

Malden River Ecosystem Restoration Detailed Project Report

APPENDIX A-1

RESOURCE AGENCIES CORRESPONDENCE



**US Army Corps
of Engineers®**
New England District



United States Department of the Interior



FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087

March 28, 2007

Reference: Project Location
Malden River Ecosystem Restoration Project Malden, Everett and
Medford, MA

Mr. John R. Kennelly
Chief of Planning
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751

Dear Mr. Kennelly:

This is in response to your letter requesting a final Fish and Wildlife Coordination Act report in relation to the Malden River Ecosystem Restoration Project in Malden, Everett and Medford, Massachusetts. The project's primary objectives are to reduce negative impacts to water quality; to restore riverine migratory corridors; to reduce negative impacts caused by sediment quality; the restoration of degraded benthic habitat; and the enhancement or restoration of freshwater wetlands.

Endangered Species Comments

Based on information currently available to us, no federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service (Service) are known to occur in the project area. Preparation of a Biological Assessment or further consultation with us under Section 7 of the Endangered Species Act is not required.

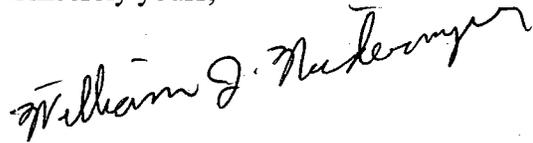
This concludes our review of listed species and critical habitat in the project location and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Fish and Wildlife Coordination Act Comments

Based on our review of the information provided, we have no objection to this project with regard to the Fish and Wildlife Coordination Act. Accordingly, these comments do not preclude future evaluation and recommendations by the U.S. Fish and Wildlife Service, pursuant to the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 et seq.), should project conditions change.

Thank you for your coordination. Please contact us at 603-223-2541 if we can be of further assistance.

Sincerely yours,

A handwritten signature in cursive script, reading "William J. Neidermyer". The signature is written in dark ink and is slanted slightly to the right.

William J. Neidermyer
Assistant Supervisor, Federal Activities
New England Field Office

MEMORANDUM FOR RECORD

TO: ALL PARTICIPANTS
FROM: MICHAEL TUTTLE
SUBJECT: MALDEN RIVER ECOSYSTEM RESTORATION
MEETING DATE: 20 MARCH 2007
PREPARATION DATE: 6 APRIL 2007

On Tuesday, 20 March 2007, a meeting was held at the office of Massachusetts Department of Environmental Protection, Northeast Region to discuss the ecosystem restoration approach for the Malden River. This document is considered a record of the discussion.

The participants present were:

- ◆ Joanne Fagan – MADEP, Section Chief
- ◆ Heidi Davis – MADEP, Environmental Analyst
- ◆ Beth Debski, MVDC Coordinator
- ◆ Jeff Nangle, Nangle Consulting Assoc.
- ◆ Chuck Altobello, Nangle Consulting Assoc.
- ◆ Harry Bovee, Preotle, Lane & Assoc.
- ◆ Mark Fobert, Tetra Tech Rizzo
- ◆ Todd Randall – USACE, Biologist
- ◆ Mike Tuttle – USACE, Project Manager

Presentation Overview

Mike and Todd presented the recommended plan for the Malden River Ecosystem Restoration Project. The primary elements of the recommended plan consist of the following:

- Removal of 36,000 cubic yards of wetland soils and 14.9 acres of invasive species along the riverbank corridor and replanting with native wetland plant species;
- Creation of 5.4 acres of emergent wetland within an existing open water area;
- Placement of 4,400 cubic yards of cobble/gravel/sand substrate to create 2.8 acres of fish spawning habitat;
- Miscellaneous debris removal and disposal; and
- Operational changes at the Amelia Earhart Dam to improve fish passage for anadromous species.

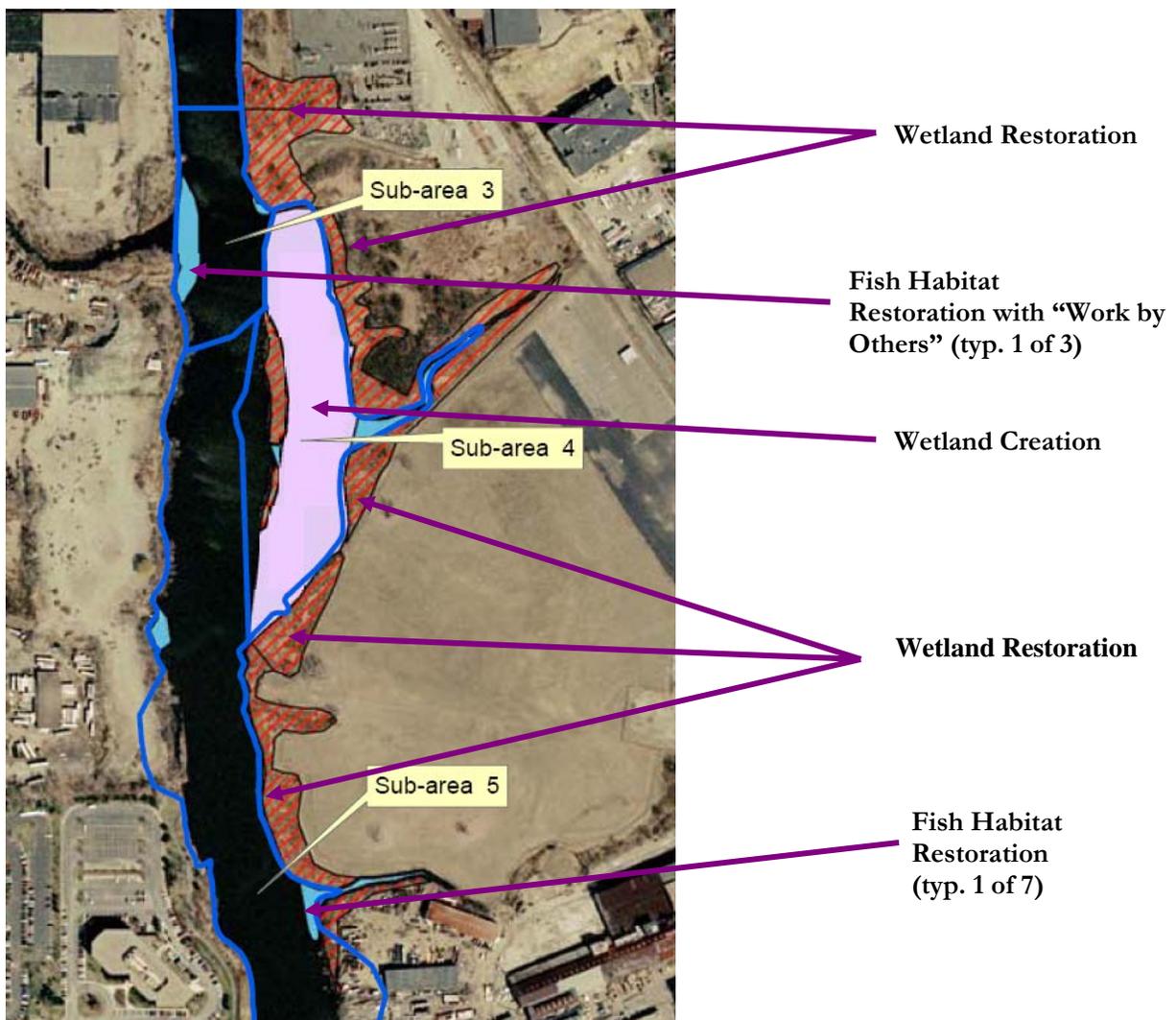
The wetland restoration component of this project involves the removal of 14.9 acres of invasive species and replanting of native wetland species to create a freshwater emergent/shrub wetland. This recommendation consists of cutting, clearing and grubbing existing Phragmites stands, excavation of the Phragmites plants and root matter, placing a layer of clean soil and the planting of native wetland plants. Phragmites stems and root matter will be removed by excavating a minimum depth of 18 inches. The generated volume is estimated at 36,000 cubic yards. This excavated material will be used as a sub-base for the wetland creation component of the recommended plan.

The wetland creation component of this project involves the establishment of a vegetated wetland within the river's oxbow to create 5.4 acres of emergent wetlands. It is anticipated that the majority of the excavated material from the wetland restoration component would be used as a substrate. A one foot layer of new soil would be placed prior to the planting of native wetland seedlings. The required volume of clean fill is estimated at 9,000 cubic yards. A flow control device such as a weir or flashboard riser would be installed within the existing tributary to control flow. The flow control device would diversify the flow and provide improved stormwater treatment.

The fish habitat restoration component of this project involves the placement of 4,400 cubic yards of clean cobble/gravel/sand substrate to create 2.8 acres of fish spawning habitat. Three of the ten proposed areas require work by "others" before placement of the gravel substrate. Another party must remove/dispose a minimum of 3-foot depth of existing river bottom in order to provide a suitable and stable base prior to the placement of the proposed gravel substrate. Negotiations with the responsible parties are ongoing. Ten individual areas comprise the fish habitat restoration measure.

Miscellaneous debris removal and disposal is proposed within the construction work limits. This recommendation involves the removal of existing debris (e.g. shopping carts, tires, appliances, etc.) and transporting to an upland disposal site. The generated volume is estimated at 450 tons. Cost for this proposed action will be non-Federal responsibility.

Fish Passage improvement involves operational changes to the Amelia Earhart Dam locking system. This recommendation consists of expanding the periods of operation of one or more of the locks to provide a more effective passage of fish into the Malden/Mystic River system. This would require operating the locks not only during the daytime periods (which has proved reasonably effective for various herring species), but also during evening and early morning hours during migration periods for other fish species (e.g., rainbow smelt).



Meeting Discussion Topics

Jeff, Harry, and Mark provided an update on the restoration efforts along the Medford side. It was expressed that restoration activities mirrored the goals and objectives of the Federal plan. The native planting specifications were provided by USACE.

Though the proposed wetland restoration component requires Phragmites stem and root matter to be removed by excavating a minimum depth of 18 inches, the objective is to excavate to the first stable substrate layer.

Compensatory flood storage was discussed. The Medford-side restoration efforts have exceeded the minimum requirement for the compensatory flood storage. Credits may be used for the Federal plan. An area adjacent to North Creek has also been identified for additional flood storage, if needed.

The excavated material for the wetland restoration component can be managed under existing State programs. One option involves using the excavated volume of 30,000 cy as a substrate layer to the wetland creation component. Excess material may be reused within the study area as a part of the redevelopment plan for the Rivers Edge project.

The water levels fluctuate approximately 2 feet within the Malden River (elev. 4.5 – 6.5 NGVD). In order to identify the proposed elevation of the wetland creation component, further discussions with MA Department of Conservation and Recreation is warranted.

Closing Comments

If an omission exists or an incorrect statement, please reply to Mike Tuttle, Study Manager at 978-318-8677 or via e-mail michael.r.tuttle@usace.army.mil .



DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO:
ATTENTION OF:

December 4, 2006

Engineering/Planning Division
Planning Branch

Mr. Michael Bartlett
U.S. Fish & Wildlife Service
70 Commercial Street, Suite 300
Concord, New Hampshire 03301

Dear Mr. Bartlett:

I am writing in reference to the proposed Malden River Ecosystem Restoration Project in Malden, Everett, and Medford, Massachusetts.

Enclosed please find a compact disk with the draft version of the Detailed Project Report (DPR), Environmental Assessment (EA) and other supporting documentation for the proposed project. The draft DPR/EA and their appendices include maps of the proposed project area, resource characterization studies of the project area, and copies of all coordination documents from federal, state and local agencies.

Please accept this letter, and its enclosures, as the New England District's request for coordination under Section 7 of the Endangered Species Act (ESA) and the Fish and Wildlife Coordination Act (FWCA). We request that you provide this office with any comments and a Final Coordination Act Report (FCAR) on the draft report within 30 days of receipt of this letter.

If you have any questions concerning this request, please contact the project manager, Mr. Michael Tuttle, at (978) 318-8677, or Mr. Todd Randall, at (978) 318-8518.

Sincerely,


John R. Kennelly
Chief of Planning

Enclosure

Same Letter Sent To:

**Ms. Maria Tur
US Fish and Wildlife Service
70 Commercial Street, Suite 300
Concord, New Hampshire 03301**



REPLY TO:
ATTENTION OF:

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
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CONCORD, MASSACHUSETTS 01742-2751

RECEIVED

MAR 13 2006

MASS. HIST. COMM

March 8, 2006

Engineering/Planning Division
Evaluation Branch

RC. 39041

Ms. Brona Simon, Acting Executive Director
Massachusetts Historical Commission
Massachusetts Archives Building
220 Morrissey Boulevard
Boston, Massachusetts 02125

CONCURRENCE: Brona Simon
4/3/06

BRONA SIMON
DEPUTY STATE HISTORIC
PRESERVATION OFFICER
MASSACHUSETTS
HISTORICAL COMMISSION

XC: Cheryl Andrews - Maltais - THPO
Victor T. Mastone - BUAR

Dear Ms. Simon:

The U.S. Army Corps of Engineers, New England District (NAE), is preparing an environmental assessment for a proposed Malden River Ecosystem Restoration Feasibility Study in Malden, Medford, and Everett, Massachusetts. The proposed project includes removing invasive plant species from degraded freshwater wetland areas, restoring wetland areas by planting with native wetland species, and the creation of new wetland areas, and fish spawning habitat. We would like your comments on this proposed project.

The Coastal Massachusetts Ecosystem Reconnaissance Study, the initial authority for the investigation of the Malden River, was authorized by a resolution adopted by the Committee on Transportation and Infrastructure of the U.S. House of Representatives on July 23, 1997. The reconnaissance study identified the restoration of the Malden River ecosystem as one of the ecosystem restoration areas that warranted a full feasibility investigation.

The Malden River watershed is a sub-basin of the much larger Mystic River watershed. The Malden River watershed is approximately 11 square miles, located in the communities of Wakefield, Stoneham, Melrose, Malden, Medford, and Everett. The Malden River originates from the outflow from Spot Pond in the Fells Reservation and passes beneath or through the cities of Melrose, and Malden, in underground culverts south of Malden Center and flows for approximately 2 miles as open surface water through the densely populated cities of Malden, Everett, and Medford, prior to its confluence with the Mystic River. The study area is defined where the river daylight from the underground culverts south of Charles Street, Malden, to the confluence with the Mystic River Medford, and Everett, with a lower boundary of the Amelia Earhart Dam. Within the study area, four small tributaries flow into the Malden River, Little Creek on the western side, two unnamed tributaries on the east side referred to as north Creek and South Creek, and a small drainage creek referred to as the Mall Creek (Figure 1).

The Malden River was originally an estuarine coastal stream that flowed into the Mystic River, winding through a dendritic network of tidal flats and wetland marshes. About 100 years ago, the bordering cities of Malden, Everett, and Medford, with the Federal and state governments, deepened and straightened a mile-long section of the Malden River to create a new Federal river channel for emerging chemical production, coal gasification and manufacturing firms. These industrial usages included tanneries, naval munitions storage, general petroleum storage, and diverse chemical production (Figure 2). The reconfigured channel of the Malden River became an important industrialized waterway and navigational route from Boston Harbor to the emerging industries developed on land created through the filling of tidal wetlands along its banks.

The combined effects of filling of wetlands and waterways, industrial discharges and disposal practices, channelization and dredging, and unregulated runoff from urban areas, led to the loss of most of the historic estuarine wetland habitats and their associated values to fish and wildlife resources (Figure 3). Alteration of the natural river course and degradation of historic spawning and nursery habitat areas negatively impacted anadromous fish populations. Finally, the construction of the Amelia Earhart Dam in 1966 resulted in a complete ecosystem alteration as the tidally flushing estuarine river was converted into a freshwater impoundment with poor flushing, circulation and water quality.

The proposed ecosystem restoration plan consists of the following actions: removal of 10.4 acres of invasive species along the riverbank corridor within sub-areas 3, 4, and 5; replanting of 10.4 acres with native wetland species within sub-areas 3, 4, and 5; creation of 4.75 acres of emergent wetland within the existing oxbow (sub-area 4); placement of gravel/sand substrate to create 2.76 acres of fish spawning habitat within sub-areas 1, 3, 4, 5, and 6; debris removal and disposal within all sub-areas; and, operation changes at the Amelia Earhart Dam to improve fish passage (Figure 4). The material to be excavated from Malden River wetlands has not undergone chemical testing. However, based on studies from adjacent uplands, NAE assumes the material is contaminated and will require out of state disposal at an approved landfill.

Staging areas may be established to support construction activities. These areas will be used to house temporary project offices, store construction equipment and materials, and to process material and other debris removed. Four proposed staging areas were identified during the feasibility study. All proposed staging areas were previously developed and/or disturbed upland areas. Currently, the most favorable staging site due to its approximation to the proposed work activities, lot size, availability, and estimated real estate costs is the National Grid parcel (Figure 5). Topography, landscape features, and vegetation will be restored in-kind upon completion of restoration work.

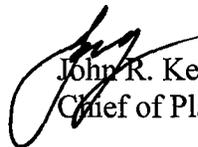
The inventory of known prehistoric sites in the hilly, upland sections of the northern Boston Basin and Mystic River drainage is limited. However, there are several clusters of prehistoric quarry/lithic workshop sites near outcrops of fine-grained rocks (rhyolite) in the Melrose and Wakefield sections of Middlesex Fells uplands. Large, base campsites were located around ponds or the head of estuaries. Smaller, task specific sites are found on small tributaries or upland areas. During the Contact Period (1520 to 1620), the Mystic River drainage was one of two concentrations or core areas of settlement in the Boston Basin, the other being on the Neponset River. The Mystic River core also probably extended inland from the estuary to include adjacent uplands with large pond (Spot Pond) and tributary stream systems, such as the Malden River. It is likely that prehistoric sites were once present along the original course of the Malden River; however, any evidence of these sites has likely been destroyed by channelization, wetland filling, and industrial development.

Industrialization along the Malden River began as early as the seventeenth century. By the mid-nineteenth century, industries lined the Malden River, including the Boston Rubber Shoe Company established by Elisha Converse, Malden Chemical Works, tanneries, dye houses, nail factories, forges, machine shops, and factories producing tinware and brittaniaware. Shoemaking became a major industry by 1837. During the late nineteenth and early twentieth centuries, the Malden River was deepened and straightened to create a new Federal river channel for these manufacturers as well as chemical manufacturers, coal gasification, and general petroleum storage (Figure 2). Tidal wetlands were filled to create land for these industries.

NAE believes that the degree of disturbance from dredging, filling, channelization, and industrialization has caused the proposed ecosystem restoration project area to lack archaeological integrity. The proposed plan is to restore some of the degraded wetlands, and create fish habitat, within areas that were historically part of the Mystic River estuarine system and that have been severely impacted by heavy industrial activity. We anticipate that the proposed restoration plan should have no effect on historic properties. We would appreciate your concurrence.

If you have any questions, please contact Ms. Kate Atwood, NAE Archaeologist at (978) 318-8537.

Sincerely,


John R. Kennelly
Chief of Planning

Enclosures



REPLY TO:
ATTENTION OF:

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

March 8, 2006

Engineering/Planning Division
Evaluation Branch

Mr. Victor T. Mastone, Director
Massachusetts Board of Underwater Archaeological Resources
251 Causeway Street, Suite 800
Boston, Massachusetts 02114-2136

Dear Mr. Mastone:

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Sincerely,


John R. Kennelly
Chief of Planning

Enclosures

Similar Letter Sent To:

Ms. Cheryl Andrews-Maltais, Tribal Historic Preservation Officer
Wampanoag Tribe of Gay Head, Aquinnah
20 Black Brook Road
Aquinnah, Massachusetts 02535-1546

Ms. Brona Simon, Acting Executive Director
Massachusetts Historical Commission
Massachusetts Archives Building
220 Morrissey Boulevard
Boston, Massachusetts 02125



DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
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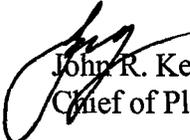
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20 Black Brook Road
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Massachusetts Board of Underwater Archaeological Resources
251 Causeway Street, Suite 800
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March 8, 2006

Engineering/Planning Division
Evaluation Branch

Ms. Cheryl Andrews-Maltais, Tribal Historic Preservation Officer
Wampanoag Tribe of Gay Head, Aquinnah
20 Black Brook Road
Aquinnah, Massachusetts 02535-1546

Dear Ms. Andrews-Maltais:

The U.S. Army Corps of Engineers, New England District (NAE), is preparing an environmental assessment for a proposed Malden River Ecosystem Restoration Feasibility Study in Malden, Medford, and Everett, Massachusetts. The proposed project includes removing invasive plant species from degraded freshwater wetland areas, restoring wetland areas by planting with native wetland species, and the creation of new wetland areas, and fish spawning habitat. We would like your comments on this proposed project.

The Coastal Massachusetts Ecosystem Reconnaissance Study, the initial authority for the investigation of the Malden River, was authorized by a resolution adopted by the Committee on Transportation and Infrastructure of the U.S. House of Representatives on July 23, 1997. The reconnaissance study identified the restoration of the Malden River ecosystem as one of the ecosystem restoration areas that warranted a full feasibility investigation.

The Malden River watershed is a sub-basin of the much larger Mystic River watershed. The Malden River watershed is approximately 11 square miles, located in the communities of Wakefield, Stoneham, Melrose, Malden, Medford, and Everett. The Malden River originates from the outflow from Spot Pond in the Fells Reservation and passes beneath or through the cities of Melrose, and Malden, in underground culverts south of Malden Center and flows for approximately 2 miles as open surface water through the densely populated cities of Malden, Everett, and Medford, prior to its confluence with the Mystic River. The study area is defined where the river daylights from the underground culverts south of Charles Street, Malden, to the confluence with the Mystic River Medford, and Everett, with a lower boundary of the Amelia Earhart Dam. Within the study area, four small tributaries flow into the Malden River, Little Creek on the western side, two unnamed tributaries on the east side referred to as north Creek and South Creek, and a small drainage creek referred to as the Mall Creek (Figure 1).

The Malden River was originally an estuarine coastal stream that flowed into the Mystic River, winding through a dendritic network of tidal flats and wetland marshes. About 100 years ago, the bordering cities of Malden, Everett, and Medford, with the Federal and state governments, deepened and straightened a mile-long section of the Malden River to create a new Federal river channel for emerging chemical production, coal gasification and manufacturing firms. These industrial usages included tanneries, naval munitions storage, general petroleum storage, and diverse chemical production (Figure 2). The reconfigured channel of the Malden River became an important industrialized waterway and navigational route from Boston Harbor to the emerging industries developed on land created through the filling of tidal wetlands along its banks.

The combined effects of filling of wetlands and waterways, industrial discharges and disposal practices, channelization and dredging, and unregulated runoff from urban areas, led to the loss of most of the historic estuarine wetland habitats and their associated values to fish and wildlife resources (Figure 3). Alteration of the natural river course and degradation of historic spawning and nursery habitat areas negatively impacted anadromous fish populations. Finally, the construction of the Amelia Earhart Dam in 1966 resulted in a complete ecosystem alteration as the tidally flushing estuarine river was converted into a freshwater impoundment with poor flushing, circulation and water quality.

The proposed ecosystem restoration plan consists of the following actions: removal of 10.4 acres of invasive species along the riverbank corridor within sub-areas 3, 4, and 5; replanting of 10.4 acres with native wetland species within sub-areas 3, 4, and 5; creation of 4.75 acres of emergent wetland within the existing oxbow (sub-area 4); placement of gravel/sand substrate to create 2.76 acres of fish spawning habitat within sub-areas 1, 3, 4, 5, and 6; debris removal and disposal within all sub-areas; and, operation changes at the Amelia Earhart Dam to improve fish passage (Figure 4). The material to be excavated from Malden River wetlands has not undergone chemical testing. However, based on studies from adjacent uplands, NAE assumes the material is contaminated and will require out of state disposal at an approved landfill.

Staging areas may be established to support construction activities. These areas will be used to house temporary project offices, store construction equipment and materials, and to process material and other debris removed. Four proposed staging areas were identified during the feasibility study. All proposed staging areas were previously developed and/or disturbed upland areas. Currently, the most favorable staging site due to its approximation to the proposed work activities, lot size, availability, and estimated real estate costs is the National Grid parcel (Figure 5). Topography, landscape features, and vegetation will be restored in-kind upon completion of restoration work.

The inventory of known prehistoric sites in the hilly, upland sections of the northern Boston Basin and Mystic River drainage is limited. However, there are several clusters of prehistoric quarry/lithic workshop sites near outcrops of fine-grained rocks (rhyolite) in the Melrose and Wakefield sections of Middlesex Fells uplands. Large, base campsites were located around ponds or the head of estuaries. Smaller, task specific sites are found on small tributaries or upland areas. During the Contact Period (1520 to 1620), the Mystic River drainage was one of two concentrations or core areas of settlement in the Boston Basin, the other being on the Neponset River. The Mystic River core also probably extended inland from the estuary to include adjacent uplands with large pond (Spot Pond) and tributary stream systems, such as the Malden River. It is likely that prehistoric sites were once present along the original course of the Malden River; however, any evidence of these sites has likely been destroyed by channelization, wetland filling, and industrial development.

Industrialization along the Malden River began as early as the seventeenth century. By the mid-nineteenth century, industries lined the Malden River, including the Boston Rubber Shoe Company established by Elisha Converse, Malden Chemical Works, tanneries, dye houses, nail factories, forges, machine shops, and factories producing tinware and britanniaware. Shoemaking became a major industry by 1837. During the late nineteenth and early twentieth centuries, the Malden River was deepened and straightened to create a new Federal river channel for these manufacturers as well as chemical manufacturers, coal gasification, and general petroleum storage (Figure 2). Tidal wetlands were filled to create land for these industries.

NAE believes that the degree of disturbance from dredging, filling, channelization, and industrialization has caused the proposed ecosystem restoration project area to lack archaeological integrity. The proposed plan is to restore some of the degraded wetlands, and create fish habitat, within areas that were historically part of the Mystic River estuarine system and that have been severely impacted by heavy industrial activity. We anticipate that the proposed restoration plan should have no effect on historic properties. We would appreciate any comments you may have at your earliest convenience.

If you have any questions, please contact Ms. Kate Atwood, NAE Archaeologist at (978) 318-8537.

Sincerely,


John R. Kennelly
Chief of Planning

Enclosures

Similar Letter Sent To:

**Ms. Brona Simon, Acting Executive Director
Massachusetts Historical Commission
Massachusetts Archives Building
220 Morrissey Boulevard
Boston, Massachusetts 02125**

**Mr. Victor T. Mastone, Director
Massachusetts Board of Underwater Archaeological Resources
251 Causeway Street, Suite 800
Boston, Massachusetts 02114-2136**

Malden River Ecosystem Restoration Detailed Project Report

APPENDIX A-2

PUBLIC INVOLVEMENT



**US Army Corps
of Engineers®**
New England District



DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO:
ATTENTION OF:

July 1, 2008

Engineering/Planning Division
Planning Branch

Ms. Michele V. Leone
National Grid
25 Research Drive
Westborough, Massachusetts 01582

RE: Malden River Ecosystem Restoration Study, National Grid Comments on "Draft" Project Report

Dear Ms. Leone:

The U.S. Army Corps of Engineers appreciates your agency's review of the "Draft" Malden River Ecosystem Restoration Detailed Project Report & Environmental Assessment dated November 2007. The Project Development Team (PDT) has reviewed your letter dated January 10, 2008 and the comments related the environmental aspects of the project.

The PDT's responses are as follows:

Comment 1 & 2 (Page 2, 1st paragraph): Elimination of sediment removal in the Malden River Restoration Plan.

Response: The PDT offers this clarification of the contaminated sediment removal measures discussed in the Report. During the initial screening process, all restoration opportunities were tabulated and ranked based on risk/success. Costs did not weigh in this initial screening. The contaminated sediment removal alternatives initially examined consisted of complete river bottom dredging and partial dredging with a capping component.

During the completion of the formulation process, the PDT determined that all contaminated sediment removal measures would be eliminated from further study. A pre-established goal for the PDT was to complete this feasibility study under the current General Investigation Program and then transition to the Section 206 Ecosystem Restoration Program Authority. Please be reminded that proposed implementation costs weighed in on the decision making process.

Due to the lack of ecological risk or the assumption of risk reduction associated with any complete or partial sediment removal, this paragraph has been rewritten.

Page ES-iv paragraph 2 has been rewritten as follows:

“Ten individual areas comprise the fish habitat restoration measure. Fish habitat restoration involves the placement 4,400 cubic yards of clean gravel/sand substrate to create 2.8 acres of fish spawning habitat. Three of the ten proposed areas require work by “others” before placement of the gravel substrate. Another party must remove/dispose a minimum of 3-foot depth of existing river bottom in order to provide a suitable and stable base prior to the placement of the proposed gravel substrate. Negotiations with the responsible parties are ongoing. If responsible party negotiations are unsuccessful, these 3 sites will be eliminated from the NER recommended plan.”

Comment 3 (Page ES-ii, 3rd paragraph): Wetland soil testing.

Response: Wetland restoration will involve the *Phragmites* removal over 14.9 acres, which will consist of cutting, grubbing and disposing off-site the *Phragmites*’ stands. A minimum depth of 18-inches of existing material will be excavated, and screened to remove *Phragmites*’ rhizome matter and other undesirable items. These items will be disposed off-site. The screened material, volumes estimated at 36,000 cubic yards, will be placed as a sub-base for the wetland creation component of the Project. A minimum 12 inch depth of clean wetland soil would be placed over the sub-base. An herbicide treatment will be applied prior to the capping. Any reuse of the excess excavated material will also contain an herbicide treatment and capping of new soil. The finished elevation of the wetland creation is proposed at 103.6 feet MDC datum, approximately 6 inches below the mean surface water level for Malden River. During the development of the plans and specifications the wetland soils will be evaluated for their suitability as sub-base material. The PDT will also evaluate uses of the excess material for creating small island habitats within the oxbow.

Once Project Approval is obtained and the Project Cooperation Agreement is executed, a condition survey and chemical testing program will be conducted over the project area. The survey results may require the PDT to adjust the restoration limits. Example, a small isolate pocket of *Phragmites* located within sub-area 2 may be considered for inclusion to the Recommended Restoration Plan. The chemical testing analysis will determine what percentage of the proposed excavated material will be designated for upland disposal.

Comment 4 (Page 40, 1st & 2nd paragraphs): Activities within the Federal Navigation Project (FNP).

Response: An existing authorized FNP channel exists in the Malden River corridor. However, the Government has not performed any dredging activities since the 1910’s and does not anticipate any future Federal dredging activity in the river.

Comment 5 (Page 69, 1st paragraph) & 6 (Page 16, section 5.1.1.2): Information in Appendix E does not support removal of sediments.

Response: The use of the sediment toxicity model was intended to assist the PDT in the prioritization of restoration measures for the river. While the values generated by the model for the benthic habitat restoration phase of the project were of lesser value than the wetland restoration and wetland creation phases, increases in benthic habitat value were observed under the dredging and capping scenario. These increases were viewed by the PDT as positive benefits to the Malden River ecosystem.

Comment 7 (Page 21, 2nd paragraph) & 8 (Page 28, subsection Sediment Quality): Existing sediment quality data.

Response: Due to human error, incomplete versions of Appendix E and F were released along with the draft report. Revised versions which contain data relevant to comments 7, 8 & 9 were forward to you and your engineers on June 16, 2008. Specifically, data relevant to comment 7 and 8 can be found in Tables F-1 through Table F-19.

In addition the following sentence has been deleted from Page E-3, paragraph 1 –“ *As a result, sediments and soils from the Malden River system may pose potentially unacceptable ecological risks to wildlife in the area.*”

Comment 9 (Page 51, section Sub-Area 1): No basis that the dredging and capping will meet ecological restoration objectives.

Response: Fishery habitat restoration involves improving spawning habitat by placement of a sand and gravel substrate. Two areas adjacent to the Medford Street Bridge have been identified for fishery habitat restoration. This restoration measure is dependent on work being performed by others. Another party must remove a minimum of 3-foot depth of existing river bottom in order to obtain a suitable and stable base prior to the placement of the spawning habitat substrate.

Comment 10 (Appendix E, Page E-8, section 2.4.1): Sediment chemistry following restoration.

Response: As noted in response to comment #7, incorrect versions of Appendix E & F were released with the draft report. The incorrect version erroneously reported the use of TEC values as a basis of comparison of before and after dredging scenarios. The PDTs analysis did in fact use actual chemical concentrations at depth in the no capping scenario and PEC values in dredging and capping scenarios.

USGS/MADEP study not in same watershed as project area.

As noted in the model result reported in Table 21 of Appendix E, the dredging only scenario does in some locations increase chemical concentrations to limited degrees.

However, in all scenarios that involve dredging and capping, chemical concentrations in the sediments are shown to decrease.

Comment 11 (Appendix E, Page E-5, section 1.3): Using bulk sediment chemistry to predict habitat value.

Response: As stated in the response to comment #7, the use of the predictive model to develop habitat units for the Malden River restoration project was for the prioritization of restoration goals. The use of the Ingersoll *et. al.* (2000) model was used effectively in the Corps feasibility study for the screening of restoration alternatives for the Muddy River (Brookline, Massachusetts). The PDT believes that the use of the predictive model was effective in providing a means of examining the restoration needs in the Malden River and weighing potential benefits against cost.

Comment 12 (Appendix E, Page E-7, 1st paragraph): Did the report only use data from Nangle.

Response: Data from the Nangle reports were used because of site specificity. During the plan formulation process, data from other studies outside of the project area were considered. However, given that the Nangle data set was located in the Malden River restoration areas being considered, the PDT felt that it accurately represented the conditions present in the river.

Comment 13 (Appendix E, Page e-14, section 3.2.2): Information in Appendix E does not support removal of sediments.

Response: Refer to the response to comment #5.

In closing, we thank National Grid for your support and concerns in ensuring a successful endeavor for the habitat restoration of the Malden River corridor. We look forward to working with you in the future. If you have any questions in regards to this letter or the study, please contact Mr. Michael Tuttle at (978) 318-8677.

Sincerely,


John R. Kennelly
Chief of Planning

Copy Furnished:

Elizabeth Debsky (MVDC)
200 Pleasant Street, Suite 621
Malden, Massachusetts 02148

January 10, 2008

Mr. Michael Tuttle
Project Manager
USACE - New England District
696 Virginia Road
Concord, MA 01742-2751

Re: Comments on Draft "Malden River Ecosystem Restoration Detailed Report & Environmental Assessment" dated November 2007

Dear Mr. Tuttle:

This letter presents National Grid's technical comments on the environmental aspects of the above-referenced document. The particular sentence or section being commented upon is identified in bold italics, followed by the related comment.

Detailed Report, Page 2, 1st paragraph. There is a specific discussion of the elimination of sediment removal from the restoration plan. An estimated 170,000 cubic yards of sediment (all of the sediment in the river) exceed sediment screening benchmarks and it is estimated to cost over \$20M to remove all this material. The Plan states that "dredging the entire river is not expected to be necessary to achieve significant ecological benefits. Significant ecological benefits may be achieved by work performed by other responsible parties. Remedial actions that address the historic[al] oil and hazardous material releases to the river should be undertaken through the Massachusetts Contingency Plan Compliance Program and U.S. EPA Brownfields Program Removal."

There is no information in the Report on ecological risk or the assumption of risk reduction ("ecological benefits") associated with any partial or complete sediment removal. Massachusetts Contingency Plan (MCP) and Brownfields projects may or may not determine that sediment removal is necessary. The MCP work performed for the portion of the Malden River upstream of the USACE project adjacent to the National Grid former MGP site, did not in fact find a Significant Risk under the MCP, and did not recommend sediment removal.

The Malden River Portion of the Former Malden MGP Site begins at the outfall of the Malden River culvert located at the upstream end of the River and extends approximately 1400 feet downstream. Supplemental Method 3 Risk Characterization activities had indicated that a condition of "No Significant Risk" existed in the Malden River portion of the Site for human health, safety, public welfare, and the environment. However, a condition of No Significant Risk was not initially concluded for exposure to carcinogenic polynuclear aromatic hydrocarbons (cPAHs) via fish ingestion. The fish bioaccumulation pathway was re-evaluated using an updated biota-sediment accumulation factor (BSAF) value and site-specific measured total organic carbon (TOC) data and the analysis showed that the Malden River portion of the Site posed No Significant Risk to human health and the environment. Additional sediment visual and analytical data were collected after this conclusion was reached to confirm that it was still the case. Consequently, the Phase III Remedial Action Plan (RAP) concluded that a Permanent Solution can be achieved through implementation

Mr. Michael Tuttle

Page 2 of 4

of No Further Remedial Action in the River, with a Class A-2 Response Action Outcome submitted to MADEP in June 2007.

Detailed Report, Page 2, 1st paragraph. The document notes that “removal of contaminated material can be accomplished as an add-on to the Corps Ecosystem Restoration Project,” separately without federal participation or with federal funds under Section 312(b) of WRDA. This reference to removal to be performed by “other responsible parties” appears to lack a systematic evaluation as part of the overall restoration protocol. If removal is performed “as an add-on,” would these other actions precede the USACE restoration? If so, on what schedule? If they are performed “in the future,” how would the permitting and the access/bank disruptions affect the plantings and other restoration features?

Detailed Report, Page ES-iii, 3rd paragraph. The detailed Report states that “most of the excavated material from the wetland restoration component would be used as substrate.” However, in the letter to the USACE Chief of Planning to the Massachusetts Historic Commission dated March 8, 2006 it is stated: “the material to be excavated from the Malden River wetlands has not undergone chemical testing. However, based on studies from adjacent uplands, NAE assumes the material is contaminated and will require out of state disposal at an approved landfill.” The disposition of this material needs to be clarified.

Detailed Report, Page 40, 1st and 2nd paragraphs. Dredging and/or capping “are not cost effective means of restoration of the water column within the entire River system.” “Rather, partial removal and capping would be a more practical option.” If capping were to be contemplated for a portion of River within the federal navigation channel, how would cap disturbance be prevented during future channel maintenance dredging?

Detailed Report, Page 69, 1st paragraph. “The assessment of benefits from benthic habitat restoration relied on a sediment toxicity model by Ingersoll *et al.* (2000) that relates sediment toxicity to benthic invertebrates to concentrations of PAHs, metals, and PCBs in sediment.” A detailed critique of the Ingersoll publication and its applicability to the River is beyond the scope of these comments. However, available sediment toxicity data in the River and the information presented in Appendix E do not support removal of affected sediments as key to benthic restoration.

Detailed Report, Page 16, Section 5.1.1.2. “Elevated levels of semi-volatile compounds (SVOCs), most likely from past releases, are considered the primary sediment quality issue.” “Remediation efforts to control ongoing sources... will not significantly improve existing sediment quality without removal or remediation.” However, the analyses presented in Appendix E (“Ecological Benefits Report”) do not support the position that sediment constituents are responsible for ecological deterioration in the River, nor do data collected by National Grid as part of the former MGP site evaluations under the MCP.

Detailed Report, Page 21, 2nd paragraph. The document states that pollutant levels in some areas of the Malden River are up to five orders of magnitude above ecological screening benchmarks. Using the information presented, we were unable to confirm this. We were also unable to confirm the conclusion of “unacceptable ecological risks” related to sediment and soil quality as noted in *Page E-3, 1st paragraph*.

Detailed Report, Page 28, Sediment Quality. “Sediment quality is probably the most important ‘driver’ of environmental restoration in the Malden River.” *1st bullet.* “The highest levels of semivolatile organics are present near the Medford Street Bridge and at the confluence of Little Creek and the Malden River.” It is noted that SVOCs are present in sediment at levels exceeding MCP UCLs (presumably those for soil) and that separate phase product may be present in sediments in these areas. Regarding free-phase product, the text does not cite any specific observations of NAPL nor do we know of any observations of NAPL. The text seems to be speculating on NAPL presence based on the SVOC concentrations and there is also no discussion of variation with depth.

Detailed Report, Page 51, Section Sub-Area 1. “Elevated concentrations of coal gasification residuals were identified within the sediment deposits along the easterly and westerly banks of the Medford Street Bridge.” “Benthic restoration involves dredging the entire Sub-Area 1 to remove contaminated sediment and recapping with clean material.” “Another party must remove a minimum of 3 feet of the existing river bottom to obtain a suitable and stable base prior to the placement of the substrate.” There is a similar discussion on **Page 53, 1st paragraph of the Detailed Report** for Sub-Area 3. These statements appear to assume that a basis, presumably under the MCP, will be found for sediment removal, that such removal will include 3 feet of sediment and that the “cap” will meet ecological restoration objectives. There does not appear to be a basis to support these assumptions.

Appendix E, Page E-8, 2.4.1, Bulk Sediment Chemistry. Sediment deposits following capping (e.g., ongoing inputs) were assumed to have concentrations equal to the threshold effects concentrations (TECs) cited by MADEP (this guidance was updated in 2005 and no longer cites TECs for all analytes). Regardless, these concentrations are well below concentrations that would be expected to be present in newly accumulating sediments. For example, in a large USGS/MADEP study¹ completed of the Mystic River Valley (112 sediment sampling locations), the surficial sediment sample just upstream of the confluence of the Mystic and Malden Rivers contained 16 mg/kg fluoranthene; the TEC is 0.42 mg/kg. The assumption that sediments will be “clean” following removal of existing material does not appear to account for typical urban conditions. Also, as indicated in Table 21, concentrations of most listed chemicals (arsenic, six metals, and total PAHs) would decrease little or even increase (PAHs in Sub-Area 3) after removal of the top 4 feet of sediment due to exposure of impacted sediments currently located at depth.

Appendix E, Page E-5, 1.3 Goals and Objectives. The second of the three goals of the ecological evaluation is to “analyze bulk sediment chemistry to assess benthic invertebrate habitat quality.” **Appendix E, Page E-8, 2.5.1, Benthic Invertebrates.** The report uses probable effects concentration quotients (PEC-Qs) based on bulk sediment chemistry to predict Habitat Sustainability Indices (HSIs) for benthic life. This approach has certain technical limitations and in fact, bulk sediment quality is a poor predictor of habitat quality.

Appendix E, Page E-7, 1st paragraph. Only data from the Nangle reports were included in the evaluations, although there appears to be a substantial quantity of other data that exists for the study area. Do the Nangle data supersede the rest of the data?

Appendix E, Page E-14, 3.2.2, Benthic Invertebrates, and Table 22. The predicted improvement in Habitat units (HUs) associated with sediment removal were minimal. In addition, the No Action Alternative predicts *Hyallela azteca* survival rates ranging from 23 to 63% (50% for Sub-Area 1). In fact, as documented Haley & Aldrich’s Phase II CSA Report for the Former Malden MGP Site dated December 2001, sediment toxicity tests done by AMEC on the sediments adjacent to the former MGP site found *H. azteca* survival from 67 to 86%, with no relationship to bulk sediment concentrations of PAHs or other analytes. Predicted HUs for Sub-Area 1 went from 0.8 under No Action to 1.1 under either a dredging or dredging and capping alternative. The greatest increase in HU associated with dredging and capping was 3.9 for Sub-Area 3. In contrast, HU gains ranged up to 23 for invasive removal, up to 35 for wetland restoration, and up to 22 for wetland creation. These estimates indicate that sediment removal is of small predicted ecological benefit compared with the other restoration options. Nonetheless, the document states (**Appendix E, page E-14**) that “although the overall changes in HUs appear to be slight, marked

¹ Breault, Robert F., John L. Durant, and Albert Robbat, Jr., 2005. Sediment Quality of Lakes, Rivers, and Estuaries in the Mystic River Basin, Eastern Massachusetts, 2001-03, U.S. Dept. of Interior and U.S. Geological Survey.

Mr. Michael Tuttle

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improvements in benthic invertebrate survivability are predicted.” This statement appears to directly contradict the evaluation’s own findings and indicates a possible bias toward the benefits of sediment removal that are not necessarily supported technically.

Thank you very much for the opportunity to comment on the proposed ecosystem restoration plan. Please feel free to contact me with any questions at 508-389-4296 or via email at michele.leone@us.ngrid.com.

Sincerely,
National Grid

A handwritten signature in black ink, appearing to read "M. Leone".

Michele V. Leone

cc: File



DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO:
ATTENTION OF:

February 19, 2008

Engineering/Planning Division
Planning Branch

Mr. John Reinhardt, President
Mystic River Watershed Association
20 Academy Street, Suite 203
Arlington, Massachusetts 02476

RE: Malden River Ecosystem Restoration Study, MyRWA Comments on "Draft" Project Report

Dear Mr. Reinhardt:

The U.S. Army Corps of Engineers appreciates your agency's review of the "draft" Malden River Ecosystem Restoration Detailed Project Report & Environmental Assessment dated November 2007. The Project Development Team (PDT) has reviewed your letter dated January 8, 2008, and the comments related to *Phragmites* management, operational changes at Amelia Earhart Dam and long term maintenance program.

The PDT offers this clarification of the proposed *Phragmites* removal process of the restoration. Wetland restoration will involve the *Phragmites* removal over 14.9 acres, which will consist of cutting, clearing, grubbing and disposing off-site the *Phragmites*' stands. A minimum depth of 18-inches of existing material will be excavated, and screened to remove *Phragmites*' rhizome matter and other undesirable items. These items will be disposed off-site. The screened material, volumes estimated at 36,000 cubic yards, will be placed as a sub-base for the wetland creation component of the Project. A minimum 12-inch depth of clean wetland soil would be placed over the sub-base. An herbicide treatment will be applied prior to the capping. Any reuse of the excess excavated material will also contain an herbicide treatment and capping of new soil.

Coordination with the Department of Conservation and Recreation, operators of the Amelia Earhart Dam, will continue. The comment that the proposed project will not result in changes to how the dam operates (Table 5-1) refers to water surface levels/drawdown. The Report recommends more frequent openings of the locks during the anadromous fish migration seasons to allow greater numbers of fish to enter the Malden and Mystic Rivers.

In regards to your comments on the cost per acre of invasive species removal across the sub-areas, the disparity between sub-areas 1 thru 5 compared with sub-area 6 reflects risk and uncertainties. During the feasibility study evaluation, no sediment chemistry data was available. Cost contingencies related to access difficulties, additional staging areas and disposal requirements are incorporated into the cost per acre of invasive species removal.

The PDT has acknowledged that an Operations and Maintenance Manual will be required upon completion of the restoration project. Though no permanent structures are proposed, a maintenance program will outline implementable activities for the local sponsor. Upon project completion, a 3-year monitoring program will be conducted by the PDT. The observation findings will be forward to MVDC. Correction of any identified deficiencies will be the responsibility of the local sponsor, MVDC. The Project Cooperation Agreement contains local sponsor responsibilities for the Operations, Maintenance, Replacement, Repair and Rehabilitation of the Project upon completion.

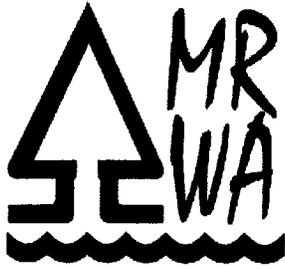
Once Project Approval is obtained and the Project Cooperation Agreement executed, a condition survey will be conducted over the project area. The survey results may require the PDT to adjust the restoration limits. Example, a small isolate pocket of *Phragmites* located within sub-area 2 may be considered for inclusion to the Recommended Restoration Plan.

In closing, we thank MyRWA for your support and concerns in ensuring a successful endeavor for the habitat restoration of the Malden River corridor. If you have any questions in regards to this letter or the study, please contact Mr. Michael Tuttle at (978) 318-8677.

Sincerely,


John R. Kennelly
Chief of Planning

Copy Furnished:
Elizabeth Debsky (MVDC)
200 Pleasant Street, Suite 621
Malden, Massachusetts 02148



MYSTIC RIVER WATERSHED ASSOCIATION
20 ACADEMY STREET, SUITE 203
ARLINGTON, MA 02476

January 8, 2008

Michael Tuttle
Project Manager
USACE - New England District
696 Virginia Road
Concord MA 01742

RE: Malden River Ecosystem Restoration
Comments on Draft Detailed Project Report

Dear Mr. Tuttle:

The Mystic River Watershed Association (MyRWA) is a non-profit organization dedicated to protecting and restoring the watershed's water quality, open space and habitat. The Mystic River Watershed includes the Malden River, which is the focus of the proposed ecosystem restoration project. MyRWA has reviewed the Draft Detailed Project Report released in November 2007, and has the following comments.

The report presents the results of a detailed environmental assessment and a plan for an ecosystem restoration of the Malden River corridor in Malden, Everett and Medford MA. As the draft report documents, this riverine system, which once included extensive tidal marsh habitat, has been severely degraded by channelization, industrial pollution and urban runoff. The construction of the Amelia Earhart dam hindered the passage of anadromous fish, including an important herring run. In recent years, however, efforts have been made by many parties to reverse the damage to the Malden River ecosystem. The extraordinary collaboration of numerous parties, as reflected in the USEPA Brownfields Showcase Community designation for the Malden River corridor, has created new hope for this urban watershed. The proposed restoration plan, with the U.S. Army Corps of Engineers (USACE) as Federal lead and the Mystic Valley Development Corporation (MVDC) as local lead, is a critical component of these efforts.

The plan calls for restoration of impacted wetland and riparian habitat, the creation of wetland habitat, and physical improvements to riverine habitat for native fish species. **Overall, MyRWA enthusiastically endorses this project.** We believe that the proposed actions, in concert with removal of contaminated sediments and other actions by PRPs, improvements in the Department of Conservation and Recreation's operation of the

Amelia Earhart dam, and improved stormwater management in the adjacent communities, will result in restoration and protection of significant ecological habitat functions.

MyRWA has a number of **specific questions and comments** about the plan, as presented in the draft report:

Management of removed *Phragmites*: The report states on page 79 that “*Phragmites* stubs and root matter will be removed by excavating a minimum depth of 18 inches. The generated volume is estimated at 36,000 cubic yards. This excavated material will be used as a sub-base for the wetland creation component of the NER plan.” The re-use of this excavate is likely to result in the spreading and re-growth of *Phragmites*. The decision to re-use excavated material containing *Phragmites* rhizome matter is especially confusing, given the following statement on page 81 of the draft report:

With regard to *Phragmites*, nearly all parts of the plant are capable of regeneration, including seed heads, freshly cut stalks, and especially rhizome material (Burdick et al., 2003). Removal of all plant parts cut during eradication to an approved disposal destination (e.g. incinerator) is absolutely essential to prevent the accidental spread within or outside of the study area.

MyRWA strongly recommends that all *Phragmites* plant materials be managed in a way that prevents any spread and re-growth. We request that the report specify how the excavate will be treated to prevent re-growth where ever it is finally placed, and that – given that the MVDC will be responsible for at least 6,000 cubic yards of this material – the report specify what types of on-site use are appropriate.

Operation of the Amelia Earhart dam: The draft report notes the need for changes in the DCR’s operation of the dam, to allow increased passage of herring and other anadromous fish. Table 5-1 on page 37 suggests that the proposed project will not result in changes to how the dam operates. We urge that continued coordination and negotiation with the DCR be explicitly included as a part of the restoration plan, to ensure that appropriate changes in dam operation are defined and implemented.

Invasives removal in Sub-area 2: MyRWA questions the elimination of invasive species removal and replanting in Sub-area 2. Considering that removal is planned for Sub-area 3 and there are no natural barriers between the sub-areas, this would seem to create an unnecessary maintenance burden on MVDC to prevent re-infestation. Removal in Sub-area 2 would create a *Phragmites*-free zone up to the Medford Street Bridge, since Sub- area 1 is reportedly clear currently. We request that invasives removal be included for Sub-area 2.

Long-term maintenance: MyRWA believes that an Operations & Maintenance Plan should be included in the restoration plan. The draft Detailed Project Report (p. 72) specifies a 50-year project life. Long-term success seems unlikely without an explicit O/M plan. In Section 6.5 Operation and Maintenance, the draft Report suggests that an O/M plan is not needed because “no permanent structures are proposed...” (p. 90).

However, the draft Report also indicates that flow control devices (weirs or flashboards) may be required (p.43). These are structures that would require maintenance to operate as intended for 50 years.

The draft Detailed Report also states that it is the MVDC that has "... responsibility for 100 percent of the Operations, Maintenance, Replacement, Repair and Rehabilitation (OMRR&R)" (p. 96). However, the report does not define what actions are required. The Environmental Assessment (EA) refers to 'long-term' annual surveys for *Phragmites*, monitoring of the Amelia Earhart dam procedures, and maintenance of shoreline and riparian vegetation (p. 16). The restoration plan needs to specify the actions and time periods involved. For example,

- Is 'long-term' in the EA the same 50 years specified in the Detailed Report?
- Is maintenance dredging anticipated, as implied in the EA (p. 5)?
- If *Phragmites* are found during post-construction monitoring, who is responsible for removing it? The EA in 3.3 Monitoring, Post Construction (p. 16) specifies four inspections per year for three years, with results provided to the project sponsor, but does not address responsibility for remedial measures. Is it the responsibility of the construction contractor (warrantee essentially) to remove the re-infestation at the behest of MVDC or is MVDC solely responsible for the work? If MVDC takes no action, does USACE have any authority to compel action?

Other questions and comments:

1. Why is Sub-area 6 disproportionately sized? Its total area is about twice the area of all the others combined, and its bordering banks and nearly ten-times that of Sub-area 1 (Report, p. 51). If Sub-area 6 were broken down so that the so-called "Mall Creek" wetland section was evaluated separately, what would the incremental cost for invasive species removal have been?
2. Why do costs per acre of invasive species removal vary so markedly across Sub-areas? Based on the costs in the Report, Table 5-7 (p. 70), and the acreage in Table 5-5 (p. 67), invasive species removal costs range from \$115,000 per acre in Sub-area 5 to \$801,000 per acre in Sub-area 3. Given that the cost per acre in Sub-area 6 is less than the Sub-area 3, how is that the Cost/Output (Report, Table 5-9) is higher for Sub-area 6 than for Sub-area 3?
3. Page 19 of the draft Detailed Report refers to the MyRWA monitoring effort and erroneously states that the monitoring occurs weekly. Monitoring on the Malden River occurs monthly.

Conclusion

Subject to these comments, MyRWA enthusiastically endorses the proposed Malden River Ecosystem Restoration Plan. Because of the time required to develop detailed restoration designs and for the USACE and the MVDC to obtain the required permits and

approvals, the proposed schedule does not anticipate completion of the work until 2012. We urge prompt review and approval of the recommended plan, so that the long-delayed restoration of this valuable urban habitat can get underway as soon as possible

Thank you for the opportunity to comment on this important project.

Sincerely,

John Reinhardt
President



DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

REPLY TO:
ATTENTION OF:

February 19, 2008

Engineering/Planning Division
Planning Branch

Ms. Penny M. Panoulis
Preotle Lane & Associates Ltd.
535 Madison Avenue, 33rd Floor
New York, New York 10022

RE: Malden River Ecosystem Restoration Study - PLA Comments on "Draft" Project Report

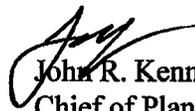
Dear Ms. Panoulis:

The U.S. Army Corps of Engineers appreciates your firm's review of the "draft" Malden River Ecosystem Restoration Detailed Project Report & Environmental Assessment dated November 2007. The Project Development Team (PDT) has reviewed your email dated January 8, 2008, and the comments related to wetland creation component of the proposed recommended plan.

The PDT offers this clarification of the proposed wetland creation within the existing 5.4 acre oxbow. Wetland creation involves the establishment of an emergent vegetated wetland by placing a minimum depth of 18-inches of screened material obtained under wetland restoration component. The screened material, volumes estimated at 36,000 cubic yards, will be placed as a sub-base for the wetland creation component of the Project. A minimum 12-inch depth of clean wetland soil would be placed over the sub-base. An herbicide treatment will be applied prior to the capping. The finished elevation of the wetland creation is proposed at 103.6 feet MDC datum, approximately 6-inches below the mean surface water level for Malden River. During the development of the plans and specifications, the PDT will evaluate uses of the excess screened material for creating small island habitats within the oxbow.

In closing, we thank PLA for your support and concerns in ensuring a successful endeavor for the habitat restoration of the Malden River corridor. We look forward to working with you in the future. If you have any questions in regards to this letter or the study, please contact Mr. Michael Tuttle at (978) 318-8677.

Sincerely,


John R. Kennelly
Chief of Planning

Tuttle, Michael R NAE

To: Penny M. Panoulias
Cc: preotlelane@aol.com
Subject: RE: Comments on Malden River Ecosystem Restoration Study

-----Original Message-----

From: Penny M. Panoulias [mailto:pmpanoulias@preotlelane.com]
Sent: Tuesday, January 08, 2008 4:42 PM
To: Tuttle, Michael R NAE
Cc: preotlelane@aol.com
Subject: Comments on Malden River Ecosystem Restoration Study

Thank you for the opportunity to comment. On behalf of Preotle, Lane & Associates, our initial thoughts are as follows:

1. There is a reference to the Tufts University Boathouse being in the construction phase. Please note that construction of the Boathouse has been completed for some time and the Boathouse opened in 2006. (We were not sure whether this study was meant to be updated or not.)
2. With respect to the wetlands on Phase I of the River's Edge project, on the other side of the river, Preotle, Lane & Associates as the master developer has created or restored an acre and a half of wetlands on this site. In addition, we have added over 8,000 plants in the 10-acre riverfront park which will be open to the public along the Malden River, of which approximately 2,000 plants are in the aforementioned 1.5-acre of wetlands. For active recreation the Park includes over a mile of paths for walking, running, rollerblading and bicycling. A series of stabilized aggregate paths branch from the main path and are closer to the river and provide dramatic views of the river and the 1.5-acre wetlands.
3. Our consultants have concerns that the recommendation of filling the meander area ("Sub are 4") would significantly detract from the views of the existing open water body and have a negative impact on the public's enjoyment of such views, a major factor in the creation of this picturesque public amenity. Further, our recent experience has been that creating and maintaining aesthetically pleasing wetlands is quite challenging as well as expensive. Would there be a way to make significant water quality improvements to the area without doing all that filling? Perhaps before this worthwhile project proceeds further, there could be a discussion on this?

Two other considerations about the filling proposal: First, if a pedestrian or multi-use recreational pathway loop along and connecting both sides of the river is ever created, as per the Malden River Park Study that was done in 1999, the Restoration Study's proposed treatment greatly reduces the diversity of types of landscape opportunities at the edge of the river, thereby reducing the opportunities to make it a stimulating park environment.

Second, by filling the meander, the proposal also undoes the most significant remaining historic alignment of the Malden River, and with it the opportunity for the future interpretation of how the river once existed.

In addition, we are attaching for your information our submission to the Waterways Division of the Massachusetts Department of Environmental Protection (Request for Minor Project Modification, Waterways License # 11377), River's Edge Phase 1 Development, which provides a great deal of information as well as photographs which are illustrative of the massive amount of efforts required in such undertakings.

Please let us know if we can help in any other way or provide any further information.

Penny M. Panoulias
Preotle, Lane & Associates Ltd.
535 Madison Avenue, 33rd Floor
New York, NY 10022
Tel. 212-754-3030



Public Notice

U.S. Army Corps
Of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751

Date: December 10, 2007
Comment Period Closes: January 10, 2008
Evaluation Branch, Engineering/Planning Division

MALDEN RIVER ECOSYSTEM RESTORATION PROJECT MALDEN, MEDFORD, AND EVERETT, MASSACHUSETTS

Interested parties are hereby notified that the U.S. Army Corps of Engineers, New England District (USACE-NAE), in partnership with the Mystic Valley Development Commission (MVDC), is proposing the restoration of aquatic and riparian habitats and the improvement of anadromous fish passage in the Malden River located in Malden, Medford, and Everett, Massachusetts (Figure 1). This project is carried out under the authority of Section 206 of the Water Resource Development Act of 1996 (P.L. 104-303) as amended, and under the provisions of Section 404 of the Clean Water Act of 1977. This public notice provides information about the ecosystem restoration project and documents all pertinent laws and regulations that are applicable.

Project Description:

The Malden River restoration project involves restoring various degraded components of the river's ecosystem. The project will restore wetland areas that have been altered by filling, changes in hydrology, and colonization by non-native invasive species. The project will also create new wetland habitat in the river as well as enhance the availability of the river to anadromous and resident fish species in the system. The project has been designed to provide the highest quality habitat that the system could reasonably support and sustain.

Specifically, the project involves the removal of approximately 14.9 acres of the invasive species *Phragmites australis* by either cutting and grubbing or herbicide spraying and the replanting of the areas with native scrub-shrub wetland species. The project also involves the creation of a 5.4 acre emergent marsh within the confines of the river's former natural channel. Additionally, the fish habitat enhancement component of this project includes improving 2.8 acres of spawning habitat within the river by placing various substrates at tributary confluences and other appropriate locations. The various restoration measures are depicted in Figure 2.

Purpose and Need for Work: The purpose of this project is to restore aquatic and riparian habitat, and improve fisheries habitat in the Malden River. The Malden River watershed is a degraded riverine ecosystem. It has been subject to the effects of gradual urbanization for several centuries. The effects of development on the river's aquatic resources have been significant. The bordering lands consist predominately of former tidelands bound by rail lines

along each bank that were previously filled with razed building materials, industrial wastes and dredged material to support early industrial development. All tributary streams and associated wetlands have been filled or altered to varying degrees. Construction of the Amelia Earhart Dam in the 1960's converted the waterway from a tidally influenced salt-water estuary to a freshwater system. Riparian wetlands along the riverbanks are dominated by non-native invasive plant species such as *Phragmites*, which are crowding out native species, and limiting the diversity of riparian and wetland plant communities. In its current condition, riverbank frontage has little ecological resource value. The degraded conditions that exist in the river will remain static unless restoration efforts are undertaken.

Restoration Alternatives: Based on the historic and existing conditions, restoration goals and objectives were developed for the Malden River. The primary goal of the Malden River Ecosystem Restoration Project is to restore the ecosystem to the highest quality that it can reasonably support and sustain. The objectives described below support this overall goal. In accordance with the USACE ecosystem restoration guidelines, the major restoration objectives for the Malden River Feasibility Study are:

- Restoration and creation of freshwater wetlands to provide habitat for native fish and wildlife;
- Provide accessibility to the Malden River for anadromous and resident fishery species.

Seventeen alternatives, which included various wetland restoration, wetland creation, and fish habitat improvement measures, were identified and analyzed in all possible combinations to identify cost effective plans. Thirteen plans were retained and considered by USACE-NAE and MVDC.

Federal & State Coordination: The proposed work is being coordinated with the following:

Federal Agencies:

U.S. Environmental Protection Agency, Region 1, Boston, MA
U.S. Fish and Wildlife Service, Concord, NH
NOAA, National Marine Fisheries Service

Federally Recognized Tribes:

Wampanoag Tribe

State Agencies:

Massachusetts Executive Office of Energy and Environmental Affairs
Massachusetts Department of Environmental Management
Massachusetts Department of Environmental Protection
Massachusetts Division of Fish and Wildlife
Massachusetts Historical Commission
Massachusetts Water Resources Authority
Massachusetts Department of Recreation & Conservation (formerly Metropolitan District Commission)

Local Agencies:

City of Malden

City of Medford
City of Everett
Mystic River Watershed Association

Private Groups:

Citizens' Groups
River's Edge (formerly TeleCom City)
Mass Electric
Keyspan
Tufts University

Endangered Species: The proposed project is not expected to affect any Federal or State listed threatened or endangered species.

Environmental Impacts: A draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) have been prepared for this restoration project and are available for public review. The District will finalize the EA and FONSI after considering public and agency comments. Excavation and filling impacts are expected to be minor and temporary. A preliminary determination has been made that an Environmental Impact Statement for the proposed restoration is not required under the provisions of the National Environmental Policy Act of 1969.

Cultural Resources: The proposed restoration project is not expected to impact any structures or sites of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966, as amended. Coordination has been completed with the Massachusetts State Historic Preservation Officer and the Wampanoag Tribe Tribal Historic Preservation Officer, concurring with our no effect determination.

Federal Consistency with Coastal Zone Management: The restoration project will be conducted to the maximum extent practicable, in a manner consistent with the approved Coastal Zone Management Program of the Commonwealth of Massachusetts.

Clean Water Act: A Clean Water Act, Section 404(b)(1) evaluation was completed for the project. State Water Quality Certification will be obtained prior to implementation.

Compliance: This Public Notice is being issued in compliance with all applicable environmental laws and regulations (see Attachment A).

Additional Information: Any person who has an interest that may be affected by the restoration of the Malden River may request a public hearing. The request must be submitted in writing to me within 30 days of the date of this notice and must clearly set forth the interest that may be affected and the manner in which the interest may be affected by this activity.

Please bring this notice to the attention of anyone you know to be interested in the project. Comments are invited from all concerned parties and should be directed to the District Engineer at 696 Virginia Road, Concord, MA 01742, ATTN: Engineering/Planning Division (Mr. Michael Tuttle, 978-318-8677), within 30 days of this notice.

11 Dec 2007
Date

Curtis L. Thalken
Curtis L. Thalken
Colonel, Corps of Engineers
District Engineer

**US ARMY CORPS
OF ENGINEERS
New England District**

December 2007

Attachment A

PERTINENT LAWS, REGULATIONS AND DIRECTIVES

Clean Air Act, as amended (42 U.S.C. 1221 et. seq.)

Clean Water Act, as amended (33 U.S.C. 1251 et. seq.)

Coastal Zone Management Act of 1972, Sections 307 (c)(1) and (2)[16 U.S.C. 760c-760g]

Code of Federal Regulation, Title 33, PART 335 through 338, Army Corps of Engineers Civil Works Projects Involving The Discharge of Dredged or Fill Material Into Waters of The U.S. or Ocean Waters

Endangered Species Act of 1973, as amended (16 U.S.C. 668aa-668cc)

Estuary Protection Act (16 U.S.C. 1221 et. seq.)

Executive Order 11988, Floodplain Management, 24 May 1977

Executive Order 11990, Protection of Wetlands, 24 May 1977

Executive Order 12898, Environmental Justice, 11 February 1994

Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks. 21 April 1997

Federal Water Project Recreation Act, as amended (16 U.S.C. 4601 – 12 et. seq.)

Fish and Wildlife Act of 1956 (16 U.S.C. 472a, et. seq.)

Fish and Wildlife Coordination Act (16 U.S.C. 661-666c)

Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 4601 – 4 et. seq.)

Magnuson-Stevens Fishery Conservation and Management Act and amended by the Sustainable Fisheries Act of 1996

Migratory Marine Game-Fish Act (16 U.S.C. 760c-760g)

National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347)

National Historic Preservation Act of 1966 (16 U.S.C. 470)

Water Resources Development Act of 1996, as amended (P.L.104-303)





**MYSTIC VALLEY
DEVELOPMENT
COMMISSION**

Chairperson
David Ragucci
Mayor, City of Everett

Vice Chairperson
Richard C. Howard
Mayor, City of Malden

Secretary/Treasurer
Michael McGlynn
Mayor, City of Medford

Malden Member
Henry A. Gennetti, Jr.

Everett Member
Joseph Hickey

Medford Member
Stephanie Muccini Burke

Ex-officio Member
Mitt Romney
Governor

Governor's Designee
John G. Troast, Jr.

Malden Government Center
200 Pleasant Street
Suite 621
Malden, MA 02148

Phone 617-381-7711
Fax 617-381-7776
www.telecomcitymass.com

September 15, 2003

List of Invitees Attached

Re: Malden River Ecosystem Restoration Feasibility Study

To Whom It May Concern:

Please join the Mystic Valley Development Commission (MVDC), the U.S. Army Corps of Engineers – New England District (Corps), and ENSR International at an important working meeting regarding the Malden River Ecosystem Restoration Feasibility Study. See the attached Fact Sheet for general information regarding the study. The meeting is scheduled for Thursday, September 25th, from 10 am to 1:30 pm in the Mayor's Conference Room on the 6th floor at Malden City Hall. A lunch of pizza and drinks will be provided and we will work through lunch. A draft agenda is also attached.

The purpose of the meeting is to discuss ecosystem restoration alternatives being considered for evaluation in Phase I of the study. Restoration alternatives will cover wetland restoration, water quality restoration to improve fish passage/habitat and sediment quality restoration to improve benthic habitat. We need your help in narrowing the possible alternatives to a focused list of candidate alternatives for further evaluation. We have selected you based on your involvement in the study to date, your involvement in the watershed, your relevant experience and/or for representation of your agency's interests. We are inviting representatives from a number of federal, state and local agencies so as to involve as many key agencies as possible in this up front planning effort.

This meeting will be a one-time event. A smaller group of MVDC and Corps representatives will continue working and meeting with ENSR as the project moves forward and a number of public meetings will be held as the study progresses towards a final recommendation for a restoration strategy. Participants are welcome to remain involved to the extent they are able.

We look forward to seeing you there and appreciate you taking the time to work with us on the Malden River study. Please reply via telephone or email regarding whether you will be able to attend the meeting, so that we can plan accordingly. Thank you.

Sincerely,

Ginny Lombardo, Environmental Engineer
Showcase Community Coordinator

LIST OF INVITEES FOR MALDEN RIVER STUDY MEETING ON SEPTEMBER 25, 2003:

US Army Corps of Engineers: Mike Tuttle Michael.R.Tuttle@nae02.usace.army.mil
Chris Hatfield Christopher.L.Hatfield@nae02.usace.army.mil
Barbara Newman Barbara.H.Newman@nae02.usace.army.mil
Todd Randall Todd.A.Randall@nae02.usace.army.mil
Ian Osgerby Ian.T.Osgerby@nae02.usace.army.mil

MVDC: Ginny Lombardo glombardo@telecomcitymass.com
Stephanie Muccini-Burke stephani.burke@comcast.net

ENSR: Mike Worthy mworthy@ensr.com
Dave Mitchell dmitchell@ensr.com

Mass Electric: Michele V. Leone
Senior Environmental Engineer
National Grid/Massachusetts Electric Co.
55 Bearfoot Road
Northborough, MA 01532
michele.leone@us.ngrid.com

KeySpan: Patricia Haederle, CPG
Lead Project Manager
KeySpan Energy Delivery New England
52 Second Avenue
Waltham, Massachusetts 02451
phaederle@keyspanenergy.com

Nangle Consulting Associates: Jeffrey Nangle
Nangle Consulting Associates
960 Turnpike Street
Canton, MA 02021
nea2@mindspring.com

EPA: Joseph Lemay
US EPA Region I
One Congress Street
Suite 1100 (HBO)
Boston, MA 02114-2023
lemay.joe@epa.gov

EOEA: Kwabena Kyei-Aboagye Jr.
EOEA
251 Causeway Street, Suite 900
Boston, MA 02114
kwabena.kyei-aboagye@state.ma.us

MA DEP: Scott Greene
MA DEP
Bureau of Waste Site Cleanup
One Winter Street

Boston, MA 02110
scott.greene@state.ma.us

Heidi Davis
MA DEP
One Winter Street
Boston, MA 02110
heidi.davis@state.ma.us

USGS:

Rob Breault
USGS
10 Bearfoot Road
Northborough, MA 01532
rbreault@usgs.gov

MDC:

Mike Galvin
MDC Engineering Department
20 Somerset Street
Boston, MA 02108
mike.galvin@state.ma.us

Mystic River Watershed Assoc.:

Nancy Hammett
MyRWA
20 Academy Street
Arlington, MA 02476
nancy@mysticriver.org

NMFS:

Eric Hutchins
NOAA
One Blackburn Drive
Gloucester, MA 01930
eric.hutchins@noaa.gov

John Catena
NOAA
One Blackburn Drive
Gloucester, MA 01930
john.catena@noaa.gov

US Fish and Wildlife Service:

William Neidermyer
US Fish & Wildlife Service
70 Commercial Street, Suite 300
Concord, NH 03301
William_Neidermyer@fws.gov

City of Medford:

Lauren DiLorenzo, Community Development Director
Medford City Hall – Room 308
85 George P. Hassett Drive
Medford, MA 02155
ldilorenzo@medford.org

Kim Lundgren
Medford City Hall – Room 300
85 George P. Hassett Drive
Medford, MA 02155
klundgren@medford.org

City of Malden:

Michelle Romero, Principal Planner
Malden City Hall
200 Pleasant Street, Room 615
Malden, MA 02148
mromero@cityofmalden.org

City of Everett:

Beth Debski, Community Development Director
Everett City Hall
484 Broadway
Everett, MA 02149
beth.debski@ci.everett.ma.us

Patrick Johnson
Everett Police
Marine Division
45 Elm Street
Everett, MA 02149
epdmarine@aol.com

Preotle, Lane & Associates:

John Preotle
Preotle, Lane & Associates Ltd.
535 Madison Ave
New York, NY 10022

Malden River Ecosystem Restoration Feasibility Study
Preliminary Alternatives Evaluation
September 25, 2003; 10:00 am–1:30 pm
Malden City Hall

Invited Attendees: *U.S. Army Corps of Engineers, New England Division (CENAE); Mystic Valley Development Commission (MVDC); ENSR International; United States Environmental Protection Agency (U.S.EPA); Mass Electric; KeySpan; Nangle Consulting Associates; Preotle, Lane & Associates (PLA); Massachusetts Executive Office of Environmental Affairs (EOEA), Massachusetts Department of Environmental Protection (MA DEP); Metropolitan District Commission (MDC); United States Geological Survey (USGS); Mystic River Watershed Association; National Marine Fishery Service (NMFS); United States Fish and Wildlife Services (U.S.F&WS) and Cities of Everett, Malden and Medford, MA.*

INTRODUCTIONS

- ☞ Introduction of Project Team Members
- ☞ Summary/Chronology of Brownfields Showcase Community Grant
- ☞ Project Timeline

GOALS OF MALDEN RIVER STUDY

- ☞ Project Task Breakdown
- ☞ USACOE ecosystem restoration goals
 - Restoration/enhancement of coastal wetlands
 - Restoration of sediment quality to improve benthic community
 - Restoration of water quality to improve fish passage/habitat
- ☞ Telecom City development/vision
- ☞ Other on-going watershed projects

CONCEPTUAL SITE MODEL

- ☞ Identification of impairments/constraints to be addressed
- ☞ Identification of potential beneficial outputs
- ☞ Graphic schematic summarizing preliminary Malden River CSM

FOCUSING OF ECOSYSTEM RESTORATION ALTERNATIVES

- ☞ Identification of potential candidate alternatives
 - Alternatives for restoration of wetlands
 - Alternatives for restoration of sediment quality
 - Alternatives for restoration of water quality
- ☞ Matrix of advantages and limitations of potential candidates alternatives
- ☞ Evaluation and recommendation of list of candidate alternatives to be further investigated

UPCOMING EVENTS

- ☞ Evaluation and Finalization of the Recommended Alternatives
- ☞ Upcoming Schedule
- ☞ Next Meeting



**US Army Corps
of Engineers** ®
New England District

Fact Sheet

MALDEN RIVER ECOSYSTEM RESTORATION STUDY

January 2003

696 Virginia Road, Concord, Massachusetts 01742-2751

LOCATION: The Malden River rises in the city of Melrose, flows 4 ½ miles in a southerly direction and empties into the Mystic River. The Malden River flows through the cities of Malden, Medford and Everett to its confluence with the Mystic River above the Amelia Earhart Dam in Everett. The 'study area' refers to the surface waters of the Malden River and adjacent land areas between Malden Square and the Amelia Earhart Dam. The 'study area' is located approximately five miles north of Boston.



BACKGROUND: The Mystic Valley Development Commission (MVDC) is a tri-city legislative body established by the Commonwealth of Massachusetts and approved by the cities of Malden, Medford and Everett. MVDC is in the process of redeveloping a 200-acre Brownfields parcel, which includes a large portion of the Malden River. As a result of the Showcase Community designation, the MVDC has partnered with the Corps of Engineers on an effort to restore the Malden River ecosystem. TeleCom City, a MVDC master-planned development, is being pursued as a public-private partnership that will include office, research & development and manufacturing facilities and approximately 60 acres of public open space, the Malden River Park. The Malden River Park will include a river-side trail and river overlooks. The restoration and remediation of the Malden River are critical to the success of the overall project and to the protection of public health.

AUTHORITY: On July 23, 1997, the U.S. House of Representatives, Committee on Transportation and Infrastructure authorized the Secretary of the Army to

conduct a Reconnaissance Study encompassing the watersheds of the Massachusetts and Cape Cod Bays, as defined by the Environmental Protection Agency designated National Estuary Program, to enhance ecosystem restoration. The Reconnaissance Study recommended four habitat types for further New England District investigation. The four habitat types are the restoration of tidal and freshwater wetlands, riverine migratory corridors, benthic habitats containing contaminated sediments, and degraded shellfish beds. Malden River was one of the restoration sites determined to be in the Federal interest. The Malden River Ecosystem Restoration Feasibility Study will focus on the restoration of freshwater wetlands, riverine migratory corridor and contaminated sediments remediation. The U.S. Army Corps of Engineers has a partnership agreement with TeleCom City. The Feasibility Study cost is \$356,600, which will be cost shared 50 percent Federal and 50 percent local sponsor.

MAJOR FEATURES OF THE STUDY: The Feasibility Study will be limited to the Malden River, the lower Mystic River and their surrounding landscapes. The Feasibility Report will provide all the necessary documentation to permit project implementation by the U.S. Army Corps of Engineers under an existing authorized program(s), if applicable, or authorized by U.S. Congress for construction of a Federal project(s), if justified.

THE FEASIBILITY REPORT WILL INCLUDE:

- ◆ Investigation of site characteristics including subsurface explorations and sediment testing.
- ◆ Formulation of practical alternatives for riverine restoration.
- ◆ Consideration of multiple purpose potential of environmental restoration projects.
- ◆ An assessment of the environmental effects of the possible solutions.
- ◆ Investigation of possible impacts to cultural resources.
- ◆ Coordination with U.S. Fish and Wildlife Service.
- ◆ Preparation of typical design drawings and quantity estimates.
- ◆ An estimation of project costs and benefits.

SCHEDULE: It is expected that the Final Feasibility Report will be completed by the Spring 2005.

CALCULATIONS AND COMPUTATIONS

Project: Attendances - Haldia River Restoration

Project Number: _____ Computed by: _____ Date: 9/25/03

Subject: _____ Checked by: _____ Date: _____

<u>Name</u>	<u>Association</u>	<u>Phone</u>	<u>Email</u>
Mark Gerath	ENSR/ Corps of Engineers	978/589-3189	MGerath@ENSR.com
Craig MacPhee	ENSR	978/589-3064	cmacphee@ENSR.com
SCOTT GROWE	MA DEP /BWSC	(617)654-6565	scott.growe@state.ma.us
MICHELE LEONE	MASS ELECTRIC	508-421-7564	michle.leone@us.ngrid.com
CARL TAMMI	ENSR	978 589-3065	ctammi@ENSR.com
Michael Galvin	DCR	617 722-5611	mike.galvin@state.ma.us
Kristen Welsh	NCA	781-821-0521	nca2@mindspring.com
Peter Hollands	MRA	617 3817711	phollands@telecomcitymass.
Kim Lundgren	City of Medford	781 393 2137	klundgren@medford.ma.us
Beth Debski	City of Everett	617-394-2245	beth.debski@ci.ev.ma.us
Patrick Johnston	Everett Police MARINE	617-905-3747	EPDMARINE@ADL.COM
LT. Pat McAdam	EPD Marine	617 798 1001	MVPINNACLE@Comcast.net
Ginny Lombardo	EPA /MVDC	6173817711	glombardo@telecomcitymass.c
TODD RANDALL	USACE	978 318 8518	todd.a.randall@usace.army.mil
Ian T. Osgerby	USACE	978 318 8631	iant.osgerby@usace.army.
Barbara Newman	USACE	978 318 8575	Barbara.H.Newman@usace.army.
Heidi Davis	MA DEP/Wetlands	617-654-6610	heidi.davis@state.ma.us
Chris Hatfield	USACE	978 318 8520	Christopher.L.Hatfield@naeoz.usace.army.mil
Jeff Nangle	NCA	781 821 0521	nca2@mindspring.com
Joe Lemay	EPA	617 918 1328	lemay.joe@epa.gov
Nancy Hammett	MYRWA		nancy@mysticriver.org
Tom Sokolowski	RIZZO	508 903 2416	tsokolowski@rizzo.com
Dave Mitchell	ENSR	978 589 3000	dmitchell@ensr.com



MYSTIC VALLEY DEVELOPMENT COMMISSION

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Malden Government Center
200 Pleasant Street
Suite 621
Malden, MA 02148

Phone 617-381-7711
Fax 617-381-7776
www.telecomcitymass.com

To: File
From: Ginny Lombardo, Showcase Community Coordinator
Date: September 30, 2003
Subj: Notes from Malden River Study Working Meeting

On September 25, 2003, the MVDC, the US Army Corps of Engineers - New England District and ENSR International hosted a working meeting to discuss restoration alternatives and measures being considered for evaluation in the Malden River Ecosystem Restoration Feasibility Study. See Attachment 1 for the list of attendees. See Attachment 2 for the Agenda. See Attachment 3 for the presentation slides. See Attachment 4 for Table 1, which is a spreadsheet of "Preliminary Environmental Restoration Measures Screening" information.

The following notes on discussion at the meeting relate to comments on the information presented in Table 1.

No Action

- ⌚ Comments on the "No Action" measure: Discussion was held regarding the basis for the "partial" potential benefits to the riverine corridor and benthic habitat under a "no action" scenario. ENSR representatives explained that the more heavily contaminated sediments from the industrial age will continue to be buried with less contaminated soils from urban runoff and hazardous waste sites will continue to be cleaned up under the MCP. Therefore, it was assumed that some partial improvements to the riverine corridor and benthic habitat would occur even without implementation of a Corps-sponsored restoration effort.

Watershed-Based Restoration Measures

- ⌚ Comments on BMPs measure: Attendees explained that the Cities and MyRWA are actively working on the implementation of stormwater BMPs. It was discussed that it was important to evaluate what the Cities and MyRWA are doing and planning and to consider these efforts in the study. However, these efforts are already being implemented by others, so this study should not duplicate work being done and should not waste too much study funding on this measure.
- ⌚ Comments on Rerouting/Bypassing of Stormwater Flows: Attendees were generally in agreement with the elimination of this measure. However, an attendee did recommend the inclusion of Little Creek and the "other" creek of the Everett side of the river for evaluation of stormwater flow/quality/treatment.

- ⊗ Comments on Control of Toxic Releases at Hazardous Waste Sites: An attendee suggested that the MA DEP be requested to evaluate hazardous waste sites along the Malden River that are continuing sources of contamination and be asked to work aggressively with these site owners to cleanup their sites.
- ⊗ Comments on Watershed Flow Management: ENSR representatives explained the potential complications and unlikelihood of significant benefit from water storage and release upstream of the Malden River on water quality. This is due to potential competing uses for water in Spot Pond. ENSR explained that they retained this measure in order to conduct the actual calculations in order to document the infeasibility of this measure and that it would likely be eliminated early in the Phase I study.
- ⊗ Comments on Incorporate Vegetated Upland Buffers: ENSR representatives explained that this measure was eliminated because the developed area around the Malden River would not accommodate additional upland buffers.

Hydrology-Based Restoration Measures

- ⊗ Discussion of the measures under this sub-section revolved around the MDC operations at the Amelia Earhart Dam, specifically on the impacts of reinstating some level of tidal cycling. Concerns were voiced regarding the impact of changing the Malden River and Lower Mystic River from freshwater to brackish or saltwater; how this would be received by the communities, the marina owners, and boat owners; the potential for odors and other nuisance problems. An attendee noted the potential problem of stratification of the salt water and fresh water and the potential of this to exacerbate the dissolved oxygen problem. ENSR representatives talked about the potential for a tide gate and partial tidal cycling. ENSR representatives stated that they would be working within the limitations of the dam's primary purpose of flood control. All of the measures under this sub-section were retained.

In-Stream Restoration Measures

- ⊗ Comments on both In Situ Chemical and Biological Treatment: Attendees suggested that chemical and/or biological treatment be retained because they may be appropriate to consider in certain areas (e.g., shoreline, hot spots), as an incremental measure implemented in conjunction with another primary alternative.
- ⊗ Comments on Monitored Natural Recovery: Attendees questioned that effectiveness of this measure for restoration of benthic habitat.
- ⊗ An attendee suggested the addition of a measure to provide an effective fish ladder at the Amelia Earhart Dam.

Wetland Restoration Measures

- ⊗ Comments on Herbicide Treatment: An attendee requested that herbicide treatment be considered for elimination since communities are working to eliminate the use of pesticides and herbicides in the watershed.
- ⊗ An attendee suggested the addition of reestablishing/daylighting filled or culverted tributaries. ENSR representatives stated that they have not ruled out replacing/restoring historic wetland areas.

Other Comments Noted:

- ⊗ One ENSR representative characterized the main impediments to the ecological health of the Malden River, in order of importance, as: (1) no flushing/low dissolved oxygen, (2) contaminated in situ sediments, (3) stormwater and (4) loadings from hazardous waste sites. Other attendees generally agreed, although one suggested switching the last two categories.
- ⊗ Attendees requested that, in evaluating restoration of the Malden River, consideration be given to the potential indirect impacts of restoration measures on the Mystic River.

- ⌚ Everett representatives explained a planned cleanup on the Island End River and the potential for collaboration (e.g., as part of the planned cleanup, a CAD cell is planned – possibly the Malden River project could dispose of contaminated sediments within this planned CAD cell and share costs for the CAD cell design and construction).
- ⌚ Attendees expressed concerns that the human health aspect of restoring the river ultimately needs to be addressed. If this project results in more people coming back to the river, then someone needs to judge the relative safety on human health for each restoration alternative.

Tuttle, Michael R NAE

From: Tuttle, Michael R NAE
Sent: Tuesday, November 25, 2003 2:56 PM
To: 'michele.leone@us.ngrid.com'; 'phaederle@keyspanenergy.com'; 'emay.ios@epa.gov';
'~~kwabecarkys@boagye@state.ma.us~~'; 'scott.greene@state.ma.us'; 'heidi.davis@state.ma.us';
'rbreault@usgs.gov'; 'mike.galvin@state.ma.us'; 'nancy@mysticriver.org'; 'eric.hutchins@noaa.gov';
'john.catena@noaa.gov'; 'William_Neidermyer@fws.gov'
Cc: 'nca2@mindspring.com'; 'dmitchell@ensr.com'; 'glombardo@telecomcitymass.com';
'stephani.burke@comcast.net'
Subject: Malden River Ecosystem Study - Alternative Analysis Meeting
Importance: High

You are hereby invited to participate in the Malden River Ecosystem Restoration Study - Alternative Analysis Meeting. **The meeting will be held at the Corps of Engineers' Concord facility [Concord Park, 696 Virginia Road, Concord, MA] on 10 December 2003 at 1:00 pm.** The meeting will present the four restoration candidates developed under the Phase I.

Under Phase I, the Project Team [Mystic Valley Development Commission, ENSR & Corps] evaluated the existing conditions/studies/reports and developed conceptual restoration "building blocks". The "building blocks" confirmed the study goals/objectives and have assisted in the development of the combined restoration candidates. The developed "building blocks" are as follows:

- ☞ Fish Habitat improvement (debris removal & substrate placement)
- ☞ Fish Habitat Improvement (sediment removal by dredging)
- ☞ Water Quality Enhancement (aeration and/or artificial mixing)
- ☞ Wetland Restoration (invasive species removal and replanting with native species)
- ☞ Wetland Restoration (wetland restoration of existing PSS wetland and daylighting culvert)
- ☞ Wetland Restoration (wetland creation of PAB/PEM within old river channel)
- ☞ Fish Habitat Improvement (dam operation enhancement/fish ladder improvements)

The restoration candidates considered for further evaluation under Phase II are

- ☞ **Alternative "G"** - Removal of existing debris follow by placement of clean gravel substrate at tributary confluences. Combined & Invasive Species Removal by cutting, clearing, herbicide spraying, burning and/or regrading follow by Native Species replanting.
- ☞ **Alternative "H"** - Removal of existing debris follow by placement of clean gravel substrate at tributary confluences; Invasive Species Removal by cutting, clearing, herbicide spraying, burning and/or regrading follow by Native Species replanting; Wetland Creation (PSS) Restoration of existing wetland and daylighting of existing culverted stream; & Wetland Creation (PAB/PEM) Creation of emergent wetland within the existing oxbow.
- ☞ **Alternative "I"** - Removal of existing debris followed by placement of clean gravel substrate at tributary confluences; Invasive Species Removal by cutting, clearing, herbicide spraying, burning and/or regrading follow by Native Species replanting; Wetland Creation (PSS) Restoration of existing wetland and daylighting of existing culverted stream; Wetland Creation (PAB/PEM) Creation of emergent wetland within the existing oxbow; & sediment removal by dredging.
- ☞ **Alternative "J"** - Combination of removal of existing debris follow by placement of clean gravel substrate at tributary confluences and selective sediment removal by dredging. [*Comment:* dredge spoils to be considered for reuse on-site/creation of emergent wetlands. Alternative calls for excavation of 2-3 feet and the placement of 1-foot of clean gravel substrate.] In addition, this option may be combined with alteration to water level control at the Amelia Earhart dam and/or improvements to the existing fish passage (sluice structure).

A follow-up e-mail with the meeting's agenda will be forward to the invitees next week!

Please respond by e-mail on your availability to attend by 9 December 03.

Sincerely

12/1/2003

Michael R. Tuttle
Study Manager

U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Tel # (978) 318-8677, Fax # (978) 318-8080

Malden River Ecosystem Restoration Feasibility Study
Alternatives Analysis Meeting Agenda
December 10th 2003; 1:00 – 4:00 p.m.
CENAE headquarters, Concord, MA

Invited Attendees: *U.S. Army Corps of Engineers, New England District (CENAE); Mystic Valley Development Commission (MVDC); ENSR International; United States Environmental Protection Agency (U.S.EPA); Mass Electric; KeySpan; National Grid; Nangle Consulting Associates; Preotle, Lane & Associates (PLA); Massachusetts Executive Office of Environmental Affairs (EOEA), Massachusetts Department of Environmental Protection (MA DEP); Metropolitan District Commission (MDC); United States Geological Survey (USGS); Mystic River Watershed Association; National Marine Fishery Service (NMFS); United States Fish and Wildlife Services (U.S.F&WS) and Cities of Everett, Malden & Medford.*

1. Introduction

- ❖ Introduction of Project Team Members
- ❖ Review of USACOE Ecosystem Restoration Program Objectives

2. Brief Chronology of Phase I Tasks to date

- ❖ Highlights of 1st Public Meeting
 - Potential ecosystem restoration measures identified
 - Meeting invitee and Stakeholder comments
- ❖ Process for Development of Potential Environmental Restoration Alternative Plans

3. Proposed Ecosystem Restoration Alternatives

- ❖ Identification of restoration components (i.e., “building blocks”)and restoration plans
- ❖ Overview of proposed Ecosystem Restoration Alternatives

a.) No Action Alternative

- Potential Current/Future Conditions without remediation
- Actions to be done by Others

b.) Invasive Wetland Species Replacement and Fish Habitat Enhancement (Alternative “G”)

- Invasive species (*Phragmites*) removal combined with regrading followed by native wetland species replanting.
- Removal of shoreline debris followed by placement of clean gravel substrate at tributary confluences

c.) Wetland Restoration and Fish Habitat Enhancement (Alternative “H”)

- Invasive species (*Phragmites*) removal combined with regrading followed by native wetland species replanting
- Restoration of existing Palustrine Scrub-Shrub (PSS) wetland south of former GE Site and daylighting of existing culverted stream
- Removal of shoreline debris followed by placement of clean gravel substrate at tributary confluences.

December 10th Meeting

Mass & Ct Conference Room

1300 – 1600 hrs

Sponsored by Mike Tuttle Ext 677

Attendees

Dave Mitchell – ENSR

Peter Jackson – ENSR

Carl Tammi – ENSR

Dave Klinch – ENSR

Mike Worthy – ENSR

Ginny Lombardo – MVDC

Jeff Nangle – Nangle Associates

~~Christian~~ Welsh – Nangle Associates
KUSTINE

Michele Leone – National Grid

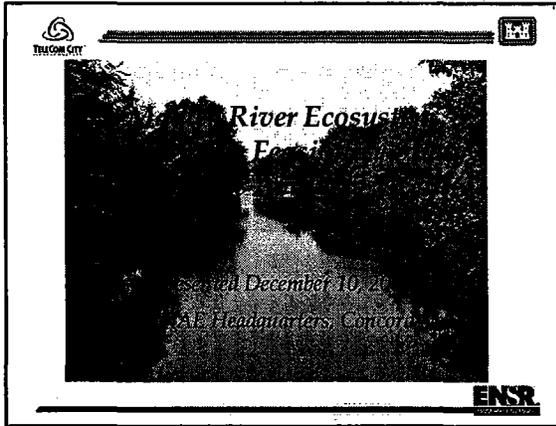
Trish Haederle - Keyspan

Bill Neidermyer – US Fish & Wildlife Service

Scott Greene - DEP

Nancy Hamnett FRIENDS of MYSTIC RIVER ASSOCIATION

Name	Organization	email
Nancy Hammett	Mystic River Watershed Assn.	nancy@mysticriver.org
Ginny Lombardo	MVDC / EPA	glombardo@telecom.net.mass.gov
Barbara Newman	USACE	barbara.h.newman@usace.army.mil
SCOTT GREENE	MA DEP	scott.greene@state.ma.us
JEFF NADGE	NCA	DCAZ@mwd.org
Kenster Welsh	NCA	"
Michèle Leone	MASS ELECTRIC	michèle.leone@us.ngrid.com
Tricia Haederle	KeySpan	phaederle@keyspanenergy.com
Dave Klinch	ENSR	dklinch@ensr.com
MIKE TUTTLE	CEPS	Michael.R.Tuttle@USACE.army.mil
Dave Mitchell	ENSR	dmitchell@ensr.com
Carl Tammi	ENSR	ctammi@ensr.com
Mike Worthing	ENSR	mworthing@ensr.com
TODD RANDALL	USACE	todd.a.randall@usace.army.mil
CHRIS HATFIELD	USACE	christopher.hatfield@usace.army.mil
Pete Jackson	ENSR	PJackson@ensr.com



Main Purpose of Today's Meeting

- To Give Stakeholders an Opportunity to Comment on the Candidate Alternative Ecosystem Restoration Plans for the Malden River

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MR Alternative Analysis Mtg Invitees

■ Federal & State Agencies	■ Stakeholders & Firms
◆ CENAE (USCOE, NE District)	◆ MVDC
◆ U.S. EPA (NE Region)	◆ Cities of Everett, Malden and Medford
◆ U.S.G.S.	◆ MyRWA
◆ U.S. F&WS	◆ Mass Electric
◆ NMFS	◆ National Grid
◆ NOAA	◆ KeySpan
◆ MA DEP	◆ Preotle, Lane & Associates
◆ Metropolitan District Commission	◆ Nangle Consult. Associates
	◆ ENSR International

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Overview of Presentation

- Introduction
- Brief Chronology of Phase I Tasks to Date
- Proposed Ecosystem Restoration Alternatives
 - ◆ No Action Alternative
 - ◆ Invasive Wetland Species Replacement and Fish Habitat Enhancement
 - ◆ Wetland Restoration and Fish Habitat Enhancement
 - ◆ Wetland Restoration/Creation and Fish Habitat Enhancement
 - ◆ Benthic and Fish Habitat Enhancement
- Process of Selection of Preferred Alternatives
- Upcoming Project Events

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CENAE Ecosystem Restoration Goals

- CENAE Ecosystem Restoration Goals are focused on 3 primary resource areas:
 - ◆ Restoration of water quality to improve fish passage and habitat (riverine migratory corridors)
 - ◆ Restoration of sediment quality to improve benthic (bottom) community habitat
 - ◆ Restoration or enhancement of coastal wetlands
- Other forms of restoration may be applicable but may not be fundable by CENAE

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Phase I Activities

- In July 2003, the CENAE hired ENSR to assist in preparing a Feasibility Study report that examines various restoration alternatives including their costs and benefits.
- During Phase I, ENSR reviewed existing data, identified data gaps, conducted a preliminary screening of ecosystem restoration alternatives, and further refined alternatives. These alternative plans will be fully evaluated during Phase II.

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Phase I Activities (continued)

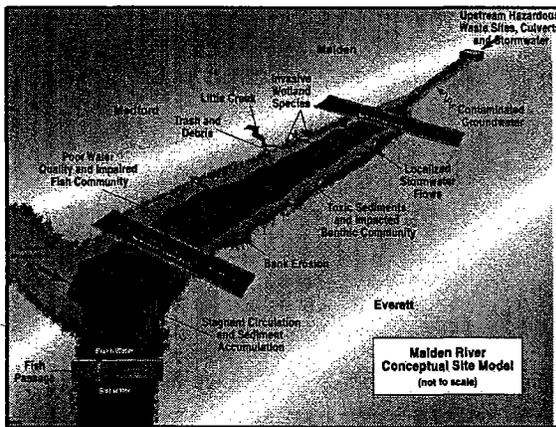
- Preliminary Alternatives Evaluation Meeting conducted at Malden City Hall in Sept. 2003
 - ◆ presented Conceptual Site Model of Malden River
 - ◆ identified potential restoration measures
 - ◆ discussed preliminary alternative plans
 - ◆ obtained stakeholder feedback and comments
- Candidate restoration alternative plans evolved via discussions w/ CENAE & MVDC
- Alternatives Analysis Meeting at Concord

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Malden River Conceptual Site Model

- Existing impairments and constraints
 - ◆ Upstream Water Quality and Stormwater Inputs
 - ◆ Water Circulation and Stagnation
 - ◆ Channelization and Riparian Zone Limits
 - ◆ MCP and other legacy sites GW inputs
 - ◆ Toxic sediment accumulations and lack of depth
 - ◆ Invasive Wetland Species
 - ◆ Anthropogenic trash and debris
 - ◆ Lack of public access and limited recreation

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Environmental Restoration Measures

- Functional groupings discussed at 9/03 mtg:
 - ◆ Watershed-Based Restoration Measures
 - ◆ Hydrology-Based Restoration Measures
 - ◆ In-Stream Restoration Measures
 - ◆ Riparian Wetland Restoration Measures
- Applicability and Potential Benefits
 - ◆ Restoration of water quality to improve fish habitat
 - ◆ Restoration of sediment quality to improve benthic (bottom) community habitat
 - ◆ Restoration or enhancement of coastal wetlands

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Development of Potential Ecosystem Restoration Alternative Plans

- Further researched potential technical feasibility and effectiveness of measures
 - ◆ discarded unfeasible or ineffective measures
 - ◆ retained potentially effective measures as "building blocks"
- Combined building block measures into a series of alternative plans, refined with CENAE, MVDC

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Environmental Restoration Measures retained:

- Water Quality Enhancement (aeration/mixing)
- Fish Habitat Improvement
 - ◆ Debris removal and spawning substrate placement
 - ◆ Sediment removal by dredging
 - ◆ Dam operation enhancement / fish ladder improvements
- Wetland Restoration
 - ◆ Invasive species removal and replacement with native spp.
 - ◆ Wetland restoration of existing PSS wetland in South Tributary and daylighting of culvert
 - ◆ Wetland creation of PAB/PEM within old oxbow

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Environmental Restoration Measures which were eliminated:

- **Watershed and Hydrology-based Measures**
 - ◆ **Increased Summer Watershed Flows** - Spot Pond is MRWA emergency water supply with no excess volume
 - ◆ **Re-routing/by-passing of Stormwater Flows**
 - ◆ **Increased Flushing by Changed Management of the Operations at Amelia Earhart Dam**
 - » Surface water (pool) Elevation Management
 - » Re-institution of Estuarine Tidal Cycling

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ER Measures also eliminated:

- **In-Stream Restoration Measures**
 - ◆ **Extensive Dredging of Sediment in MR Channel**
 - » No significant impact on sediment toxicity; no clean layer to dredge to, minimal improvement in fish and benthos
 - » No target depth to achieve (e.g. for aquatic plant control)
 - » Very expensive for dredging and disposal
 - ◆ **Capping of Sediment- Full or Thin Layer Cover**
 - ◆ **In Situ Chemical Treatment/Stabilization or Biological Treatment of Sediment**
 - ◆ **Re-configuration of Channel Location/Morphology**

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Other Relevant ER Measures:

- **Watershed-Based Restoration Measures Not eliminated but retained as Actions to be Performed by Others**
 - ◆ Adoption/installation of Best Management Practices (BMPs) in Watershed
 - ◆ Control Toxic Releases at Hazardous Waste Sites

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Alternative Ecosystem Restoration Plans

- **Considered entire length of river, but mostly focused on area between Malden St. and Route 16 bridges and three small tributaries**
 - ◆ Better opportunities for wetland restoration and habitat improvements. Upper river is channelized with very thin riparian zone
 - ◆ Potential for stormwater treatment of tributaries
 - ◆ Address areas of greater sediment contamination and potential for dredge material disposal and dewatering
 - ◆ Potential complementary functions with TeleCom City

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Malden River Aerial View from North



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No Action Alternative Plan

- **Evaluation of Current and Future Conditions in the absence of restoration**
 - ◆ No significant changes in present ecosystem
 - ◆ Potential Monitored Natural Sediment Recovery
- **Includes Actions to be performed by others**
 - ◆ EPA Phase II Stormwater Management
 - ◆ MCP Site Cleanups
 - ◆ Shoreline cleanups and volunteer action

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Malden River Wetlands: Existing Conditions

- *In-stream habitat primarily riverine, but also includes emergent and scrub-shrub wetlands. Impacted by contaminated sediment and poor water quality*
- *Wetland function and value severely impaired relative to stormwater treatment, flood storage and habitat functions*
 - ◆ *Impaired by previous alteration, filling, and invasion of monotypic stands of Phragmites*
 - ◆ *Adjacent wetlands associated with tributaries degraded by urban activities*



Wetland Restoration Alternative Plans

- *Alternative "G" - removal/replacement of invasive species (Phragmites), debris removal, gravel substrate*
- *Alternative "H" - removal/replacement of invasive species, debris removal, gravel substrate placement, restoration of PSS wetland at South Creek and daylighting of culvert*
- *Alternative "I" - removal/replacement of invasive species, debris removal, gravel substrate placement, restoration of PSS wetland at South Creek, daylighting of culvert, creation of PEM wetland in former oxbow and removal of sediment in two locations, potential to reuse in oxbow.*



MR Wetlands: Proposed Restoration Benefits

- *Increased wetland species diversity and function*
- *Reduced toxic load in sediments and stormwater treatment*
- *Improved wildlife and fish habitat value*
- *Ancillary benefit - improved aesthetics and recreational value*





WQ and Fish Habitat Improvement Restoration Alternative Plan

- *Alternative "J" - debris removal, gravel substrate; selective sediment removal. Potential water level manipulation/construction to improve fish passage at Earhart dam. Evaluation of aeration/artificial circulation*



Malden River Sediment Dredging

- *Dredge sediments to 3-ft depth in two locations with 1-ft of clean material placed over as a cap*
- *Area 1 - confluence of Little Creek and MR*
 - ◆ *Sediment w/ highest levels of As, Cr, and Hg*
 - ◆ *Highest VOC and second highest SVOC concentrations*
 - ◆ *Volume to be dredged = approximately 20,000 CY*
- *Area 2 - Medford Street Bridge Area*
 - ◆ *Hotspot for SVOCs (10,000 ppm vs. 2,000 ppm ambient)*
 - ◆ *Volume to be dredged = approximately 11,000 CY*



Malden River Dredged Material Disposal

- *Total Volume of Proposed Dredged Material equal approximately 31,000 CY*
- *Assumptions*
 - ◆ *Disposal of 31,000 ± CY of contaminated sediments necessary*
 - ◆ *Assumes no beneficial re-use at the site as worst-case scenario. Beneficial off-site use may be identified, but hard to predict*
 - ◆ *Upland disposal will require dewatering, transportation, and disposal*



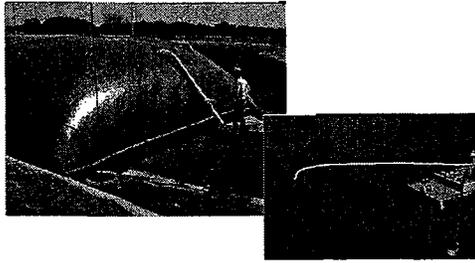
Sediment Dewatering and Disposal

- Assumes use of former GE Site for dewatering, storage, and access for hauling
 - ◆ Assume hydraulic dredging used for sediment removal with discharge into geotextile bags for dewatering
 - ◆ Will need approximately 10 acres of GE site for geotextile bag dewatering method
 - ◆ Area may be reduced based on site-specific performance of the dewatering bags (i.e., shows faster dewatering)
- Beneficial uses could include batching in asphalt plant or use as landfill cover



Dredged Material Dewatering





Fish Passage at Amelia Earhart Dam



- Current fish "ladder" structure not effective, passage by lockage
- Fish passage adequate but not ideal; effective for alewife but not for smelt
- Evaluation of potential operational or structural changes need to improve fish passage at structure



Evaluation of Ecosystem Alternatives

- Start with baseline evaluation of current ecosystem measures and functions
- Evaluate proposed restoration alternatives as to potential ecosystem improvements and cost-effectiveness
- Consider future conditions and potential effects on non-ecological goals or objectives
- Rank and select alternatives



Wetland and Habitat Restoration - Measurement of Functional Value

- Malden River ecosystem functions & values
 - ◆ Wetland Area and Riparian Corridors
 - ◆ Wetland diversity and functionality
 - ◆ Wildlife Habitat Improvement
 - ◆ Benthic Habitat Quality
 - ◆ Anadromous fish passage
 - ◆ Resident fish community



Complementary Functions - Areas of Potential Improvement

- Malden River non-ecological objectives
 - ◆ Local Public Access and improved navigation
 - ◆ Water-based Recreation
 - ◆ Shoreline-based Recreation
 - ◆ Mitigation of potential human exposure concerns
 - ◆ Aesthetics and Viewsheds



Next Steps

- *At end of Phase I (Feb. '04), ENSR will narrow five alternative plans down to three, including No Action alternative to go into Phase II*
- *Process of Selection of Final Array of Preferred Environmental Restoration Alternative Plans*
 - ◆ *Evaluation of Ecosystem Outcomes and Costs*
 - ◆ *Tradeoff Analysis*
 - ◆ *Evaluation of Complementary Functions*
 - ◆ *Stakeholder Comments/Inputs*



Selection of Preferred Alternative Plans

- *Evaluation of Ecosystem Outcomes and Costs*
 - ◆ *Comparison/evaluation of increased ecosystem values and functions (e.g., wetland habitats)*
 - ◆ *Comparison of costs associated with ecosystem gain*
 - ◆ *Comparison to No Action alternative*
- *Evaluation of Complementary Functions*
 - ◆ *Potential positive/adverse effects on other water quality uses such as recreation and for local public access*
 - ◆ *Potential positive/adverse effects on Telecom City*



Phase I Schedule Milestones

- *Sept 03 Technical Meeting - Identify candidate restoration measures for evaluation with the assistance from relevant public agencies.*
- *Dec 03 Alternative Analysis Meeting - Present the restoration alternatives being considered.*
- *Feb 04 Phase I Report - Provide the CENAE and MVDC with a comprehensive list of candidate restoration alternatives to receive detailed evaluation during Phase II.*

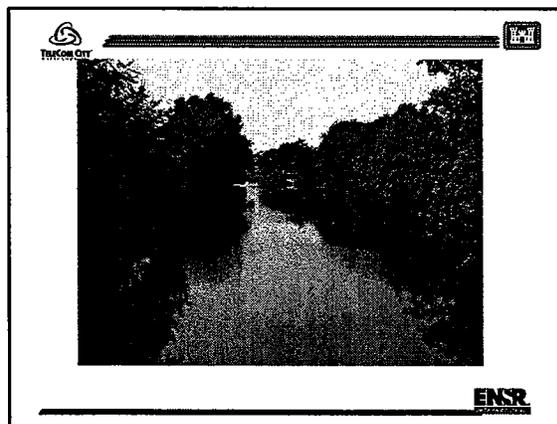


Malden River Phase II Tasks

- *Selection of Preferred Ecosystem Restoration Plan*
- *Public Review Opportunities*
- *Hydraulic/Hydrologic Analyses*
- *Resource Inventories*
- *Restoration Alternatives Analysis*
- *Quantities/Cost Estimates*
- *NEPA Documentation*
- *Preparation of Feasibility Report*





**Malden River Ecosystem Restoration Feasibility Study
Alternatives Analysis Meeting Minutes
Held on December 10th 2003 @ USACE, Concord, MA**

Attendees:

Ginny Lombardo – MVDC
Jeff Nangle – Nangle Associates
Kristen Welsh – Nangle Associates
Scott Greene – MA DEP
Michele Leone – National Grid
Tricia Haederle – Keyspan
Nancy Hammett – Mystic River Watershed Associates
Mike Worthy – ENSR
Dave Mitchell – ENSR
Carl Tammi – ENSR
Peter Jackson – ENSR
Dave Klinch – ENSR
Chris Hatfield – USACE
Barbara Newman – USACE
Todd Randall – USACE
Mike Tuttle – USACE

1. Introduction

- ❖ Introduction of Project Team Members
- ❖ Review of USACOE Ecosystem Restoration Program Objectives
 1. Restoration of tidal and/or freshwater wetlands, which includes the removal of invasive species and the replanting of native species.
 2. Enhancement of the riverine migratory corridor
 3. Improvement of the benthic habitat
 4. Restoration of the degraded shellfish beds (Identified within the Mass & Cape Cod Bays General Investigation, however, not warranted for further evaluation for the Malden River Project).

2. Brief Chronology of Phase I Tasks to date

- ❖ Highlights of 1st Public Meeting
 - Potential ecosystem restoration measures identified
 - Replication of lost wetland habitat
 - Restoration of the river to its natural/historical river course
 - Dredging and on-site reuse or off-site disposal of contaminated sediments
 - River flow alteration
 - Aeration and/or mechanical mixing

❖ **Process for Development of Potential Environmental Restoration Alternative Plans**

The team developed a decision matrix, which assisted in the identification of the Restoration Alternative Plan candidates. The Phase I report will recommend a minimum of 4 restoration alternatives for a more detailed evaluation to be conducted in Phase II. The No Action alternative is included as one of the four restoration candidates. The Feasibility Study Report will be developed during Phase II.

3. Proposed Ecosystem Restoration Alternatives

❖ **Identification of restoration components (i.e., “building blocks”) and restoration plans**

Evaluating the existing conditions/studies/reports, the team developed conceptual restoration referred to as “building blocks”. The “building blocks” confirmed the study goals/objectives and have assisted in the development of the combined restoration candidates. The “building blocks” are

- ◆ Fish Habitat Improvement by means of debris removal & substrate placement.
- ◆ Benthic Habitat Improvement by means of sediment removal by dredging.
- ◆ Water Quality Enhancement by means of aeration and/or artificial mixing.
- ◆ Wetland Restoration by means of invasive species removal and replanting with native species. A component for all combined alternative candidates.
- ◆ Wetland Restoration by means of restoring existing wetland and daylighting culvert.
- ◆ Wetland Restoration by means of creating wetland within oxbow.
- ◆ Fish Habitat Improvement by means of fish passage improvements at the Amelia Earhart Dam.

❖ **Overview of proposed Ecosystem Restoration Alternatives – Refer to the attached Plans**

a.) No Action Alternative

- Potential Current/Future Conditions without remediation
- Actions to be done by Others – includes Best Management Business Practices, Principle Responsible Parties actions, ...

b.) Invasive Wetland Species Replacement and Fish Habitat Enhancement (Alternative “G”)

- Invasive species (*Phragmites*) removal combined with regrading followed by native wetland species replanting.
- Removal of shoreline debris followed by placement of clean gravel substrate at tributary confluences

c.) Wetland Restoration and Fish Habitat Enhancement (Alternative “H”)

- Invasive species (*Phragmites*) removal combined with regrading followed by native wetland species replanting
- Restoration of existing Palustrine Scrub-Shrub (PSS) wetland south of former GE Site and daylighting of existing culverted stream
- Removal of shoreline debris followed by placement of clean gravel substrate at tributary confluences.

d.) Wetland Restoration/Creation and Fish Habitat Enhancement (Alternative "I")

- Invasive species (*Phragmites*) removal combined with regrading followed by native wetland species replanting
- Restoration of existing Palustrine Scrub-Shrub (PSS) wetland south of former GE Site and daylighting of existing culverted stream
- Enhancement of existing emergent marsh wetland east of former Monsanto Site
- Wetland Creation of PAB/PEM (Palustrine Aquatic Bed/Palustrine Emergent Marsh) emergent wetland within the old oxbow (former channel)
- Dredging of limited areas of problematic sediments with dredged material to be considered for reuse on-site/creation of emergent wetlands with clean cap
- Removal of shoreline debris followed by placement of clean gravel substrate at tributary confluences.

e.) Benthic and Fish Habitat Enhancement (Alternative "J")

- Removal of shoreline debris followed by placement of clean gravel substrate at tributary confluences.
- Dredging of areas of problematic sediments with excavation of 2-3 feet of contaminated sediment and the placement of 1-foot cap of clean gravel substrate
- Potential alteration to operational controls at the Amelia Earhart dam to allow improvements to fish passage

4. Process of Selection of Preferred Alternatives

- ❖ Evaluation of ecosystem benefits (outcomes) and costs
 - Comparison and evaluation of wetland habitat and ecosystem values
 - Comparison of costs/benefits associated with outcomes
 - Comparison to the No Action Alternative
- ❖ Complementary Functions with Non-ecosystem issues
 - Telecom City site development
 - Access and recreation

5. Project Schedule

- ❖ Upcoming Schedule – Phase I Deadlines and Reporting
 - ENSR Submission of the Phase I Report is scheduled for 20 Jan 04
 - Review and Comment Period for USACE, MVDC & Stakeholders 21 Jan 04 thru 17 Feb 04
 - ENSR Submission of the Final Phase I Report is scheduled for 16 March 04
- ❖ Phase II tasks and funding
 - Phase II Negotiations between USACE & ENSR 23 Feb 04 thru 5 Mar 04
 - Phase II Option Award 19 Mar 04
 - Phase II Effort by ENSR 22 Mar 04 thru 6 Aug 04
 - Interim Findings Report Submission 9 Aug 04
- ❖ Future Stakeholder Involvement
 - Phase I Report Review & Comment 21 Jan 04 thru 17 Feb 04

Tuttle, Michael R NAE

From: Tuttle, Michael R NAE
Sent: Friday, June 10, 2005 9:05 AM
To: 'joe.dalton@mail.house.gov'; 'beth.debski@ci.everett.ma.us'; 'ldilorenzo@medford.org'; 'EPD.Marine@comcast.net'; 'tlinc02155@aol.com'; 'nancy@mysticriver.org'; 'julie@mysticriver.org'; 'kenneth.krause@comcast.net'; 'joanne.fagin@state.ma.us'; 'heidi.davis@state.ma.us'; 'mike.glavin@state.ma.us'; 'paul.dipietro@state.ma.us'; 'eric.hutchins@noaa.gov'; 'john.catena@noaa.gov'; 'william_neidermyer@fws.gov'; 'michele.leone@us.ngrid.com'; 'phaederle@keyspanenergy.com'; 'john.obrien2@exeloncorp.com'; 'rrago@haleyaldrich.com'; 'preotlelane@aol.com'; 'gary.caldwell@tufts.edu'; 'fahey.kl@mellon.com'; 'brian.israel@aporter.com'; 'cmaietta@combinedproperties.com'; 'barbara.riley@ae.ge.com'; 'gstead@cityofmalden.org'
Cc: 'phollands@telecomcitymass.com'; 'stephanieb@ppcinc.com'; 'nca2@mindspring.com'; 'lombardo.ginny@epa.gov'; Randall, Todd A NAE
Subject: Malden River Ecosystem Restoration Study - Stakeholder's Meeting
Importance: High

Good Morning All:

You are cordially invited to a Stakeholder's Meeting for the Malden River Ecosystem Restoration Study to be held on 13 July 2005 at 10:00 am at the New England District's Concord facility.

The U.S. Army Corps of Engineers has partnered with the Mystic Valley Development Commission to conduct an Ecosystem Restoration Feasibility Study on the Malden River. Phase I of the study focused on a data collection effort, which identified feasible alternatives emphasizing on wetland restoration, water quality restoration to improve fish passage/habitat and sediment quality restoration to improve benthic habitat. The comprehensive evaluation of available site information had led to the development of numerous "building blocks" or restoration components that were recommended for further development within Phase II. The Phase I Report was completed in August 2004.

In Phase II, the Study Team has redefined the restoration components into categories and sub-sections within the study area. Each restoration component within their respective sub-section have been evaluated for its ecological value, cost, implementability and sustainability relative to the restoration goals. This will be the main topic of discussion at the Stakeholder's Meeting.

The attachments include a Project Information Sheet, the Invite List and directions to our facility.

On behalf of the Mystic Valley Development Commission, we look forward to your participation in this July 13th Stakeholder's Meeting. Due to security purposes, please email or call to confirm your participation.

Sincerely,

Mike

7/29/2005



US Army Corps
of Engineers
New England District

Project Information Sheet



Malden River Ecosystem Restoration Feasibility Study Medford, Malden & Everett, Massachusetts

June 7, 2005

696 Virginia Road, Concord Massachusetts, 01742-2751

STUDY NAME: Malden River Ecosystem Restoration Feasibility Study

STUDY AUTHORITY: On July 23, 1997, the U.S. House of Representatives, Committee on Transportation and Infrastructure authorized the Secretary of the Army to conduct a reconnaissance study encompassing the watersheds of the Massachusetts and Cape Cod Bays, as defined by the Environmental Protection Agency designated National Estuary Program, to enhance ecosystem restoration. The Reconnaissance Study recommended four habitat types for further New England District investigation. The four habitat types are the restoration of tidal and freshwater wetlands, riverine migratory corridors, benthic habitats containing contaminated sediments, and degraded shellfish beds. Malden River was one of the restoration sites determined to be in the Federal interest.

A Federal navigation channel exists within the study area. Adopted in 1912 and modified in 1915, the project provided for a 6-foot deep channel, 100 to 150 feet wide, extending approximately 1.5 miles from the confluence of the Mystic River to the Medford Street Bridge

CONGRESSIONAL DISTRICT: Massachusetts – 7th (Markey)

STUDY SPONSOR: Mystic River Development Commission (MVDC) is a tri-city legislative body established by the Commonwealth of Massachusetts to address commonly shared issues such as land development and river restoration opportunities within the Malden River watershed.

LOCATION AND DESCRIPTION: The Malden River watershed is a sub-basin of the much larger Mystic River watershed. The Malden River watershed is approximately 11 mi², located in the towns of Wakefield, Stoneham, Melrose, Malden, Medford and Everett. The Malden River originates from the outflow from Spot Pond in the Fells Reservation and passes beneath or through the cities of Melrose and Malden in underground culverts or channelized conveyances. The river daylights from two sets of stormwater culverts south of Malden Center and flows for approximately 2 miles as open surface water through the densely populated cities of Malden, Everett and Medford prior to its confluence with the Mystic River. The 'study area' is defined where the river daylights from the underground culverts south of Charles Street, Malden to the confluence with the Mystic River in Medford and Everett with a lower boundary of the Amelia Earhart Dam. With the 'study area', four small tributaries flow into the Malden River, Little Creek on the western side, two unnamed tributaries on the east side referred to as North Creek and South Creek, and a small drainage creek referred to as the Mall Creek (see Figure 1).

The Malden River channel is approximately 6 feet deep by 100 to 150 feet wide from the Medford Street Bridge in Malden to its confluence with the Mystic River. In locations outside of the channel, water depths have been observed to be as shallow as 2 feet.

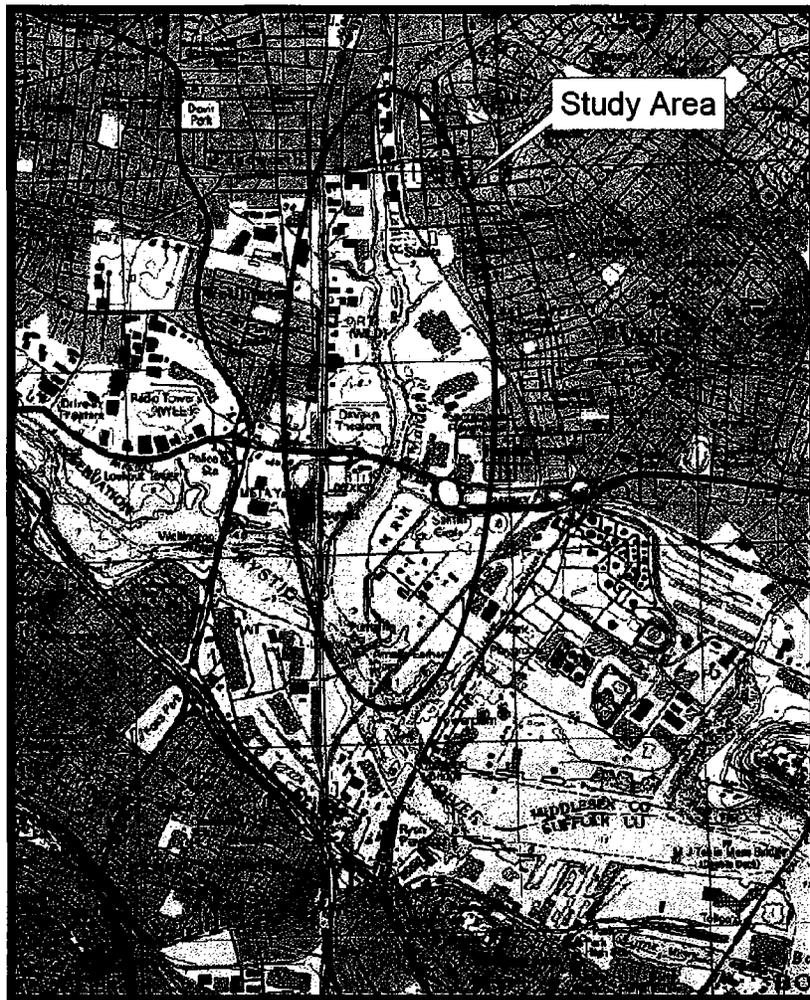


Figure 1 – Study Area

EXISTING ECOLOGICAL PROBLEMS: The existing ecological impairments to the Malden River have been recognized as degraded water quality, degraded wetland habitat and poor sediment quality.

Current sources of contamination to the water quality of the Malden River include contaminated sediments, stormwater, leaching groundwater, and product discharge. Degraded water quality is exacerbated by the lack of flushing in the river, either by sufficient freshwater inflow or by tidal exchange. Low channel gradients and little inflow result in low water velocities, creating impoundment-like conditions throughout the Malden River.

Primary causes for wetland habitat loss include filling for industrial and commercial development, channelization for navigation, and historic dredging by Federal, state and private interests. Wetlands that currently remain have undergone varying effects of anthropogenic degradation because of impacted stormwater runoff, industrial contamination, invasive species colonization, habitat fragmentation, and discontinuation of tidal cycling. The cumulative effects of wetland loss and degradation on the Malden River system are significant, and include: 1) reduced nutrient, toxicant, and suspended solids removal from stormwater, 2) loss of nesting and foraging habitat and travel corridors for wildlife, 3) reduced floodwater storage, 4) reduced erosion protection along the river's shoreline, 5) loss of macroinvertebrate habitat among submergent and emergent wetlands, and 6) reduced shade, cover, and structure

General conclusions regarding the current characterization of the sediment quality in the Malden River are as follows:

- Semi-Volatile Organic Compounds (SVOC) are present at levels several orders of magnitude above the ecological screening bench marks throughout the river. The highest levels of semi-volatile organics are present near the Medford Street Bridge and at the confluence of Little Creek and the Malden River. SVOCs are present at levels exceeding the MA Department of Environmental Protection's Upper Concentration Limits (UCL) only in these areas. Separate phase pollutants may be present in sediments in these areas. SVOCs are present at elevated levels (over 100 ppm) in the immediate vicinity of the Medford Street Bridge.
- Metals were not detected at levels exceeding the UCLs, but they exceed the ecological screening benchmarks throughout the river. The highest levels of combined metals (e.g., arsenic, lead, zinc) are present above the Revere Beach Parkway. Elevated lead and zinc levels are present at various locations throughout the river.
- The thickness of sediment ranges from 2 to 18 feet. Pollutants are present at all depths.
- Stormwater discharges as well as atmospheric deposition will continue to provide a degree of pollutant loading in the system.

RESTORATION OBJECTIVES: The overall goal of the Feasibility Study is to determine feasible restoration activities that will restore the Malden River ecosystem to the highest quality that it can reasonably support and sustain. The primary objectives of the Feasibility Study are:

- Reduction of current impacts to water quality, reduction of water quality standard exceedances, and restoration of riverine migratory (anadromous fish) corridors;
- Reduction of current impacts caused by poor sediment quality and restoration of degraded benthic habitat; and
- Enhancement or restoration of freshwater coastal wetlands.

The secondary objectives (or non-ecosystem issues) that address identified watershed stakeholder concerns include:

- Increase recreational use of the river;
- Increase public access to the river; and
- Reduce potential human health concerns regard surface water or sediment exposure.

CURRENT PROJECT STATUS: The Malden River Ecosystem Restoration Feasibility Study Phase I Report resultant was the development of numerous "building blocks" or restoration components that were recommended for further development within Phase II. These "building blocks" were directed towards the three restoration goals of the Study: wetlands restoration, benthic habitat restoration and fisheries habitat restoration.

Under Phase II, each of the selected "building blocks" have been evaluated for its ecological value, cost, implementability and sustainability relative to the corresponding restoration goals.

Further evaluation required the study area to be divided into six sub-sections (see Figure 2). Each sub-section contains five management plans, which are focused on improving the environmental conditions in the Malden River. The plans are comprised of the removal of invasive species, the removal of invasive species coupled with restoration of wetlands, the creation of wetlands, the contaminated sediment remediation, and the enhancement of fish habitat and fish passage.

The costs of the alternative restoration plans are compared with the environmental benefits within the framework of an incremental cost analysis, which will identify the most cost effective alternatives. An incremental cost analysis examines how the costs of additional units of environmental output increase as the level of environmental output increases. For this analysis, the environmental outputs are measured in habitat units. The incremental analysis identified 39 (out of a possible 1,584) alternatives as cost effective plans. The Stakeholder's Meeting will expand on this process and elaborate on the best buy plans identified during this analysis.

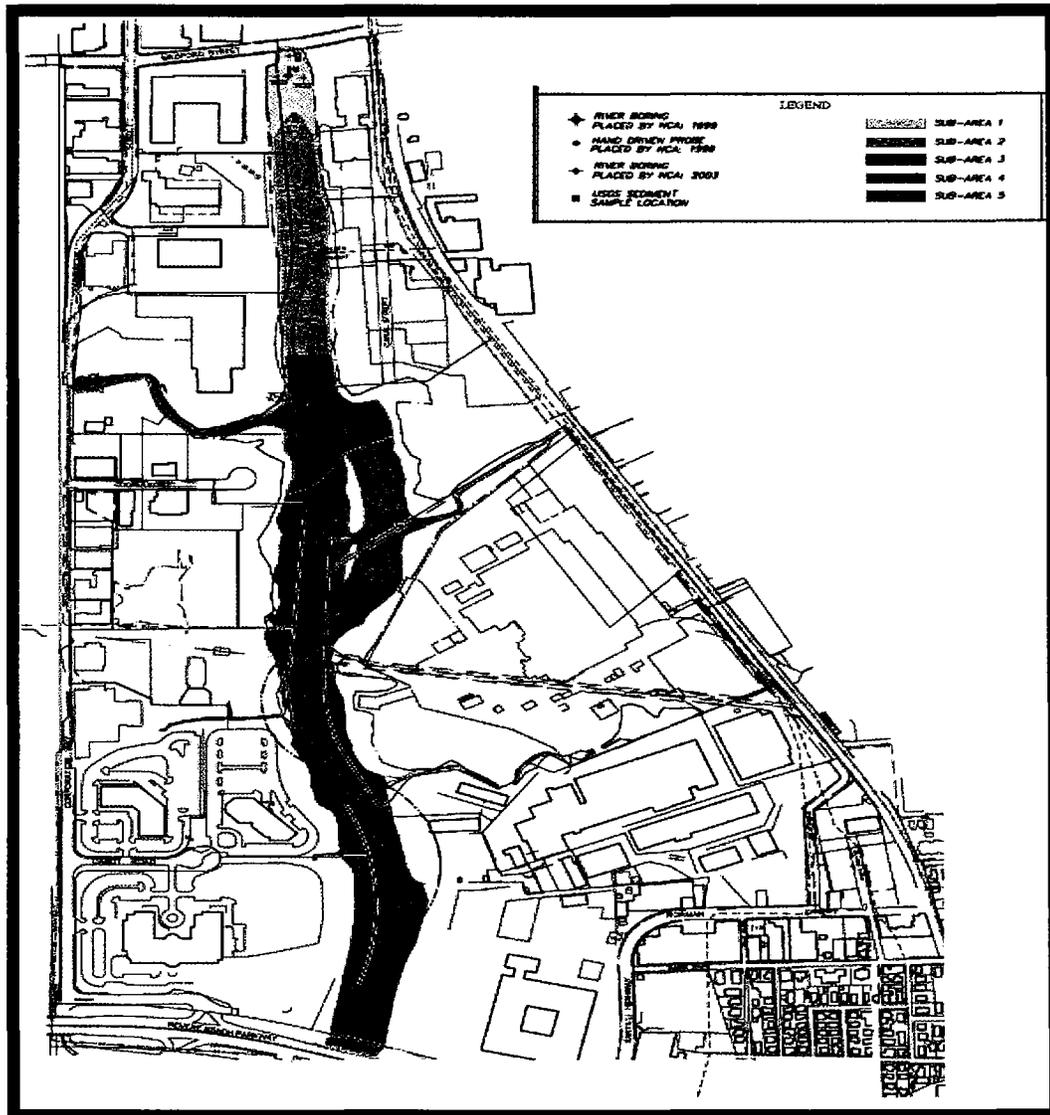


Figure 2 – Malden River Sub-Areas

CONTACT: For additional information on this project, please contact the Project Manager, Mr. Mike Tuttle, at the New England District at 978-318-8677 or at Michael.r.tuttle@usace.army.mil

Malden River Ecosystem Restoration Feasibility Study

July 13, 2005 – Stakeholder's Meeting

- ❖ Mike Tuttle – Study Manager
- ❖ Todd Randall - Ecologist



Brief Project Background Malden River

- ❖ July 23, 1997, US House of Reps authorized Coastal Massachusetts General Investigation.
- ❖ Recon. Study identify restoration sites within Mass & Cape Cod Bays' watersheds.



Brief Project Background Malden River

- ❖ Malden River identified as a potential restoration site in the Federal Interest.
- ❖ Corps Ecosystem Restoration Mission.
 - Restoration of Tidal & Freshwater Wetlands.
 - Restoration of Riverine Migratory Corridor.
 - Restoration of Benthic Habitat.

Brief Project Background Malden River

- ❖ October 2002, Agreement signed between Mystic Valley Development Commission and US Army Corps of Engineer.



Feasibility Study Approach

- ❖ Feasibility Study broken into 2 Parts
- ❖ Phase I Focus – Data Collection & Review, Forecasting, & Formulation of Alternatives (Completed in August 04).
- ❖ Phase II Focus – Evaluate & Compare Alternatives, & Determine Recommended Alternative Plan (Ongoing).



Corps' 6-step Planning Process

- Step 1 - Problem Identification & Opportunities (Phase I)
- Step 2 – Inventorying and Forecasting Conditions (Phase I)
- Step 3 – Formulating Alternative Plans (Phase I & II)
- Step 4 – Evaluating Alternative Plans (Phase II)
- Step 5 – Comparing Alternative Plans (Phase II)
- Step 6 – Selecting a Plan (Phase II)

- Urbanization
- Wetland Loss
- Poor Sediment Quality
- Decline in Habitat Quality for Fisheries, Waterfowl & Wildlife
- Poor Water Quality
- Low Diversity of Macroinvertebrates
- Poor Flushing & Circulation
- Inadequate Operations for Fish Passage



- Improve Waterfowl Habitat
- Improve Benthic Habitat
- Improve Fisheries Habitat
- Create Habitat Diversity
- Improve Water Quality
- Enhance Recreation



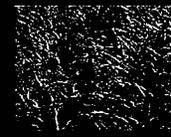
Dam operations prevent tidal flushing, create poor circulation and lead to poor water quality

Existing Ecological Impairments



Future Without Project

- ❖ Continued Degradation of Wetlands
- ❖ Elimination of Fisheries Habitat
- ❖ Continued Degradation of Benthic Habitat
- ❖ Increase in Human Health Risks
- ❖ Continued Degradation of Waterfowl Habitat
- ❖ Loss of Recreation Uses
- ❖ Continued Poor Water Quality



Future With Project

- ❖ Enhance Aquatic Habitat for Fisheries
- ❖ Improvement of Waterfowl Habitat
- ❖ Improvement of Benthic Habitat
- ❖ Improvement of Water Quality
- ❖ Restore a Balanced Diversity among Habitats



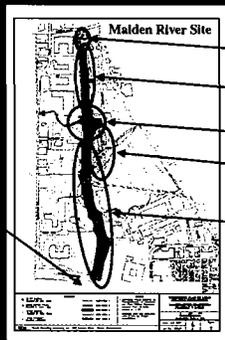
❖ "Building Blocks" Concept

- No Action
- Wetland Restoration
- Invasive Species Control
- Fish Habitat Enhancement
- Wetland Creation
- Benthic Restoration
- Fish Passage Improvement
- Water Quality Improvement



- ❖ Fish Habitat Enhancement by placement of appropriate spawning substrate.
- ❖ Invasive Species Control by removal followed by re-establishment of native wetland species.
- ❖ Improvement of Water Quality by means of natural filtration.

- ❖ Wetland Restoration by "daylighting" sections of South Creek.
- ❖ Wetland restoration by creating an emergent marsh wetland within the oxbow.
- ❖ Benthic Restoration by dredging existing contaminant sediments and capping with clean substrate.
- ❖ Improvement of migratory fish passage by changing the operational procedures at Amelia Earhart Dam



- Forecast With Project Conditions for Each Alternative
- Compare With Project Condition to Without Project
- Characterize Effects
- Determine Each Alternative Costs
- Develop Environmental Outputs

MALDEN RIVER STUDY AREA

SUB-AREA DIVISION RESTORATION ALTERNATIVES

	No. Action	Invasive Species Removal	Wetland Restoration (<1' clean fill w/ planting)	Wetland Creation (>1' fill and planting)	Sediment Removal	Fish Habitat Improvement
Sub-area 1		0	0	0	1.24	0.07
Sub-area 2		1.29	1.29	0	1.0	0
Sub-area 3		3.37	3.37	1.55	4.23	0.69
Sub-area 4		3.39	3.39	3.87	3.29	0.84
Sub-area 5		3.78	3.78	0	1.79	0.42
Sub-area 6		14.23	14.23	0	0	0.79

Values in acres

EVALUATION METHODS

- Habitat Evaluation Procedure (HEP)



Green Heron



Marsh Wren



Common Yellowthroat

- Predictive Sediment Toxicity Model



Sediment toxicity predicted through the use of a sediment effects ratio (described as a Probable Effects Concentration Quotient (PEC-Q))

MacDonald et al. (2000) Ingersoll et al. (2000)



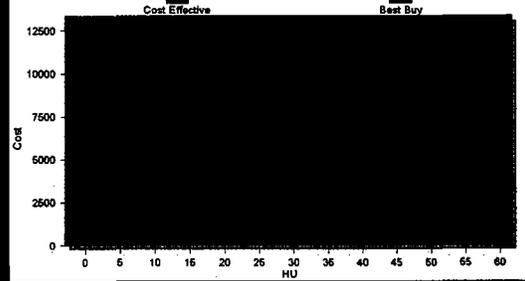
WTR-Plan Designator	Description	Cost	HU
A1	Total Remove Invasive Species SA 2	709.4	0.54
A2	Total Remove Invasive Species SA 3	1,028.3	0.67
A3	Total Remove Invasive Species SA 4	1,174.4	1.02
A4	Total Remove Invasive Species SA 5	965.9	2.57
A5	Total Remove Invasive Species SA 6	7,431.7	7.40
B1	Rem Inv Species & Restore Wetland SA 2	727.4	3.65
B2	Rem Inv Species & Restore Wetland SA 1	1,078.2	8.52
B3	Rem Inv Species & Restore Wetland SA 4	1,227.0	9.26
B4	Rem Inv Species & Restore Wetland SA 5	1,098.4	12.41
B5	Rem Inv Species & Restore Wetland SA 6	7,627.3	42.45
C1	Create Wetland SA 3	186.4	7.80
C2	Create Wetland SA 4	468.2	13.47
C3	Create Wetland SA 5	211.7	9.48
D1	Dredging SA 1	2,154.1	0.34
D2	Dredging SA 2	2,042.4	0.17
D3	Dredging SA 3	5,316.8	1.69
D4	Dredging SA 4	4,539.2	2.02
D5	Dredging SA 5	2,481.8	0.35
E1	Place Gravel/Sand SA 1	7.3	0.70
E2	Place Gravel/Sand SA 3	76.0	0.69
E3	Place Gravel/Sand SA 4	71.3	0.84
E4	Place Gravel/Sand SA 5	45.3	0.42
E5	Place Gravel/Sand SA 6	78.2	0.79
	Fish Passage	41.0	81.73

24 plans identified plus the No Action

Cost in thousands of dollars

Fish Passage operational changes is included in all restoration components

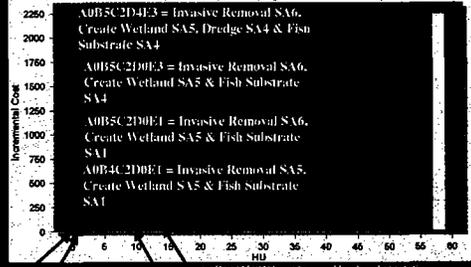
Cost Effective and Best Buy Plans - Malden River ER



Increment No.	Plan Designator	Cost	HU	Ave. Cost	Inc. Cost	Inc. HU	Inc. Cost per HU
1	A0B0C0D0E0	0.0	0.0	0.0	0.0	0.0	0.0
2	A0B0C0D0E1	7.3	0.70	10.4	7.3	0.70	10.4
3	A0B0C0D0E1	213.8	10.18	21.0	206.5	9.48	21.8
4	A0B0C2D0E1	475.5	14.17	33.6	261.7	3.99	65.6
5	A0B4C2D0E1	1,483.9	26.58	55.8	1,008.4	12.41	81.3
6	A0B5C2D0E1	8,102.8	56.62	143.1	6,618.9	30.04	220.3
7	A0B5C2D0E3	8,166.8	56.76	143.9	64.0	0.14	457.1
8	A0B5C2D4E3	12,706.0	58.78	216.2	4,539.2	2.02	2,247.1

B4 = Invasive Removal & Replanting SA6
 C2 = Create Wetland SA4
 D4 = Dredging SA4
 E1 = Fish Substrate SA1
 B5 = Invasive Removal & Replanting SA6
 C3 = Create Wetland SA5
 E3 = Fish Substrate SA4

Best Buy Plans - Malden River ER



No Action
 A0B0C2D0E1 = Fish Substrate SA1
 A0B0C2D0E3 = Invasive Removal SA6, Create Wetland SA5, Dredge SA4 & Fish Substrate SA4
 A0B5C2D0E3 = Invasive Removal SA6, Create Wetland SA5 & Fish Substrate SA4
 A0B5C2D0E1 = Invasive Removal SA6, Create Wetland SA5 & Fish Substrate SA1
 A0B4C2D0E1 = Invasive Removal SA5, Create Wetland SA5 & Fish Substrate SA1
 A0B0C2D0E1 = Create Wetland SA4 & Fish Substrate SA1
 A0B0C3D0E1 = Create Wetland SA5 & Fish Substrate SA1

Alt 6 - A0B5C2D0E1
 Cost = \$8,167,000
 Habitat Units = 56.62

Fish Substrate SA1
 Create Wetland SA5

Invasive Removal & Replanting SA6

Fish Passage Operational Improvements



Alt 6 - A0B5C2D0E1
 Cost = \$8,167,000
 Habitat Units = 56.62

Fish Substrate SA1
 Create Wetland SA5

Invasive Removal & Replanting SA6

Fish Passage Operational Improvements



Sponsor & Stakeholder's Options

MVDC accepts the Corps' NER Plan
(a best buy plan, cost-shared 65% Fed/35% non-fed)

OR

MVDC Selects a 'Locally Preferred' Plan
(not a best buy plan, cost-shared depends on Plan selected)

OR

MVDC Requests Add Ons to the Corps' NER Plan
(a best buy plan, cost-shared 65% Fed/35% non-fed, Add Ons 100% non-fed)

Feasibility Study Schedule

- ❖ September 05 – Complete Draft Phase II Report
- ❖ January 06 – Division Approval to Issue Public Notice
- ❖ May 06 – Obtain Project Approval
- ❖ July 06 – Initiate Plans & Spec Phase

US Army Corps of Engineers

QUESTIONS???

Presented by the New England District

Malden River Ecosystem Restoration Detailed Project Report

APPENDIX A-3

OTHER PERTINENT CORRESPONDENCE



**US Army Corps
of Engineers®**
New England District



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

July 29, 2005

Engineering/Planning Division
Planning Branch

Mr. Stephen Viggiani
US EPA, Region 1
One Congress Street, Suite 1100-SAA
Boston, Massachusetts 02114-2023

RE: Malden River Ecosystem Restoration Study

Dear Mr. Viggiani:

This letter is intended to provide your agency an update on the Malden River Ecosystem Restoration Feasibility Study. We are currently formulating restoration opportunities within the Malden River site. The initial analysis has identified eight Best Buy plans. These Best Buy plans were presented to the stakeholders on July 13, 2005. The local sponsor, Mystic Valley Development Commission, is reviewing the developed restoration plans.

Our current schedule depicts the completion of the draft feasibility report occurring in September 2005. However, this milestone date will be extended to November 2005, in order to allow the local sponsor to identify a "Locally Preferred" plan.

Enclosed for your review is the PowerPoint presentation and handouts that were distributed during the Stakeholder's Meeting.

If you have any questions or wish to discuss the status of the study further, please contact Mr. Michael Tuttle at (978) 318-8677.

Sincerely,

John R. Kennelly
Chief of Planning

Enclosure

MEMORANDUM – MEETING MINUTES

TO: ALL PARTICIPANTS
FROM: MICHAEL TUTTLE
SUBJECT: MALDEN RIVER ECO RESTORATION
MEETING DATE: 5 MAY 2004
REVISED DATE: 10 MAY 2004

On Wednesday, 5 May 2004, PDT meeting was held at Concord Park to discuss the Phase II options, Program procedures, project schedule, funding, workload, and contracting options.

The participants at the meeting were the following:

- 1 Ginny Lombardo – MVDC
- 1 Jeff Nangle – Nangle Consulting Assoc.
- 1 Chris Hatfield – USACE
- 1 Todd Randall – USACE
- 1 Barbara Newman – USACE
- 1 Mike Tuttle – USACE

Outstanding Issues

- 1. Awaiting non-Fed FY funds (\$118,300). *Update* – Funds received, deposited and available. – **Issue Resolved.**
- 2. Awaiting submission of the Final Phase I Interim Report/Response Document from ENSR. *Update* – Final Phase I Reports will be picked up on Friday afternoon (7 May 04). – **Issue Resolved**

Meeting Topics

- 1. The Study Team will review the Final Phase I report and concur whether ENSR had adequately addressed the Team's review comments.
- 2. The Study Team agreed to proceed with Phase II of the Study. Ultimately, implementation of the restoration strategy may be recommended through Section 206, Aquatic Habitat Restoration, of the Continuing Authorities Program. Any authority transfer would be handled at the completion of the Feasibility Phase. The

206 authority would allow for the project to be implemented by the District with approval of Division (NAD) leaders, rather than requiring OMB and Congressional approval as would be required if implementation was pursued through the GI Authority. The dollar limit under Section 206 is a total project cost of \$7.7 million, which breaks down to a maximum Fed participation of \$5 million and a minimum local sponsor participation of \$2.7 million. In-kind services can be a component of the local sponsor's share.

3. The Corps clarified that any required remedial work (i.e., removal of contaminated sediments) for which there is a viable PRP would need to be pursued as a PRP responsibility and could not be funded by the Corps nor could it be considered part of the local cost share. However, 'add-ons' to the Project could be implemented. The [definition - 'add-on' is a desired feature of the local sponsor that will be included with the recommended NER plan. The local sponsor would assume 100% of the design and construction costs for these 'add-ons']. Further discussion/clarification is warranted.
4. The Study Team discussed pursuing Phase II similar to the approach taken in the Elizabeth River, such that restoration elements would be valued separately for each of the 3 goals of the study (aquatic, wetland & benthic) and then the best-buy plan for each goal would be combined to create the National Ecosystem Restoration (NER) plan. The Study Team discussed that some elements address more than one goal and would need to be considered as such.
5. The Study Team agreed to proceed with a plan to determine the preferred alternative based on ecological value, implement-ability and best economic value. Elements of the NER plan for which there is a viable PRP will be extracted from the plan and PRPs will be pursued to implement these elements. If after that, the NER plan is valued higher than \$7.7 million, the Study Team will extract the lowest priority elements (based on ecological value) to lower the cost of the NER plan to below the \$7.7 million cap. Those extracted elements will be identified as potential future projects. The remaining elements will be pursued as the recommended alternative.
6. The Corps will review the Muddy River Study Report and the Elizabeth River Study Report and talk to the Project Managers of those studies to ensure that we apply any "lessons learned" to the Malden River Study.
7. Outline of Plan to Proceed:
 - a. Corps will talk to management about the findings of Phase I and the general plan for Phase II and get buy-in to our approach for moving forward.
 - b. Corps will breakdown Alternatives G, H, I and J into incremental restoration building blocks and group the building blocks into three goal-based categories; wetland restoration, benthic habitat restoration and aquatic habitat restoration.

- c. Corps will assess whether any additional data is needed for the habitat value evaluation process on each building block.
- d. Corps will establish habitat units/environmental benefits/wetland functional assessment for each building block.
- e. Corps will create evaluation methodology for ranking wetland restoration and aquatic habitat restoration building blocks.
- f. Nangle and the Corps will work together to create an evaluation methodology for ranking the benthic habitat restoration building blocks. The foregoing work should be completed within 90 days – by early August.
- g. Corps will contract with ENSR for further design and detailed cost estimates for each of the building blocks. ENSR should be given approximately 3 months to complete this work – by early November.
- h. Corps will complete the cost effectiveness and incremental cost analysis. The results of the incremental cost analysis will be analyzed and used to determine the preferred restoration alternative.
- i. Corps will prepare the Real Estate Report and Cultural Resource components of the FS Report.
- j. The preferred NER plan may be narrowed based on PRP responsibility and/or cost, as discussed above, to determine the recommended restoration alternative. The Study Team may need to host public meetings at this point to solicit public input on the recommended alternative.
- k. Corps will complete the Environmental Assessment for the recommended restoration alternative. The draft Feasibility Report/EA will be available for review in Spring 2005.

Closing Comments

- ξ On or around May 26, the Study Team will have a conference call to report on the status of actions 7a through 7d, particularly any data needs identified.
- ξ The Corps will update Dave Mitchell of ENSR next week (10 May 04) on the Project approach for Phase II.

If an omission exists or an incorrect statement, please reply to Mike Tuttle, Study Manager at 978-318-8677 or via e-mail before 15 May 2004.



MYSTIC VALLEY DEVELOPMENT COMMISSION

Chairperson
Richard C. Howard
Mayor, City of Malden

Vice Chairperson
Michael McGlynn
Mayor, City of Medford

Secretary/Treasurer
David Ragucci
Mayor, City of Everett

Malden Member
Henry A. Gennetti, Jr.

Everett Member
Joseph Hickey

Medford Member
Stephanie Muccini Burke

Ex-officio Member
Mitt Romney
Governor

Governor's Designee
John G. Troast, Jr.

March 9, 2004

Steven Viggiani
Senior Enforcement Counsel
U.S. EPA Region I
One Congress Street
Suite 1100 (SEL)
Boston, MA 02114-2023

Re: Funding for Phase II of the Malden River Ecosystem Study

Dear Mr. Viggiani:

The Mystic Valley Development Commission (MVDC) extends its gratitude to you for facilitating the inclusion of funding for Phase II of the Malden River Ecosystem Restoration Feasibility Study in EPA's recent settlement agreement with Excelon Mystic LLC. This funding will ensure the successful completion of the Study, which is the critical first step to the realization of a restored Malden River for the communities of Everett, Malden and Medford.

We have discussed the method of payment with our partners at the U.S. Army Corps of Engineers (Corps), the lead agency for the Study, and have confirmed that Excelon can issue a check for the Study funding directly to the Corps. The check for \$118,300 should be made payable to "FAO, CENAE, New England District" and must include a reference on the check to the "MVDC/Malden River Ecosystem Restoration Study". The check can be mailed to:

Michael Tuttle, Study Manager
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742-2751.

The MVDC requests that Excelon copy us on the transmittal of the check to the Corps. Thank you again for your assistance in this matter on our behalf.

Sincerely,


Peter Hollands
Project Director

Malden Government Center
200 Pleasant Street
Suite 621
Malden, MA 02148

Phone 617-381-7711
Fax 617-381-7776
www.telecomcitymass.com

cc: Diane Applegate, Excelon
Michael Tuttle, U.S. Army Corps of Engineers

February 4, 2004

Engineering/Planning Division
Planning Branch

Honorable David Ragucci
Mayor of Everett
Everett, Massachusetts 02149

Dear Mayor Ragucci:

Enclosed is a quarterly financial summary for the Malden River Ecosystem Restoration Study, which is being conducted by the New England District, U.S. Army Corps of Engineers, under a cost sharing agreement with the Mystic Valley Development Commission (MVDC). This financial status report presents the actual costs of the study through the end of December 2003.

Negotiations with ENSR on Phase I of the feasibility study were completed in July 2003. Phase I requires ENSR to evaluate feasible restoration activities that will restore the Malden River ecosystem to the highest end use resource that it will reasonably support and sustain. The negotiated price for Phase I was \$80,860. Phase II will require a comprehensive evaluation of the Phase I restoration candidates, the preparation of environmental documentation, and a Feasibility Study Report.

The enclosed summary identifies the necessary contributed funds required to award the Phase II task order to ENSR. Further cash contributions have been coordinated through MVDC's representative, Ms. Ginny Lombardo.

If you have any questions or wish to discuss the status of the study further, please contact Mr. Michael Tuttle at (978) 318-8677.

Sincerely,

John R. Kennelly
Chief of Planning

Enclosure

Copy Furnished:

Ms. Ginny Lombardo
TeleCom City Showcase
200 Pleasant Street, Room 621
Malden, Massachusetts 02148

C/SSS

JCC

CH/PLNG/BR

CF: Plng Br Files, Tuttle C:\Correspondence_EP\Tuttle\RequestFY04Funds.MVDC ✓
Reading Files

Tuttle

July 16, 2003

Tuttle/sa/677

Engineering/Planning Division
Planning Branch

Honorable Michael McGlynn, Chairperson
Mystic Valley Development Commission
200 Pleasant Street, Room 621
Malden, Massachusetts 02148

Dear Honorable McGlynn:

Enclosed is a quarterly financial summary for the Malden River Ecosystem Restoration Study, which is being conducted by the New England District of the Corps of Engineers under a cost sharing agreement with Mystic Valley Development Commission (MVDC). This financial status report presents the actual costs of the study through the end of June 2003.

We have completed negotiations with ENSR on Phase I of the feasibility study. Phase I requires ENSR to evaluate feasible restoration activities that will restore the Malden River ecosystem to the highest end use resource that it will reasonably support and sustain. The negotiated price for Phase I is \$80,860.

As you can see in the enclosed summary, we currently do not have the necessary contributed funds to award this task order to ENSR. Further cash contributions for the remainder of this fiscal year's efforts has been coordinated through MVDC's representative Ms. Ginny Lombardo.

If you have any questions or wish to discuss the status of the study further, please contact Mr. Michael Tuttle at (978) 318-8677.

Sincerely,

John R. Kennelly
Chief of Planning

Enclosure

Copy Furnished:

Ms. Ginny Lombardo
TeleCom City Showcase
200 Pleasant Street, Room 621
Malden, Massachusetts 02148

**NAE REGULATORY PROGRAM
FACT SHEET**



US Army Corps
of Engineers®
New England District

File Number: 200000229

Date Prepared: 18 Mar 2003

Project Manager: Alan R. Anacheka-Nasemann, PWS

Project Name: Telecom City (Mystic Valley Development Commission - MVDC)

Purpose of Work: Establish a Telecommunications Industry Business Park

Waterway: Malden River, adjacent to an existing brownfields site.

Site Address: Malden River at Commercial Drive, Malden, Medford & Everett

Description: The MVDC and Preotle-Lane Associates (NYC development firm) have requested a permit to fill 1.65 acres of jurisdictional but degraded wetlands to construct the first phase of a major business park. USEPA is a proponent of project, which is a brownfields redevelopment Showcase Community, and a USEPA Brownfields Coordinator is assigned to assist Telecom City in this endeavor. Affected wetlands abut abandoned, gutted buildings and include invasive plant species, construction and other debris.

Background/Issues: Application received 30 Aug 2001. Public Notice issued: 25 Sep 2001. The application was withdrawn in March 2002 while the applicant revised the mitigation plan. Applicant reactivated processing in Oct 2002. Mitigation plan was received 19 Dec 02. After review by ERS, final revisions should arrive today, and applicant expects our final decision shortly.

Current Status: On 13 Mar 03, it came to the attention of Ed Reiner (USEPA) that there are two unresolved enforcement cases on two contiguous parcels that are part of this site. One case was deferred on 13 Jul 93 and the other on 4 Feb 94. The former dates to the late 1970s. At that time, we investigated the alleged filling of 1.3 acres of the Malden River and 1.15 acres of wetlands. Aerial photography indicates that these activities occurred between 1968 and 1977. Based on our phase-in dates for jurisdiction, any fill of the wetlands prior to July 1975 is grandfathered; only fill placed between 1975 and 1977 was unauthorized. The 13 Jul 94 memo deferring enforcement action thus admits that our case vis-a-vis wetlands was very weak at that time. The other 1.3 acre fill would have been regulated under §10. There is no evidence that further filling on this parcel occurred after Cease & Desist order (28 Nov 1977).

In the latter case, the violation involved the placement of old barges and filling of approximately 1000 s.f. (0.025 acre) of the Malden River. The agreed upon

course of action was that the violator would remove the fill and restore the site. It appears that said removal probably occurred, although this was not verified by the Corps. The subsequent wetland restoration effort failed due to dieback of the planted vegetation. Today, the area is a *Phragmites* wetland.

Both deferral documents state that the Corps will not entertain new applications until/unless the violations are cleared up. However, the Corps did accept, and has been processing, the present application for some time. The previous PM and I were unaware of the past enforcement cases. The applicant has been proceeding in good faith under the current application.

Mr. Reiner has recommended that Telecom City be compelled to show the past, alleged violations on their plans and to receive after-the-fact authorization for them. He has also recommended that the mitigation plan be enhanced to offset the aggregate aquatic resource losses. This is suggested despite the fact that (1) the vast majority of this fill is at least 25 years old; (2) the wetland component may well have occurred prior to the applicable phase-in dates, rendering part of the case moot; (3) available evidence indicates that a cooperative violator at least attempted to remove the more recent 1000 s.f. of fill approximately 13 years ago; and (4) No action has been taken relative to these cases in over nine years. Mr. Reiner has also raised the issue with the EPA Brownfields Coordinator, who is upset to have this apparent roadblock introduced at this late stage in Telecom City's application process.

Next Action: (Recommended) Meet with Chief, Regulatory Division to discuss situation. Possible solutions include, in sequence:

- (1) Issue a letter to the applicant/current owner indicating that a preponderance of evidence suggests that the past filling of 1.15 acres of wetlands occurred prior to July 25, 1975 and is therefore authorized by Nationwide Permits issued July 19, 1977;
- (2) Inspect the area that involved the 1000 s.f., fill, verify removal, document current conditions, and issue a letter to the applicant/current owner indicating that the removal satisfactorily resolves the violation;
- (3) Add the filling of 1.30 acres of navigable waters that occurred between 1968 and 1977 to the applicant's plans. Authorize it under §10 noting that the 404(b)(1) Guidelines do not apply because this is a §10 project only and the 404(b)(1) Guidelines were not in effect at the time the fill was placed; and
- (4) Review the final mitigation plan, prepare EASOF and ISSUE PERMIT. Suspense = 18 Apr 03 to meet CECW-OR performance goals.

Staffing: PM _____ SEC CHF _____ BR CHF _____

Tuttle, Michael R NAE

To: kwabena.kyei-aboagye@state.ma.us
Subject: Section 312 criteria

Good Morning Kwabena,

The following is the criteria for Section 312:

Section 312 of WRDA 90 authorized the Secretary of the Army to remove contaminated sediments from navigable waters of the U.S. There are two distinct authorities in Section 312.

Section 312(a) provided for removal of contaminated sediments outside the boundaries of and adjacent to a Federal navigation project as part of the operations and maintenance of the project.

Section 312 (b) provided for removal of contaminated sediments for the purpose of environmental enhancement and water quality improvement if such removal was requested by a non-Federal sponsor and the local sponsor agrees to pay 35 percent of the cost of such removal and remediation.

Joint Plan Requirement (Section 312 (c))- The Secretary may only remove and remediate contaminated sediment under subsection (b) in accordance with a joint plan developed by the Secretary and interested Federal, State and local government officials. Such plan must include an opportunity for public comment, description of the work to be undertaken, the method to be used for dredged material disposal, the roles and responsibilities of the Secretary and non-Federal sponsors, and identification of sources of funding.

Costs of disposal of contaminated sediments removed under Section 312 (b) shall be shared as a cost of construction.

Planning for projects to remove and remediate contaminated sediments will be conducted under two phases - reconnaissance and cost shared feasibility study process. Preparation of a feasibility report will meet fully the Section 312 (c) requirement for development of a joint plan. Planning for removal and remediation of contaminated sediments should use fully existing sources of information to expedite the study process, provide reasonable protection for the Corps from liability, and address requirements to ensure compliance with CERCLA's "polluters pays" principle.

Creative solutions and financial partnerships involving all levels of government should be sought in developing plans for removal and remediation of contaminated sediments. Duplication of Federal programs should be avoided and plans for sediment removal and remediation should recognize appropriate Federal, State and Local agency roles. An interagency planning team should be formed to conduct the planning study.

Michael R. Tuttle
Project Manager
U.S. Army Corps of Engineers
696 Virginia Road
Concord, MA 01742-2751
Tel: 978-318-8677
Fax: 978-318-8080

FEBRUARY 2, 2003

Army engineers agree to study Malden River

By John Laidler
GLOBE CORRESPONDENT

It has been known through much of its modern history as a grimy industrial waterway, a reputation gained from the years that factories used it to transport their goods and dump their wastes.

But officials in Everett, Malden, and Medford are developing a new vision of the Malden River as a recreational resource for local residents.

Now, a new study could enable the three cities to take a step toward that goal.

The study, which is being carried out by the US Army Corps of Engineers in partnership with the Mystic Valley Development Commission, will investigate options for cleaning up the river, in particular how to address the pollutants embedded in the river sediments. It also will explore options for restoring wetlands that have been degraded or lost over the years.

The study will encompass an approximately 2-mile stretch of the Malden River from Malden Square to the river's confluence with the Mystic River. It also takes in the Amelia Earhart Dam, a facility run by the Metropolitan District Commission located on the Mystic River.

The commission is the entity established by Everett, Malden, and Medford to oversee development of TeleCom City, the telecommunications park the three cities hope to locate on 200 acres of land on both sides of the Malden River.

As part of its development of TeleCom City, the cities intend to develop a linear park along both sides of the river.

And in a development local officials have hailed as a sign of the river's untapped potential, the Tufts University rowing team has been using the river since the fall of 2001 for practices and regattas.

But the commission recognized that for the river to be truly transformed into a recreational resource, the public needs to be assured that it is safe, said Ginny Lombardo, an environmental en-

gineer with the US Environmental Protection Agency who is in the midst of a three-year assignment to work with the Mystic Valley Development Commission.

She said the study will go a long way toward determining what type of cleanup is needed.

"For the Mystic Valley Development Commission to get a commitment from the Army Corps to look at this 2-mile stretch of urban river was just a really great accomplishment for the MVDC," she said.

"A lot of people don't even realize the Malden River exists because of the past heavy industrialization on both sides of the river," Lombardo said.

The Army Corps and the commission are each picking up half of the estimated \$356,000 cost of the project under an agreement they reached last October and formally announced Jan. 15. The program through which the corps is undertaking the study requires a local partner.

Drawing from its own budget and other public and private funding sources, the commission has raised about \$60,000 toward its share, close to the \$80,000 it needs to generate the first year.

Lombardo said past studies done by the commission and others indicate the river's water is relatively uncontaminated. But she said its quality is poor because of its stagnant condition, which has resulted in low oxygen levels. One way to address that problem may be to adjust the dam to create more water movement.

The significant contamination problem is in the sediments, where the industrial pollutants, discharged over time, have settled, Lombardo said. Options for addressing those contaminants range from dredging the sediment and disposing of it off site, to capping it with clean fill. In the case of contaminated sediments that have been naturally covered by cleaner sediments since the dumping of industrial wastes ended in the mid-1900s, the strategy may be to not disturb them, she said.

Malden River's rejuvenation a big plus from TeleCom City

**Environmental,
recreational
impact of the
TeleCom City
project is
immense,
officials report**

This is the third, and final, in a series of stories that is focusing on the initial construction of TeleCom City, the telecommunications industry and what positive impact the project is having on the environment around the Malden River.

By KEVIN MACCIOLI

J.S. Army
MALDEN- The Malden River. Malden Redevelopment Authority (MRA) Executive Director Steven Wishoski called it, "Malden's forgotten jewel."

While that certainly is an apt description for the waterway that serves as a tributary for the more well-known Mystic River, and runs parallel to the Commercial Street-Corporation Way corridor, the river, and its banks, may soon become one of the premier resources for residents of the tri-city area.

Virtually abandoned for a number of years, outside of the occasional fisherman, a number of initiatives tied to the TeleCom City project, and a few that are not, could once again reintroduce the river into residents lives via the Malden River Park.

Once a major transportation highway, used for moving goods from mills and companies along the river banks to Boston, the Malden River has recently sat pretty much dormant.

Now, the Mystic Valley Development Commission (MVDC) hopes to bring the river and its shores back to life with the completion of TeleCom City and the waterway's revitalization as a lively spot for people to spend time picnicking, fishing, swimming and playing.

While on the business side, the key component of the TeleCom

MALDEN EVENING NEWS

MALDEN, MA
DAILY 13,710

FRIDAY
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New England Newsclip
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TeleCom City

Continued from Page One

City project is the development of an unparalleled telecommunications research park, on the environmental side, the key components are the remediation of the Malden River and the addition of over 60 acres of open space, to an area that desperately lacks adequate park space.

Included in the open space will be an all purpose athletic field, to be built during Phase I of the construction, nature areas, bicycle and walking trails, as well as space for people to picnic.

"First the river was used as a highway, then as a dumping ground," said Wishoski. "This project takes the exact opposite approach, in that we want people to use it for recreation."

As part of the TeleCom City project, the MVDC has taken several steps to clean up the land and the river.

While the MVDC recently learned the US Army Corps of Engineers would do a \$350,000 study of the river and its sediments, the crowning environmental achievement of the project came back in 2000.

It was then, that TeleCom City was designated a National Brownfields "Showcase Community" by the federal government.

"It's quite an accomplishment," said TeleCom City project director Peter Hollands.

As one of just 12 communities throughout the nation to be given the

designation, it gave the MVDC, and TeleCom City, access to resources from 17 federal agencies to assist in the cleanup and revitalization of the site and led to the Army Corps of Engineers study, which Hollands says he hopes will "help bring back the river's recreational and wildlife uses."

"We've already learned the river is cleaner than we thought it was," said Hollands, "and right now we already have some activity out there, with the Tufts University crew teams."

Bringing Tufts to the river is just one step the MVDC and the cities of Malden, Medford and Everett, and Combined Properties, the real estate company whose land Tufts is currently using to house their equipment, have taken to reintroduce the entire river and TeleCom site to local residents.

Deborah Burke, the Marketing Director for the City of Malden, who has worked extremely closely with the MVDC, pointed out when Malden recently held its 350th Anniversary celebration, the river was used as the backdrop for a concert and fireworks show.

"We think we can have more things like that at TeleCom [City]," said Burke.

"We hope it becomes a part of the community again," said Hollands. "It's a great resource."

FYI



REPLY TO:
ATTENTION OF:

DEPARTMENT OF THE ARMY
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS
696 VIRGINIA ROAD
CONCORD, MASSACHUSETTS 01742-2751

October 8, 2002

Engineering/Planning Division
Planning Branch

Mayor Michael McGlynn, Chairperson
Mystic Valley Development Commission
300 Commercial Street, Suite 27
Malden, MA 02148

Dear Mayor McGlynn:

Enclosed for your signature are six (6) copies of the Feasibility Cost Sharing Agreement for the Malden River Restoration Study. Please sign and date each of the agreements and return them to the Corps Study Manager, Mr. Michael Tuttle at the above address. Once the District Engineer signs each of the agreements, we will forward three copies for your files.

The cost for this feasibility study is \$356,600, which will be cost shared 50% Federal and 50% non-Federal. Your total cost share for this study is \$178,300. Once the agreements are executed, we will send a second letter to the Commission requesting your share of the study funding for this fiscal year which is estimated to be \$80,000.

We look forward to working with you on this study. If you have any questions or require additional information, please contact the Study Manager, Mr. Michael Tuttle, at (978) 318-8677.

Sincerely,

A handwritten signature in black ink, appearing to read "David L. Dulong".

David L. Dulong
Chief of Engineering & Planning
New England District

Enclosures

FEASIBILITY SCOPE

SITE: MALDEN RIVER RIPARIAN CORRIDOR (Site 9)

CONTACTS: Mass EOE – Kwabena Kyei-Aboagye, Jr.
617-626-1165

Mystic Valley Development Commission's (MVDC) TeleCom City – Ginny Lombardo
617-381-7711

Mystic River Watershed Association
781-316-3438

PROJECT DESCRIPTION:

MVDC is in the process of redeveloping a 200 acre parcel in Malden, Medford and Everett, referred to as the TeleCom City Project. The Malden River runs through the TeleCom City Project area. The creation of a Malden River Park is a component of the project. Malden River is considered an unhealthy river ecosystem. The river sediment are contaminated; the water quality is poor, lacking adequate dissolved oxygen to support aquatic life and the adjacent wetland are dominated by the invasive wetland species *Phragmites australis* (common reed). The Amelia Earhart Dam is considered a contributing factor to the poor quality of both the lower Mystic River and the Malden River.

FEASIBILITY STUDY SCOPE:

- ◆ **22 A – Public Involvement:** The purpose of public involvement efforts is to maintain citizen interest, solicit citizen and agency input, and to satisfy the requirements of the National Environmental Policy Act (NEPA). Coordination with Federal, State, local agencies and interest groups throughout the conduct of the feasibility study. Coordinate general public meetings and inter-agency workshop meetings. Provide advertising in local and public newspaper, coordinating with the media, and responding and commenting on inquiries from the general public and congressional interest. **(\$5,000)**
- ◆ **22 B – Institutional Studies:** The purpose of the assessment of non-Federal sponsor's financial capability is to determine whether that ample funds will be available to satisfy the non-federal sponsor's financial obligation for the project. Development of the financing plan to meet the non-Federal sponsor's financial obligations for the project funding and Operation, Maintenance, Replacement, Repair and Rehabilitation (OMRR&R). **(\$5,500)**
- ◆ **22 D – Cultural Resource Studies:** The purpose of the cultural resource studies is to comply with Section 106. Identify potentially significant prehistoric and historic archaeological sites, and historic structures. Efforts will entail determining existing conditions and impacts of alternative plans upon historic resources. Coordinate with various groups interested in the historic value of the study areas. **(\$3,000)**
- ◆ **22 E – Environmental Studies:** The purpose of the environmental studies is to satisfy the compliance requirements of the National Environmental Policy Act (NEPA), Sections 401 and 404 of the Clean Water Act, and other environmental laws and regulations, and provide environmental technical support during the plan formulation and later phases of the project. Preparation of a NEPA document to include documentation of the alternative solution, and the impacts, both positive and negative, of the alternatives on significant resources; assessment and prioritization for the development of environmental restoration solutions; document existing biological resources and physical environment, and provide a baseline for evaluation of potential improvements; and documentation of compliance with all applicable environmental laws and regulations.

Environmental studies will include: background research; site visits, and development of environmental setting; wetland delineation; determination of environmental impacts; preparation of an Environmental Assessment (EA), Findings of No Significant Impact (FONSI), and Section 404(b)(1) evaluation; Coastal Zone Management (CZA) consistency determination; water quality certification; and coordination with non-Federal sponsor to comply with other State regulations. **(\$65,900)**

- ◆ **22 G – Economic Studies:** The purpose of the analysis is to ensure that the economically efficient. Least cost alternative is identified for each possible level of environmental output, and to produce a comparison of the changes in costs associated with increasing levels of outputs. Perform cost effectiveness prior to the incremental analysis in order to eliminate measures that are economically inefficient and ineffective. Provide environmental outputs from the formulated alternatives in terms of acres of wetland, riverine migratory corridor, benthic habitat or shellfish beds restored. **(\$3,200)**
- ◆ **22 H – Real Estate Studies:** Develop a gross appraisal of the costs of lands required for economic evaluation and construction alternative plan including detailed determination of lands, easements, rights-of-way, relocations, and dredged material placement areas. **(\$4,000)**
- ◆ **22 J – Hydrologic and Hydraulic Investigations:** Collect and analyze water quality data and reports for the Malden River and surrounding tributaries to determine non-point source impacts; evaluate combined sewer overflow discharge plan for Malden River and determine impact on Malden River's water quality; evaluate sedimentation issues including time of sedimentation buildup after existing sedimentation are dredged; evaluate Amelia Earhart Dam operation to determine water quality impacts and to improve tidal flushing upstream of the dam; and prepare a report. **(\$53,300)**
- ◆ **22 K – Geotechnical Studies:** Studies will include coordination meetings to discuss alternatives, constructability issues, material analysis, prepare preliminary profiles and cross sections for the design of CAD cell, and analysis of the contaminated material to be removed (dredged). Tasks will include subsurface exploration, the analysis of subsurface conditions, and geotechnical input to the report. **(\$78,100)**
- ◆ **22 N – Surveys and Mapping:** Conduct hydrographic and topographic surveys of the sites of potential restoration projects and/or features, including wetland delineation limits. **(\$15,000)**
- ◆ **22 P -Design and Cost Estimates:** Coordination with various technical elements to establish survey requirements; preparation of survey scope of work; negotiation and oversight of the survey contract; coordination on the design of alternative restoration measures; evaluation of site access and constructability issues; preparation of project plans to include a general site plan, miscellaneous site plans, and sections and details; develop quantity estimates for cost estimating; and preparation of a design report.

Cost estimating efforts will include abbreviated cost estimates for alternative plans; detailed MCACES cost estimates for the recommended plan; estimates of average annual operations, maintenance, and replacement costs; and estimates for preparation of Plans and Specifications. Contingencies will be developed and applied where areas of uncertainty exists. **(\$31,000)**

- ◆ **22 Q – Study Management and Report Preparation:** Perform activities related to the management of the study including: preparing schedules, distributing and monitoring study funding, leadership in plan formulation, assisting various team members in developing and/or securing information pertinent to the successful conduct of the study, coordinating with all higher Corps authorities and other Federal agencies, developing and preparing the feasibility report, preparing and tracking budgets, monitoring study progress, developing the draft Project Cooperation Agreement, and acting as the primary liaison between the non-federal sponsor and the study team. **(\$39,600)**
- ◆ **22 R – Plan Formulation and Evaluation:** Coordinate and document the formulation and evaluation of alternatives by the Corps and the non-Federal sponsor. The formulation process will have six

iterative steps: (1) specify the problems, needs, and opportunities of the study area, (2) inventory and forecast resources, (3) formulate alternative plans, (4) evaluate alternative plans, (5) compare alternative plans, and (6) select a recommended plan. Each alternative plan analyzed will be compared to its respective without project condition; the effects of the with and without condition characterized; and a determination of the plans' completeness, effectiveness, efficiency and acceptability will also be conducted. **(\$10,000)**

- ◆ **22 T – Life Cycle Project Management:** Review and prepare the model language of the Project Cooperation Agreement (PCA) for the project. A letter of intent will be developed which acknowledges the requirements of the local cooperation and expresses good faith intent. Prepare a Project Management Plan (PMP) which is intended to be a “living document” and will be updated based on the proposed projects. **(\$5,000)**
- ◆ **22 U – Washington Level Review:** Ensures that the non-Federal sponsor is afforded an opportunity to participate in any significant effort as a result of Washington level review, “review Support” for the District and the non-Federal sponsor costs are included. **(\$13,200)**
- ◆ **22 Y – Independent Technical Review:** An Independent Technical Review (ITR) team will be established that represents all technical elements providing significant input to the Feasibility Study, as required by Corps policy. The ITR team has the credentials and experience necessary to provide a comprehensive review particularly as it relates to plan formulation, environmental, economic, engineering, and public involvement matters. **(\$13,200)**

Feasibility Study Cost Estimate Table

<u>Task</u>	<u>Task Cost</u>	<u>In-Kind Services</u>	<u>Total Cost</u>
22A – Public Involvement	\$ 5,000		
22B – Institutional Studies	\$ 5,500		
22D – Cultural Resource Studies	\$ 3,000		
22E – Environmental Studies	\$65,900		
22G – Economic Studies	\$ 3,200		
22H – Real Estate Studies	\$ 4,000		
22J – Hydrologic & Hydraulic Investigations	\$53,300		
22K – Geotechnical Studies	\$78,100		
22N – Surveys & Mapping	\$15,000		
22P – Design & Cost Estimates	\$31,000		
22Q – Study Management & Report Preparation	\$39,600		
22R – Plan Formulation & Evaluation	\$10,000		
22T – Life Cycle Project Management	\$ 5,000		
22U – Washington Level Review	\$13,200		
22Y – Independent Technical Review	<u>\$13,200</u>		
Subtotal	\$345,000		
Contingencies (5% of Subtotal Cost)	<u>\$17,250</u>		
Total Study Cost	\$362,250		

Amelia Earhart Dam Study Meeting

MDC Building, 20 Somerset St. 7th Floor Boston

Thursday, May 9th, 2002

10:30 AM – 12:00 Noon

Proposed Draft Agenda:

1. Introduction by Samantha Overton, MDC
2. Earhart Dam project presentation by Christopher Hatfield, USACOE
3. IWRC Comments by Kwabena Kyei-Aboagye/Karl Pastore
4. Issues and Concerns by the MDC
5. Discussion

~~HP~~

Ⓢ

Amelia Eberhart Dam

Name	org	phone/e-mail
Jamie Jucker	MDC	2275-267 rt66
Ginny Lombardo	EPA	617 3817711 x10
Karl Pastore	MW1	Karl.Pastore@state.ma.us 617 626-1243
JOHN WINKELMAN	CORPS	978-318-8615 JOHN.H.WINKELMAN@USACO.ARMY
Chris Hatfield	USACE	978-318-2520 Christopher.Hatfield@usace.army.mil
Nick Winter	MDC	617-727-0488 Nick.Winter@state.ma.us
GRACE PEREZ	Mystic R. Watershed Assoc.	781-316-3438, gperez@earthlink.net
Kwabang Kyeremeh	EOEA	(617) 626-1165
Stephen Winston	MVDC	617-381-7711 x102

Project # 4 STUDY OF THE AMELIA EARHART DAM

The Mystic Valley Development Commission (MVDC) is a public body politic and corporate made up of members from the 3 participating cities: Malden, Medford and Everett. MVDC is in the process of redeveloping a 200-acre parcel in Malden, Medford and Everett, referred to as the Telecom City Project. The Malden River runs through the middle of the Telecom City project area. A vital component of the TeleCom City project is the creation of the Malden Park along the banks of the river, which will be opened for public use and enjoyment, and the restoration of the Malden River. In conjunction with the Telecom City project, there has been extensive study of the Malden River. Study has shown that the Malden River is currently an unhealthy river ecosystem. The river sediments are contaminated; the water quality is poor and lacks the necessary dissolved oxygen to support abundant and diverse aquatic life; the wetlands along the riverbanks are dominated by the invasive wetlands species *Phragmites australis*, which has limited value to wildlife and effectively crowds out other species; and, also, the abundance and diversity of wildlife is limited. There are many factors contributing to the current degraded condition of the Malden River, most noteworthy being the historical industrial activities that led to the contamination of the river.

The Mystic River Watershed Association (MRWA) is a community-based, private nonprofit organization established to protect the Mystic River watershed. In conjunction with the mission of the MRWA, there has been extensive study of the Mystic River watershed. Study has shown that the lower Mystic River is also currently an unhealthy river ecosystem.

One of the main factors contributing to the poor quality of both the Lower Mystic River and the Malden River is the Amelia Earhart Dam, which was constructed in the 1960's, and which is operated by the Metropolitan District Commission (MDC). The dam is immediately downstream of the confluence of the Malden and Mystic Rivers and was installed for flood control. The dam ended the daily tidal flushing of the rivers, and, as a result, the rivers have essentially become a lake or stagnant. The water column is now stratified with low dissolved oxygen that inhibits a diverse river ecosystem.

Deliverables: This project would involve studying the operations of the dam and how the operations affect the rivers. The purpose of this study would be to determine whether the dam could be modeled as a way of identifying different operating procedures that could result in a positive effect on the rivers. The study would consist of the following tasks:

- Review current operational procedures and the basis for these procedures;
- Review any existing studies of the effects of the dam on the rivers;
- Identify limiting factors to operational changes (i.e., mechanical limitations of existing system, flood control restrictions, marina needs);
- Identify data necessary to model the dam, review existing data, and identify data gaps;
- Determine if reintroducing tidal flow to the rivers would be viable and if positive effects would result, including references to other similar systems where tidal flows were reintroduced;
- Evaluate environmental and economic pros and cons of changing the operations of the dam;
- Recommend whether it would be worthwhile to fund a study to model the dam in order to define operational changes to positively influence the rivers.

Duration: 2003-2004

Estimated Cost: \$10,000

Environmental Agency: Metropolitan District Commission, EOEA-MWI

Potential Partners: Army Corps of Engineers, EPA, City of Malden, City of Medford, City of Everett, Tufts, Malden River Park Task Force

Project 4 Amelia Earhart Dam Study MDC must be willing to develop scope and manage project. BH Watershed staff will go back and discuss with MDC/IWRC rep. to become more involved in scope development and project implementation and be co-lead with USACE. (There is still an issue as to whether MDC will accept lead. If MDC does not accept lead, project is dropped. ed.)

CIF

United States
Environmental
Protection Agency
Washington, D.C. 20460

Solid Waste
and Emergency
Response (5101)

EPA 500-F-98-136
May 1998



Brownfields Assessment Demonstration Pilot

Malden, Medford, Everett, MA

Outreach and Special Projects Staff (5101)

Quick Reference Fact Sheet

EPA's Brownfields Economic Redevelopment Initiative is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse brownfields. A brownfield is a site, or portion thereof, that has actual or perceived contamination and an active potential for redevelopment or reuse. Since 1995, EPA has funded more than 150 Brownfields Assessment Demonstration Pilots, at up to \$200,000 each, to support creative two-year explorations and demonstrations of brownfields solutions. The Pilots are intended to provide EPA, states, tribes, municipalities, and communities with useful information and strategies as they continue to seek new methods to promote a unified approach to site assessment, environmental cleanup, and redevelopment.

PILOT SNAPSHOT

Date of Announcement: May 1998

Amount: \$200,000

Profile: The Pilot targets 200 acres of blighted industrial land for redevelopment into a state-of-the-art telecommunications research and development park.

BACKGROUND

EPA has selected the Cities of Malden, Medford, and Everett as a Brownfields Pilot. The three communities are located in an urbanized area five miles north of Boston. The area's manufacturing and industrial activities historically centered around the Malden River and abutting railroads. In recent years, manufacturing has declined in Malden by 13%, Everett by 61%, and Medford by 79%. Each community has a lower per capita income than the state average, and the average poverty rate in the project area is 9.1%.

The three cities have joined together on a project to construct a state-of-the-art telecommunications research and development park, called TeleCom City. The 200-acre area consists of blighted industrial land that once supported power generation and chemical production facilities. The stagnant area is at the fringe of each community, with no public access to the river. Perceived and real contamination hinders economic redevelopment of the area. More than 70% of the site is vacant or used for parking or open storage. The TeleCom City project is overseen by the Mystic Valley Development Commission (MVDC), a tri-city legislative body established by the Commonwealth of Massachusetts and approved by the three cities. Funding support of over \$1 million has been granted by Massachusetts, with an additional \$30 million committed to this project by the state.

OBJECTIVES

Pilot funds will be used to help prepare the project area for cleanup and redevelopment activities by developing a comprehensive environmental database that will make overall assessment less costly than a parcel-by-parcel approach. The overall objective of the TeleCom City project is to convert 200 acres of underused, blighted industrial land into a telecommunications center that will advance the local and regional economies. To overcome fragmented ownership and

liability constraints, the MVDC will obtain ownership control over the project area and establish a consistent set of zoning controls, which will allow for comprehensive environmental testing of the area without the constraints of parcel boundaries. In addition, significant public recreational activities and green space will be provided for the three communities and the general public through reclamation of the environmentally distressed Malden River area.

ACCOMPLISHMENTS AND ACTIVITIES

Activities planned as part of this Pilot include:

- Updating the existing environmental database in Malden;
- Assessing the Malden River Riparian Corridor in Medford and Everett;
- Preparing initial site assessments in Medford and Everett;
- Assessing the abandoned General Electric and Duncan Galvanizing portions of the project area sites; and
- Assessing the road reconstruction area along the western border of the proposed TeleCom City.

The cooperative agreement for this Pilot has not yet been negotiated; therefore, activities described in this fact sheet are subject to change.

CONTACTS

Mystic Valley Development Commission
(617) 381-7711

Regional Brownfields Team
U.S. EPA - Region 1
(617) 573-9681

Visit the EPA Region 1 Brownfields web site at:

<http://www.epa.gov/region01/remed/brnfld/>

For further information, including specific Pilot contacts, additional Pilot information, brownfields news and events, and publications and links, visit the EPA Brownfields web site at:

<http://www.epa.gov/brownfields/>

*Brownfields Assessment Demonstration Pilot
May 1998*

*Malden, Medford, Everett, MA
EPA 500-F-98-136*

PILOT PROPOSAL NOMINATION

2. Pilot Proposal Information

a. **Project Title** Lower Mystic River Watershed (Massachusetts)

b. **Location:** Target area for proposed project is the lower sub-basin of the Mystic River and its tributaries including the Malden River, Island End River, Little Mystic River, Mill Creek and Chelsea Creek. This section of the watershed includes the communities of East Boston, Malden, Somerville, Medford, Chelsea, Everett, Revere, and Charlestown (Suffolk County, MA).

c. **Federal/State Designations:** The Lower Mystic River and its tributaries are located within an EPA designated National Estuary Program (NEP), the Massachusetts Bays Program. There are three Massachusetts Designated Port Areas (DPA) located in the project area: Mystic River, Chelsea Creek, and East Boston DPAs. The water bodies are on the 303d list, and there are many sites along the Aberjona River that are on the National Priorities List. Belle Isle Marsh is a designated Area of Critical Environmental Concern (ACEC). The Malden River is in the Mystic Valley Development Commission's (MVDC) Brownfields redevelopment project which is a National Brownfields Showcase Community.

d. **Pilot Study Area Population:** The Mystic River watershed is located in eastern Massachusetts and covers a 76 square mile area that is home to over 400,000 people in 21 cities. The lower sub-basin of the Mystic River and its tributaries is home to over 153,000 people

e. **Project Contact:** Myra Schwartz, Brownfields Project Mgr.
EPA New England, OSRR
1 Congress Street, Suite 1100 (HIO)
Boston, MA 02114-2023
617-918-1696 (phone)
E-MAIL: schwartz.myra@epa.gov

Kwabena Kyei-Aboagye, Jr., Regional Planner
Executive Office of Environmental Affairs
251 Causeway Street, Suite 900
Boston, MA 02114
617-626-1165 (phone) 617-626-1181 (fax)
E-MAIL: Kwabena.Kyei-Aboagye@state.ma.us

Christopher Hatfield
U.S. Army Corps of Engineers
New England District
696 Virginia Road
Concord, MA 01742
Phone (978) 318-8520, email: Christopher.Hatfield@usace.army.mil
Fax: (978) 318-8080

f. **Authorization and Funding**

The Corps and the Mystic Valley Development Commission (MVDC) have just initiated a congressionally authorized feasibility study of ecosystem restoration opportunities along the Malden River. The study is cost shared equally between the Corps and the MVDC. The study is a spin-off effort of the congressional authorization to conduct a larger investigation of ecosystem restoration opportunities in the Massachusetts and Cape Cod Bay estuaries.

The area receives annual resources as part of the Massachusetts Watershed Initiative (MWI) through the EOE. MWI focuses resources and staff time to projects that improve water quality, wildlife habitat, protect public health, decrease erosion, restore and protect sediment and soil quality and promote safe use of natural resources.

EOEA has partnered with USGS to initiate a study and mapping project for sediment in the upper Mystic River. There are many active EPA grants including: EMPACT grant to the City of Somerville to do real-time water quality monitoring; and a grant to Tufts University to do a Nutrient Loading Study in the upper and lower basins. Over the past five years, the area has received an additional \$280,000 in grants from EPA New England and leveraged additional resources through various sources. The MVDC has also been awarded Brownfields Assessment Pilot funding and utilized this funding for extensive water quality and sediment quality analysis in the Malden River.

3. Criteria

a. Collaboration

The vision of this Pilot Project to remediate and restore contamination and to provide habitat restoration in the Lower Mystic River watershed is a collaboration of EPA New England, the Army Corps of Engineers and the Executive Office of Environmental Affairs' (EOEA) Massachusetts Watershed Initiative. This joint proposal also has the enthusiastic support of the Mystic Valley Development Commission, Massachusetts Coastal Zone Management, the Urban Ecology Institute, City of Chelsea, Tufts University, and the Mystic River Watershed Association.

The Massachusetts EOEA launched the Massachusetts Watershed Initiative (MWI) in December 1993 as a focal point of environmental, business, municipal and government interests. The MWI integrates state environmental programs activities with the federal and local governments, non-governmental organizations, business and other watershed partner projects. The Mystic Watershed Team (brochure enclosed) is a multi-disciplinary group of partners that work together to provide comprehensive watershed protection and is ideally suited to spearhead the EPA/ACOE Pilot Project in the Lower Mystic.

The Mystic Valley Development Commission (MVDC) is a collaboration with Medford, Malden and Everett and is working to redevelopment a 207-acre Brownfields site which includes a large portion of the Malden River. As a result of Showcase Community designation, the MVDC works with the Corps, as one of the federal agency Brownfields partners, on an effort to restore the Malden River. Through this collaboration, the Malden River has been listed in the Coastal Massachusetts Ecosystem Restoration Reconnaissance Report (June 2001). Since the completion of the report, the MVDC has worked with the Corps to initiate an ecosystem restoration feasibility study for the Malden River. That study was initiated in November 2002.

The Mystic River Watershed Association (MyRWA) is a community-based private nonprofit organization formed in the 1970s to protect and improve the quality of the Mystic River and the other water resources in its watershed. Tufts University was founded in 1852, dedicated to productive community partnerships that combine university resources with local needs. The Urban Ecology Institute (UEI) is located at Boston College and runs two model programs: the Urban Ecology Field Studies Program and the Natural Cities program. Both programs engage youth, residents and experts to assess, evaluate, and enhance the health of the Lower Mystic watershed, including forest and riparian corridors.

b. Public Health and Environmental Impacts

The Lower Mystic watershed (drained by Chelsea Creek, Mill Creek, and Malden River) is the most polluted tributary feeding into the Boston Harbor. Chelsea Creek is ranked by EPA as the second most polluted water body in the state. The project areas targeted in this proposal address the most significant environment and public health impacts in the Lower Mystic watershed. Development started in the 1600s and the Lower Mystic now includes many industrial facilities that release hazardous chemicals to soils, groundwater, and surface waters. The Mystic River, Chelsea Creek and neighborhoods of East Boston and Chelsea are part of a Designated Port Area (DPA), which must be preserved for industrial, water-dependant uses. In June 2000, Chelsea Creek was the site of a 58,000-gallon oil spill, the largest in Boston Harbor's history.

East Boston and Chelsea have 398 state-designated hazardous waste sites; five major oil tank farms; the largest rock salt pile in the Northeast, a tannery; airport-related parking; more than 90 freight forwarding companies; and air and noise pollution from the Tobin Bridge, Logan Airport, Route 1A, and heavy truck and residential traffic. Two National Priority List (NPL) Superfund Sites are located on the Aberjona River that are upstream of the Lower Mystic River Watershed (Wells G&H and Industri-Plex). Should the need for remedial action be identified, the CERCLA cleanup would eliminate these Sites as sources of ongoing contamination to the river or larger watershed.

There are also several hundred state-identified hazardous waste disposal sites, and numerous vacant industrial properties in the Lower Mystic watershed. Pollution from industry in the lower watershed threatens air quality, water quality, sediment quality, and recreation.

The area also contains Combined Sewer Overflows (CSOs), that degrade water quality by discharging untreated sewage into the Mystic River during storm events. The large amount of organic matter and stratification in the rivers creates low dissolved oxygen levels, high turbidity, and high quantities of pathogenic bacteria. Elevated concentrations of pollutants in river sediment affects benthic organisms, water quality, estuarine life, and human recreational use. The water quality in local urban rivers is poor and lacks the necessary dissolved oxygen to support abundant and diverse aquatic life; the wetlands along the riverbanks are suffering from the invasive wetlands species *Phragmites australis*, which has limited value to wildlife and effectively crowds out other species; and the abundance and diversity of wildlife is limited.

Recent studies have further verified the extent of environmental impacts in the watershed and on public health. A study conducted by EPA New England estimates that more than one million gallons of oil (emergency spills and releases) contaminates the groundwater flowing out to Chelsea Creek. A June 2000 report names Chelsea and East Boston as respectively the third and fifth "most environmentally overburdened cities in Massachusetts". Results from a community-based comparative risk assessment verified that local residents have high rates of asthma, elevated blood lead levels, respiratory and/or cardiopulmonary disease, cancer, and other diseases. Local residents are also deprived of the environmental and public health benefits from open and green space and have either poor or no access to local parks and the natural environment.

For decades, much of the Lower Mystic basin was virtually inaccessible to the public. As such, the contamination and potential risks associated with the river were ignored. However, contamination must be addressed, and can no longer be ignored, because the projects proposed herein and other planned projects in the watershed will bring the public to the waterfront and afford them access which had historically been denied. The potential risks associated with public access and potential direct contact exposures must be analyzed and addressed. The projects proposed will help address these environmental problems and help reverse a trend of environmental injustices that residents have borne.

c. Community Needs

The communities in the Lower Mystic watershed include Chelsea, East Boston, Revere, Charlestown, Malden, Everett, Somerville and Medford. All of these communities are identified as potential EPA Environmental Justice communities that are disproportionately affected by environmental impacts. The target communities that will be served by this proposal are densely developed. Chelsea is 1.8 square miles with a population of approximately 37,000. Neighborhood population density is 2-3 times the statewide average.

Lower Mystic communities have a disproportionately low percentage of open and green space compared to other Massachusetts communities and have little to no safe, public access to the waterfront. The Lower Mystic communities are organized and working to solve these problems. There are only two public access points on Chelsea Creek - a broken bench behind a gas station and a tiny cement walkway behind an airport parking lot. The Lower Mystic River and Chelsea Creek also serve as the focal point in Boston Harbor for extensive commerce and national security interests. Safe, reliable and efficient waterborne transportation is essential to the area's economic vitality. The community has openly expressed their desire to pursue options regarding sustainable reuse of the Chelsea Creek DPA. Local businesses continue to use Chelsea Creek area as dumping grounds.

Based on input from Lower Mystic communities, the pilot proposal has identified the following community needs:

- Continue stream flow assessment and resolve flood control issues in the Mystic River watershed.
- Evaluate current land-use and opportunities for smart redevelopment within the lower watershed.
- Restore sensitive habitat areas by managing dams, remediate contaminated sediments, restore wetlands, and control invasive species of aquatic plants.
- Protect public health and promote safe, public access to urban rivers.
- Improve water quality by reducing CSOs, fecal coliform and nutrient levels.

d. Redevelopment/Future Uses

The projects highlighted under this proposal in the Mystic River and its lower tributaries build upon current community-based comprehensive planning and site restoration efforts. The MVDC is pursuing the redevelopment of a 207-acre Brownfields site along the Malden River in the Cities of Malden, Medford and Everett. This master-planned development, TeleCom City, is being pursued as a public-private partnership that will include over 1.4M square feet of office, research & development and manufacturing space and approximately 60 acres of public open space, the Malden River park. The Malden River Park will include a river-side trail, river overlooks and a canoe launch. The restoration and remediation of the Malden River are critical to the success of the overall project and to the protection of public health. This river has had a significant history of industrial use by a long line of public and private entities. This fact, combined with current non-point source conditions creates an impossible structure for pursuing private entities for cleanup. The planned feasibility study and this pilot proposal, will help restore and revitalize the Malden River and allow it to be restored for the use and enjoyment of the communities.

The Chelsea Creek Action Group and Chelsea Green Space Alliance have spent the last several years creating a community vision for the future of the Chelsea Creek, including tributaries such as the Mill Creek. This process engaged hundreds of residents and created redevelopment plans for targeted parcels for the transformation of industrial and abandoned properties into community resources including parks, open/green space, mixed-use development, affordable housing, and other needs. This project will also service a community that is less able to draw on other sources of funding, due to lack of formal federal designations prior to this Pilot Project and no targeted Congressional appropriations for environmental remediation and subsequent redevelopment of the area.

The City of Everett is in the process of conducting a waterfront assessment that will assist with their decision-making process regarding the reuse/redevelopment of their waterfront. The collection of water quality data from the Mystic River will assist the community in preparing a waterfront plan that will appropriately reserve or develop waterfront areas for public use and enjoyment. In addition, the water column sampling and analysis will provide the City with useful information regarding possible point sources and non-point sources of contamination from their waterfront industrial areas.

e. Economic Revitalization

See discussion above regarding future reuse of the surrounding property.

f. Anticipated Measures of Success

With the appropriate dedication of resources and the EPA/ACOE Pilot Project designation, this work in the Lower Mystic will achieve a variety of measurable environmental and economic results. Projects in the Lower Mystic River watershed will result in increased data and information on water and sediment quality, increases in open/green space for residents in some communities, increased public access to the waterfront, reduced risks from contaminated sediments, partial restoration of water quality and riparian zones, the revitalization of contaminated properties, and the maintenance of this navigable port resource.

For example, the Mill Creek Restoration Project is a collaborative, community-based effort to restore biological value to badly degraded estuarine wetlands in metropolitan Boston. Tracking the number of acres of wetlands, riparian zones, and open/green space that are preserved or created and assessing the presence of wildlife (autonomous fish, birds) is planned.

As another example, the sediment remediation study will produce the maps, volume estimates, and characterization necessary for the remediation of contaminated sediments, the most intractable environmental problem in this watershed. This study will help assess sediment quality, create high-precision bathymetry maps of the Lower Mystic, and serve as a baseline for measuring current conditions and serve as a foundation for measuring progress on future sediment restoration projects.

This pilot will compliment existing projects and will provide the following critical data for the Lower Mystic:

- Baseline information on contaminated sediment concentrations and volumes
- Sediment assessment in light of toxicity guidelines, and national USGS NAQWA data sets for urban rivers.

- Assessment of differences between historically dredged and non-dredged areas.
- Spatial variability in concentrations.
- Temporal variability (to help assess the effects of 150 years of industrial activity, and the effectiveness of 30 years of environmental controls on the quality of the Mystic River bottom sediment).
- Biota measurements.

The MVDC utilized funding from its Brownfields Assessment Pilot to assess the water and sediment quality of the Malden River. The surface water and sediment sampling program performed will serve as the baseline and framework for the Malden River Ecosystem Restoration Feasibility Study. The sampling program demonstrated the presence of elevated levels of contaminants, PAHs, petroleum hydrocarbons and heavy metal compounds. The water column is stratified with low dissolved oxygen concentrations, and next steps are being identified.

**ENVIRONMENTAL LAW
MYSTIC RIVER WATERSHED ASSOCIATION PROJECT
PROJECT # 1, CSOs AND THE VARIANCE**

Team Members:
Marilyn McCrory
Keren Prize

December 4, 2002

Our team studied issues surrounding combined sewer overflows in the Mystic River watershed. One goal of the Mystic River Watershed Association (MyRWA) is to achieve a level of water quality in the Mystic River watershed that will allow the waters to be classified as “fishable and swimmable” by 2010. However, water quality is severely compromised by combined sewer overflows (CSOs).

Control of CSOs has been described as “sticky” and “complicated” by nearly everyone our team talked to, from local residents to state and federal regulators. The complications mainly come from balancing the costs and benefits of eliminating CSOs. The only way to eliminate CSO discharges is to separate the combined sewers so that all sanitary discharges go to the wastewater treatment plant and only stormwater discharges are released through the pipe. Unfortunately, sewer separation is very costly. The laws and regulations allow cost and affordability to be considered in determining the best approach to achieving water quality standards. Massachusetts regulators have built “flexibility” into the regulations, allowing CSO permit holders to not eliminate CSOs if it can be proven that doing so would cause “widespread social and economic harm.” The vagueness of these terms is one reason that this issue is “sticky” and “complicated.”

This memo describes CSOs and explains why they are a problem; reviews federal and state laws and regulations relevant to CSO control; and reviews the history of CSO control in the Mystic River watershed. It concludes with our team’s recommendations on actions MyRWA can consider to meet its goals related to CSO control and water quality. This memo is organized as follows:

1. Combined Sewer Overflows: What They Are and Why They Are a Problem
2. MyRWA’s Goals Related to CSOs in the Mystic River Watershed
3. Relevant Laws and Regulations
4. History of CSO Control in the Mystic River Watershed
5. Current Status of CSO Cleanup in the Mystic River Watershed
6. Key Issues and the Final Decision Process
7. Recommendations

1. COMBINED SEWER OVERFLOWS: WHAT THEY ARE AND WHY THEY ARE A PROBLEM

A combined sewer is an antiquated type of sewer that is designed to carry both sanitary sewage and stormwater runoff. Under usual conditions, when the sewer is able to contain all of the sewage and runoff, it is all taken to a wastewater treatment plant (WWTP) and safely discharged after receiving treatment. When rainfall and/or melting snow is heavy enough to exceed the carrying capacity of the sewer system, both the precipitation and the sewage are discharged to a receiving body of water rather than to the WWTP.

The term CSO stands for combined sewer overflow and refers to both the combined sewer overflow structure and the discharge from the structure. CSOs are meant to be used in emergency situations, and they are helpful in preventing sewage from backing up into homes and onto the street. However, increased amounts of sewage in water bodies may cause severe contamination, and preventive measures must be taken as the growing population imposes additional strains on the system.

1.1 Why are CSOs a problem?

From a recreational perspective, sewage makes swimming and fishing in the Mystic Watershed dangerous as well as unpleasant. Sewage overflow results in wastewater floatables such as condoms, toilet paper, and tampons floating in the waterways.

Obvious harms result from sewage pollution in waterways. Untreated human sewage is associated with bacteria, viruses, and excess nutrients. Nutrients, such as nitrogen and phosphorus, nourish algae, making their populations skyrocket and creating algal blooms in the receiving water. After the mass amount of algae die, an enormous amount of dissolved oxygen (DO) is used in their decay. Decomposing organisms consume much of the existing oxygen as well breaking down the sewage. This oxygen is therefore not available to fish and other animals, which may die if they do not have a certain amount of DO. This process of nutrient richness is called eutrophication, and it causes the water to have a pea-soup green color and bad odor in addition to killing off the wildlife. The limit for dissolved oxygen concentrations for most cold-water fish is 6 mg/L. The Alewife/Mystic River Advocates reported that DO fell below 5.0 mg/L in 9 of the 49 samples collected. The Massachusetts Water Resources Authority, USGS, and MyWRA measured DO levels as low as 2 mg/L.

Through extensive sampling, the Mystic Monitoring Network¹ observed the results shown in **Table 1**. Untreated sewage accounts for many sites exceeding maximum standards for fecal coliform, total suspended solids, nutrients, and DO, as reflected in Table 1. All of these are important indicators that sewage contamination is particularly bad in a certain area.

Fecal coliform is a fetid bacteria that is found in excrement and can also be used as an indicator of the incidence of disease-causing organisms. Coliform violates criteria by the highest percentage in the Somerville/Arlington location; Somerville is the only town on the table that is known to own CSOs, and Arlington is suspected to have them. This is no coincidence. The large loading of bacteria is especially bad in wide areas where the water slows down. As the particulate matter settles, the sediments are contaminated with fecal bacteria that can stay suspended for weeks up to months.

Total suspended solids (TSS) make water dirty and cloudy with a combination of silts and organic waste particles that are smaller than grains of sand. TSS amounts are reduced by over 85% when sewage water is treated.

Table 1. Percent of All Samples Deviating from Established Criteria by Site

Site	Site Description	Town	Fecal Coliform	TSS	Nitrate	Total Phos.	DO mg/L	DO %
ABR049	Aberjona @ Salem St.	Woburn	55	0	83	11	26	47
ABR028	Aberjona @ Washington St.	Winchester	45	0	100	0	0	5
ABR006	Aberjona @ USGS station	Winchester	40	0	100	58	0	21
UPL001	Upper Mystic Lake @ Mystic Lakes Dam	Medford	0	0	0	47	0	0
MIB001	Mill Brook @ Mt. Pleasant Cemetery	Arlington	75	10	50	84	0	10
MYR071	Mystic River @High St. Bridge	Arlington	10	0	0	0	0	0
WIB001	Winn Brook, outlet to Little Pond	Belmont	65	0	33	88	0	0
ALB006	Alewife Brook @ Broadway	Arlington/Somerville	85	10	0	63	25	47
MEB001	Meetinghouse Brook, outlet into Mystic River	Medford	45	10	100	11	0	0
MAR036	Malden River @ Medford St.	Malden	42	5	0	24	0	21

The main obstacle to dealing with CSOs is that they are very expensive to fix and there is little state or federal funding. In addition, agencies that have some authority are not uniformly responsive to public concerns about environmental quality. In general, the MWRA is responsible for regional sewer system and long-term CSO control planning. The cities are accountable for taking care of illegal sewage discharges in their municipalities.

Finally, there is very little exact data on the amount of bacteria from CSO and storm drain discharges, and every entity has its own opinion on how much there is and where it is coming from. Some residents feel that there is much more sewage coming from both CSOs and drainpipes than the MWRA acknowledges, and that even more CSOs are active than speculated. There is even controversy about the distinction between which outlets are CSOs and which are drainpipes.

1.2 Where Are CSOs Located?

The MWRA sampling stations and CSOs located in the Mystic Watershed are shown on the map in **Figure 1** (at the end of this document).ⁱⁱ

1.3 Who is responsible for the CSOs?

The CSOs shown on Figure 1 are operated by several authorities:

- The Massachusetts Water Resources Authority (MWRA)
- City of Cambridge
- City of Somerville
- City of Chelsea

Other communities affected include Arlington, Belmont, Everett, and East Boston. Alewife Brook seems to have the most problems, and it receives waste in water dumped from Cambridge, Somerville, Arlington, and Belmont. Various people we talked to speculate that the last two have illegal sewage connections and possibly even CSOs that are classified as storm drains. Cambridge has done the most to eliminate CSOs, and actually has plans to build a detention basin. This will slow down water from the areas that will have their CSOs separated, mainly to prevent flooding.

The municipalities are ultimately responsible for sewage contamination from CSOs and storm drains. However, they do receive support from the MWRA, which receives fees from 44 communities.

Table 2ⁱⁱⁱ illustrates the various actions that are required to be taken and who is responsible.

A. Actions to Minimize CSO/Sanitary Discharges	Responsible Party
Implement Nine Minimum Controls	
Provide estimates of AB/UMR CSO activation's and volumes over the Variance period	MWRA, Cambridge, Somerville
Reevaluate possibility of additional infiltration/inflow controls at key locations	MWRA, Cambridge, Somerville
Identify opportunities for additional SOP measures in	MWRA
local combined systems and assess likely water quality benefits	Cambridge, Somerville (MWRA)
(For AB/UMR sewer member communities) Provide MWRA BMP plan, GIS sewer system mapping, technical assistance as requested, and review community stormwater management plan to identify opportunities for enhanced pollution prevention, if requested.	MWRA
B. Actions to Further Assess CSO/Stormwater Pollutant Loads	
Receiving water sampling for AB/UMR over the Variance period to assess impacts of CSO discharges; submit report annually with results	MWRA
Stormwater sampling at representative stormdrain locations to allow for determinations of stormwater loadings	MWRA, Cambridge, Somerville
C. Assessment of CSO Controls in the Alewife/Upper Mystic Basin	
Prepare and file final report summarizing and assessing information gathered during Variance process	MWRA
Identify "triggers" appropriate for basis to determine when additional CSO controls would yield greater benefits for respective costs	MWRA (with EPA and DEP)

The MWRA is responsible for most actions, while the cities and towns are responsible for more local undertakings, such as implementation and sampling.

2. MYRWA'S GOALS RELATED TO CSOS IN THE MYSTIC RIVER WATERSHED

The goal of the Mystic River Watershed Collaborative is to achieve and maintain a "Class B" level of water quality in the Mystic River and its tributaries by 2010. Class B status will allow the waters to be considered "fishable and swimmable." Water quality classifications are described below under state regulations.

To attain Class B status, all CSO discharges must be eliminated. According to Grace Perez, MyRWA's specific goal is to gain a commitment from the Massachusetts DEP and the Massachusetts Water Resources Authority to eliminate CSO discharges into the Mystic River watershed. Without eliminating CSO discharges, the waters – because they could contain raw sewage, even if only 5% of the time – will never achieve "fishable, swimmable" status.

MyRWA recognizes that eliminating CSOs is expensive, and therefore, that the time horizon for achieving this goal may be long. What MyRWA wants, in the short term, is a firm, public commitment from MWRA to eliminating all CSO discharges. Furthermore, MyRWA believes that DEP support, in the form of an appropriate water quality classification for the Mystic River, is critical to obtaining this commitment. MyRWA believes that if the state downgrades the water quality classification to "Class B_{CSO}," then MWRA will no longer have an incentive to remove CSOs.

3. RELEVANT LAWS AND REGULATIONS

This section provides an overview of the relevant federal and state laws and regulations.

3.1 Federal Laws and Regulations

The key **federal law** that covers combined sewer overflows is the Clean Water Act (33 USC §§1251 – 1387). The objective of the CWA is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."^{iv} The goals of the CWA include the following:

- 1) Eliminate the discharge of pollutants into the navigable waters by 1985
- 2) Achieve an interim water quality goal that "provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water" by July 1, 1983
- 7) Develop and implement programs for the control of nonpoint sources of pollution

Key sections of the CWA that are relevant to CSOs include the following:

- §1251 Congressional declaration of goals and policy
- §1274 Wet-weather watershed pilot projects – authorizes technical assistance and grants to carry out pilot projects related to wet-weather discharge control
- §1301 Sewer overflow control grants
- §1342 National Pollutant Discharge Elimination System – authorizes EPA and the states to issue permits for pollutant discharges
 - §1342(q) Combined sewer overflows (enacted December 2000) – permits for CSO discharges shall conform to EPA's CSO Control Policy of April 11, 1994

- §1311 – Effluent limitations – requires application of the best available technology economically achievable
 - (e) – applies effluent limitations to all point source discharges
 - (m) – modification of effluent limitation requirements for point sources
- §1312 Water quality-related effluent limitations – allows establishment of effluent limitations based on water quality
- §1313 Water quality standards and implementation plans – part (c) requires states to hold public hearings to review water quality standards every three years
- §1314 Information and guidelines – authorizes EPA to establish water quality criteria and regulations on effluent limitations
- §1329 Nonpoint source management programs
- §1316 National standards of performance
- §1342(p) Municipal and industrial stormwater discharges
- §1365 Citizen suits

The act regulates all point-source discharges of pollutants, that is, pollutants discharged from pipes. Point-source discharges are regulated through the National Pollutant Discharge Elimination System (NPDES). The act gives authority to the states to implement the NPDES permit program and to set water quality standards.

The act also encourages public participation in the development, revision, and enforcement of the regulations (§1251(e)). Finally, the act allows citizen suits.

The 2000 amendments to the Clean Water Act added Section 402(q), Combined Sewer Overflows.^v Combined sewer overflows are defined as point-source discharges and are thus covered under the Clean Water Act: “As point sources, CSOs are subject to the technology- and water quality-based requirements of the CWA. They are not, however, subject to the secondary treatment standards that apply to POTWs.”^{vi}

Federal **regulations** related to the CWA are promulgated by the U.S. Environmental Protection Agency in the Code of Federal Regulations, Title 40, Protection of Environment. Chapter I, Parts 100 – 149 contains regulations related to water programs. Some key parts relevant to CSOs include the following:

- NPDES permit program (40 CFR Part 122)
- State program requirements (40 CFR Part 123)
- Criteria and standards for the NPDES permit program (40 CFR Part 125)
- Water quality planning and management (40 CFR Part 130)
- Water quality standards and designation of uses (40 CFR Part 131)
- Prior notice of citizen suits (40 CFR Part 135)

The USEPA issued its *Combined Sewer Overflow Control Policy* in April 1994.^{vii} The policy establishes four principles to address concerns about cost and flexibility:^{viii}

- “1) providing clear levels of control...to meet appropriate health and environmental objectives;
- 2) providing sufficient flexibility to municipalities, especially financially disadvantaged communities, to consider the site-specific nature of CSOs and to determine the most cost-effective means of reducing pollutants and meeting CWA objectives and requirements;

- 3) allowing a phased approach to implementation of CSO controls considering a community's financial capability; and
- 4) review and revision, as appropriate, of water quality standards and their implementation procedures when developing CSO control plans to reflect the site-specific wet weather impacts of CSOs."

The policy requires CSO permit holders to:

- characterize their sewer systems
- implement nine minimum CSO controls
- develop a long-term CSO control plan

The nine minimum controls are presented in section II.B of the policy:

1. Proper operation and regular maintenance programs for the sewer system and the CSOs;
2. Maximum use of the collection system for storage;
3. Review and modification of pretreatment requirements to assure CSO impacts are minimized;
4. Maximization of flow to the POTW for treatment;
5. Prohibition of CSOs during dry weather;
6. Control of solid and floatable materials in CSOs;
7. Pollution prevention;
8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and
9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.

In Massachusetts, the state sets water quality standards based on the CWA. These standards include uses of water bodies, such as uses for drinking water, primary contact recreation (swimming), boating, and fishing, among others. Guidelines to the states in designating uses are set forth in 40 CFR §131.10. These regulations give states the authority to establish subcategories of uses if the state can demonstrate that it is not feasible to attain the designated use.

However, the EPA policy states that, before a state can remove a designated use, it must conduct a **use attainability analysis**. This analysis determines whether a designated use can be achieved if CSO controls are implemented:

Furthermore, a State may not remove a designated use that will be attained by implementing the technology-based effluent limits required under Sections 301 (b) and 306 of the CWA and by implementing cost-effective and reasonable best management practices for nonpoint source controls. Thus, if a State has a reasonable basis to determine that the current designated use could be attained after implementation of the technology-based controls of the CWA, then the use could not be removed.^{ix}

The significance of the use attainability analysis is discussed further below under state regulations.

Our team calls MyRWA's attention to the following aspects of the national CSO control policy, since they may provide some options for further actions:

- Dry-weather discharges from CSOs are absolutely prohibited.^x
- The policy allows a phased approach to implementing CSO controls.
- Sensitive areas: the long-term CSO control plan must provide controls for overflows to sensitive areas, which include waters with threatened or endangered species and their habitats.

3.2 State Laws and Regulations

The Massachusetts Department of Environmental Protection is the state agency responsible for implementing and enforcing the Clean Water Act. Relevant state laws, regulations, and policies are:

- Massachusetts Clean Waters Act (MGL c. 21, §§26 – 53)
- Massachusetts Environmental Policy Act (MGL c. 30)
- 314 CMR 3.00 – surface water discharge permits
- 314 CMR 4.00 – Massachusetts surface water quality standards
- 310 CMR 41 – funding mechanisms
- Massachusetts Combined Sewer Overflow Policy.^{xi}

The Massachusetts CSO policy has not been put into regulations (and was not intended to be).^{xii} The Massachusetts policy reiterates EPA policy on implementing the nine minimum controls. All NPDES permit holders for CSOs must implement the nine minimum controls. However, complete elimination of CSOs is not necessarily required.

DEP currently provides the following classification options for water bodies:

Class A	designated uses of the water body include sources of public water supply; no CSO discharges are allowed
Class SA	similar for marine waters
Class B	uses of the water body include habitat for fish, other aquatic life, and wildlife; primary and secondary contact recreation; and public water supply in some cases; suitable for irrigation; no CSO discharges are allowed
Class SB	similar for marine waters
Class B _{CSO}	CSO controls allow the water body to meet Class B use standards at least 95% of the time
Class SB _{CSO}	similar for marine waters
Class C	uses of the water body include habitat for fish, other aquatic life, and wildlife; and secondary contact recreation
Class SC	similar for marine waters

A variance option is also allowed for a specified period of time if insufficient information is available to determine whether or not the use standards can be attained. A variance does not permanently change the water body’s designated uses. “A variance allows CSO discharges to be in compliance with ‘modified’ water quality standards in the NPDES permit while additional analyses are conducted and progress is made toward meeting the existing standard.”^{xiii} The regulations (314 CMR 4.03(4)) allow the state to grant a variance if the applicant demonstrates one of six things. These include:

- (c) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place

- (f) Controls more stringent than those required by sections 310(b) and 306 of the Act would result in substantial and widespread economic and social impact.

Waters with CSOs in the Mystic River watershed (Alewife Brook, Upper Mystic River, Mystic/Chelsea confluence) are Class B waters, but currently fall in the variance category. However, the proposed water quality standard for these waters, as presented in the MWRA CSO Facilities Plan,^{xiv} is B_{CSO} or SB_{CSO} .^{xv}

4. HISTORY OF CSO CONTROL IN THE MYSTIC RIVER WATERSHED

The Massachusetts Water Resources Authority provides water and sewer service to Boston and many surrounding communities. Somerville, Boston, Cambridge, and Chelsea have combined sewer systems connecting to MWRA's sewer system. There are 84 CSO outlet pipes among them, but only 21 currently overflow. Combined rainwater and sewage overflow into Boston Harbor and the Charles, Mystic, and Neponset Rivers when the CSO structures cannot contain it.

The CSO Control Plan was created in 1994 as part of the Federal Court mandate related to the multibillion dollar Boston Harbor project. The MWRA was required to create a plan to reduce and potentially eliminate CSOs. The problem was that they really had no idea how much work this would require in the Mystic Watershed. Before the Clean Water Act, all storm drains were CSOs. Then, after the act was passed in 1970, many CSOs were simply reclassified as storm drains.^{xvi} In reality, not much testing was done to check on the status, and it is rare to find a clean storm drain (according to activist and Mystic kayaker, Roger Frymire). Therefore, as more research was done, the MWRA has had to continuously revise its plans as more and more problems were identified. For example, MWRA thought that Arlington and Belmont had separated sewers, when in fact they did not. In addition, MWRA found several illegal connections, where homes were discharging sewage directly into the waterways. In these cases, the cities pay to have the plumbing connected to sewage pipes.

The progression of the CSO problem in the Mystic watershed has been a long, complicated process that started with a \$12.1 million solution and is now projected to be in the \$200 million range. The 1997 Final CSO Facilities Plan required that the MWRA periodically re-examine, optimize, and expand its CSO Control Plan if new information is discovered during the project design process.

The conditions of the variance call for the MWRA to proceed with CSO projects that are practical and cost effective, and also gather further data on CSO and stormwater loads in the watershed. Because the plan had become more expensive and intricate, in March 1999, a CSO Variance was issued by the Massachusetts DEP for the CSO discharges to the Alewife Brook/Upper Mystic River watershed.

Table 3 shows how dramatic the changes were for the newer plan. Both plans would achieve an 84% reduction in annual CSO volume.

	Frequency of Overflows	Annual CSO Volume (million gal)
Original Plan		
Assumed Existing	16	18.3
Recommended	4	2.9
Revised Plan		
Assumed Existing	63	49.7
Recommended	7	7.4

Table 4 illustrates the main differences between the two plans.

1997 Recommended Plan	Revised Recommended Plan
Separate sewers in the CAMO04 tributary area to reduce CSO discharges	Separate sewers in the CAMO04 tributary area to eliminate CSO discharges (includes construction of a new stormwater outfall and wetland detention basin)
Separate sewers in the CAMO02 tributary area to eliminate CSO discharges.	Increase size of local sewer connection at CAMO02, CAM401B and SOM01A, to reduce CSO discharges at these locations
	Increase size and capacity of Rindge Avenue siphon to reduce CSO discharges at MWRO03; add hydraulic relief gate
Floatables control at remaining CSO outfalls (SOM01A, CAM001, CAM004, CAM400 CAM401)	Separate sewers in the CAM400 tributary area Floatables Control at remaining CSO outfalls (SOMA001A, CAM001, CAM002, CAM004(2), CAM400, CAM401A, CAM401B and MWR003)
Estimated Total Cost: \$12.1 M	Estimated Total Cost: \$74.0 M

A significant addition is the separation of CAM 004, which will require a new stormwater outfall to convey the water to a new wetlands detention basin. The type of pipe installation needed for this work is much more complicated and expensive. The reevaluation concluded that “targeted” separation is much more cost effective and will yield the most water quality benefits.

Table 5 gives an idea about how severe the overflow from each CSO is. Although the volumes are known, the exact concentration of contaminants has not yet been studied. However, it is obvious that CAM 400 is the worst, and that its elimination is most urgent.

Table 5. CSO Volumes

Outfall	Existing conditions prior to Contract 2A/2B Construction		Sewer Separation Alternative A	
	Annual Frequency	Annual Volume (MG)	Annual Frequency	Annual Volume (MG)
CAM001				
CAM002	1	0.01	5	0.2
MWR003	7	1.57	4	0.72
CAM004	1	0.06	5	1.03
CAM400	63	24.1	0	0
CAM401A	10	0.8	5	0.27
CAM401B	7	2.74	5	1.65
SOM01A	25	10.5	7	2.24
Totals	20	9.89	3	1.29

Table 6 compares the changes in the plans for each CSO.

Outfall	Original Recommended Plan	Revised Recommended Plan
CAM001	Provide floatables control	Provide floatables control
CAM002	Eliminate CSO outfall by complete separation upstream of regulator	Increase capacity of local connection to interceptor, and provide floatables control
MWRO03	Provide floatables control	Provide hydraulic relief gate at regulator
CAM004	Reduce activation frequency by separating area upstream of regulator	Provide floatables control
CAM400	Provide floatables control at regulator (to remain open).	Separate area upstream of regulator, and permanently close regulator upon completion of separation work
CAM401A	Convert existing combined sewers to storm drains, to minimize need for additional new pipe	Provide major new storm drain conduits to improve drainage capacity; provide flushing chambers and grit pits to control deposition in shallowly-sloped pipes
CAM401B	Provide floatables control	Provide new stormwater outfall to Little River, with downstream detention basin to attenuate peak flows
CAM401A	Provide floatables control	Separate combined manholes upstream of regulator, and provide floatables control
CAM401B	Not addressed in original plan; outfall discovered during early field investigations	Relieve siphon downstream of Rindge Avenue combined sewer, and provide floatables control
SOMOIA	Provide floatables control	Increase capacity of local connection to interceptor, and provide floatables control

Other main discoveries that led to an increase in cost, besides the complicated piping on CAM 400, were a previously unknown CSO (CAM 401B), a cross-connection at Vassar Lane, extensive interconnections at CAM004 area, and more illegal sanitary connections. The connections are between sanitary (sewer) and drainage (stormwater) systems. Another finding was the need for new localized projects using innovations such as interceptor connection reliefs, siphon reliefs, and hydraulic relief gates.

The NPC (Notice of Project Change for the Long Term CSO Control Plan) is a document that is updated periodically to thoroughly describe alterations in the possible plans and new discoveries about misinformation on the location and status of CSOs. The most recent copy outlines 19 different alternative plans to reduce or eliminate CSOs. Only one of the plans, the one to separate all CSOs, will allow the Mystic watershed to attain class B status. Of course, this plan is by far the most expensive. The other alternatives include combinations of storage basins, partial CSO elimination, discharge treatment, and relocation. These will all hold MWRA accountable to reduce CSO discharge by 95%. It is important to note that even if total separation is achieved, bacteria will still get into the watershed through the feces of dogs, birds, and other sources.

Environmental Monitoring for Public Access and Community Tracking (EMPACT) is an EPA program that aids communities in quickly amassing and publicizing environmental data. Somerville has received a \$363,257 grant from this program to monitor the Mystic River. In addition to sewage contamination, the Mystic River has been overwhelmed with chemicals, hydrocarbons, pathogens, and road salt from

stormwater runoff. The Mystic Watershed Collaborative (a partnership between the Mystic River Watershed Association and Tufts University) has been designated to run the project, and it monitors fecal coliform bacteria, dissolved oxygen, conductivity, pH, and water depth at least five times per week. This, in addition to other community awareness programs has helped to stimulate public concern.

5. CURRENT STATUS OF CSO CLEANUP IN THE MYSTIC RIVER WATERSHED

MyWRA, the Alewife/Mystic River Advocates, MWRA, and USGS have been testing samples from the watershed at different locations and intervals to monitor water quality. So far, 6 out of 14 CSO outfall pipes in the Mystic watershed have been closed so that no more sewage can flow from them.

Table 7 is a summary of the cost of work items that have already been completed or committed to be completed.

Element	Total Cost
Outfall Cleaning (Contract 1)	\$452,500
Fresh Pond Parkway (Contracts 2A and 2B)	\$16,171,900
Orchard Street Separation (Contract 3)	\$2,509,500
Engineering on Contracts 1 to 3	\$6,994,400
Floatables Control (Contracts 4 and 5)	\$1,730,400
New CAM004 Outfall (Contract 12)	\$10,395,000
Berm	\$300,000
MWRO03 Floatables Control	\$300,000
Contingency (Contracts 4,5 and 12)	\$1,649,500
Engineering (Contracts 4, 5 and 12, and amendments)	\$9,560,600
TOTAL	\$50,063,800

So far, over \$50 million has been spent, and most of it has gone to work along Fresh Pond and for CAM 004.

Figure 2 shows the systemwide map for the MWRA area. Most of the CSOs to be eliminated are located south of Boston, because the MWRA outlines "sensitive use" areas that should benefit from total separation while just minimum treatment of CSO discharges is deemed sufficient in less-sensitive areas. The total spending of the MWRA for all CSO reduction was originally estimated at \$430 million in 1997, and has now risen to \$530 million.

The Mystic River drains into the Boston Harbor. There are several segments of the Watershed: the Aberjona River, Malden River, Alewife Brook, Mystic River, and the Chelsea River (Segments MA71-01 to MA71-06). The last three of these contain CSOs. The first of two are stably classified as class B, and do not face the danger of reclassification to B_{CSO} Variance.

Cities are given NPDES permits for how much their CSOs can overflow and how many times per year. 6 cities have been given Notices of Noncompliance (NONs) for going beyond their permits, and Belmont exceeded its the most. The city of Somerville was issued NPDES permits to discharge combined sewage through six CSOs to the Alewife Brook. However, the permits expired in September of 1997, and Somerville has supposedly removed five CSOs. The problem is that these permits are enforced only

through warnings and do not even have to be renewed until five years after they expire. Somerville was issued several NONs for discharging in excess of what was permitted, but not much else was done. Cambridge also has a permit to discharge into the Alewife Brook through seven CSOs. Its permit expired in April 1998 but is expected to be reissued.

Dry-weather sampling programs have established many storm drains in the Alewife Brook that appear to be discharging wastewater flows. The DEP has issued NONs to towns in the watershed requiring identification and removal of illegal connections to storm drains. This process takes a long time, and these pollution sources are slowly being removed one by one.

6. KEY ISSUES AND THE FINAL DECISION PROCESS

The only way to maintain Class B status is to eliminate CSOs through sewer separation. The DEP CSO guidance document explains ways to evaluate the feasibility of sewer separation.^{xvii}

- Cost – to determine if the impact on ratepayers is excessive, using EPA's guidance
- Benefits – allows consideration of impacts of pollution from storm drains
- Protection of sensitive uses – if CSOs are not completely eliminated, alternatives "must provide an equivalent or higher level of environmental benefit..."^{xviii}

Discussions with Mr. Kevin Brander of DEP indicated that cost/affordability will be a key criterion in the final decision on water quality classification. Mr. Brander stated^{xix} that the following steps will lead up to a decision on water quality standards. These steps are shown in **Figure 3** (Figure 1 in DEP's CSO guidance document).

- 1) The CSO Control Plan in the Alewife/Mystic watershed must be completed by July 1, 2003. This document is required under the CSO Variance. A notice will be placed in the *Environmental Monitor*, and the document will be subject to the MEPA environmental review requirements (301 CMR 11.00). Public comments will be solicited on the plan.
- 2) DEP will hold a public forum during the MEPA comment period to allow MWRA to present technical information in the final plan publicly and to hear public comments.
- 3) DEP will consider the information included in the CSO Plan and public comments, and determine if the recommended plan is the highest feasible level of CSO control. The highest feasible level of CSO control will be determined from the technical analysis of the costs and water quality benefits of the range of CSO control alternatives and on the financial capacity of MWRA and its ratepayers.
- 4) If CSOs will be eliminated, no change to the present water quality standard is required. If CSOs will be mitigated but not eliminated, DEP will need to develop a Use Attainability Analysis (UAA) for submittal to EPA "to document that achieving a higher level of CSO control is not feasible or appropriate."^{xx}
- 5) In the case of a standards change (which is equivalent to a change in the state regulations - 314 CMR 4.00), DEP must publicly announce its intention of changing the standard, hold a public hearing on the tentative change, and publish a notice in the *Environmental Monitor* so there will be opportunities to provide input and public comment at the hearing and in writing to the MEPA office.

- 6) EPA, upon receipt of the UAA, will have 60 days to approve the standards change, or 90 days to disapprove the standards change.
- 7) Upon EPA approval, the standard would be formally changed and a NPDES (discharge) permit would then be issued to the CSO permittees requiring the level of CSO control associated with the highest feasible level of control as identified in the approved CSO control plan (and UAA).
- 8) The Clean Water Act requires the state to conduct a public review of the water quality standards every three years (triennial review), so any standards changes would be subject to additional review and scrutiny by the public, and the information that supported the standards changes (e.g., affordability) can be revisited during those reviews.

Before EPA makes its decision in October 2003, the main way for the community to voice its opinion is at the public meeting. This will happen after the final CSO plan is submitted on July 1, 2003. It is important for people to comment on the following points:

- 1) Residents have a right to live by clean water; and the cost is high at first, but will pay off in the future.
- 3) Residents who do use the Mystic recreationally, or those who would like to (were it clean), can state what it means to them.
- 3) Children that play along the river and streams can state why they would like the water to be clean.

The public can also appeal certain permits and the decision in general if the Mystic is classified as B_{CSO}.

7. RECOMMENDATIONS

Our team recommends that MyRWA try to influence the decision makers in advance of the public comment period. The following approaches could be considered:

- Request extension of the variance
- Request funding and phasing
- Insist on the triennial review required by the CWA
- Approach Boards of Health
- Demonstrate value of waters to the community
- Collaborate with other watershed associations
- Consider a citizen suit

7.1 Request Extension of the Variance

DEP feels it has enough information to make a decision on water classification. However, MyRWA could request an extension of the variance based on the following:

- Data gaps – Extension of the variance would allow more time to fill in gaps in data presented in MWRA's long-term CSO control plan
- TMDLs – The “demonstration approach” used by MWRA in its CSP Facilities Plan requires calculation of total maximum daily loads.^{xxi} The facilities plan should be reviewed to see if it includes TMDLs. If it does not, MyRWA should call this omission to the attention of DEP and EPA

- Dry-weather discharges must be eliminated, per CWA
- Stormwater impacts – Final water quality classification cannot be determined until stormwater controls are implemented
- Sensitive areas – Are there any endangered or threatened species? DEP's Kevin Brander indicated that no one has studied impacts on fish or the levels of pollutants in fish tissue. We suggest that MyRWA contact the Department of Fish & Wildlife and request that it immediately initiate a study of pollution impacts on fish in the Mystic watershed.
- New technologies – An extension may allow time for new CSO control technologies to emerge

7.2 Request Funding and Phasing

MyRWA can also request that implementation of CSO controls be phased in to reduce cost impacts. The CWA (§1342(q)) allows implementation to be phased in, and phasing of implementation would be preferable to a change in water quality status.

To address concerns about the cost of CSO elimination, MyRWA could urge CSO communities to apply for grant funding under recent amendments to the CW:

- Sewer overflow control grant (CWA §1301)
- Wet weather watershed pilot project (CWA §1274)

Cities like Chelsea and Somerville may meet the “financially distressed” criteria for grant funding.

7.3 Insist on the Triennial Review

It appears that DEP has not reviewed the surface water discharge standards in more than three years, as required by §1313 of the CWA. The triennial review provides an opportunity to determine whether or not the B_{CSO} standard violates the CWA. MyRWA should confirm the date of the last triennial review, and then request that EPA direct DEP to review the standards.

7.4 Approach Boards of Health

Massachusetts law (MGL c. 40) gives boards of health the authority to adopt regulations to protect public health, safety, and welfare. MyRWA could approach the boards of health in Cambridge, Somerville, Arlington, Medford, Chelsea, or other communities and urge the adoption of more stringent water quality standards based on public health concerns.

7.5 Demonstrate the Value of the Waters to the Community

Sensitivity of uses is a key criterion in determining water quality classification. Currently, there is a perception among regulators that Alewife Brook is “not a heavily used resource.” It is critical for MyRWA to counter this perception and demonstrate to regulators that the Mystic watershed waters are valued by the community. Evidence could be gathered by:

- Conducting surveys
- Collecting signatures and petitions
- Taking photos of community events
- Working with schools to develop curricula using Alewife Brook and the Mystic River as a “living classroom”

7.6 Collaborate with Other Watershed Associations

Areas of collaboration could include:

- Bringing political pressure on DEP and EPA through both state and national representatives and senators
- Initiating a citizen suit under the CWA

7.7 Consider a Citizen Suit

One basis for a citizen suit could be that the Bcso standard does not protect public health or welfare, as required by the CWA (§1313(c)(2)). Furthermore, the B_{CSO} standard does not comply with the CSO Control Policy and therefore violates the CWA. The CSO Control Policy states: "A primary objective of the long-term CSO control plan is to meet WQS, including the designated uses through reducing risks to human health and the environment by eliminating, relocating or controlling CSOs to the affected waters."^{xxii}

It can be argued that it is not worth paying almost double the cost just to eliminate the remaining 5% of the CSOs. However, there is so much uncertainty involved, that the payoff might be worth this cost. For instance, the number of residents in the Mystic watershed will continue to increase in the future, leading to more sewage and waste. In addition, global warming is speculated to increase flooding and cause more extreme temperatures. Alternatives to complete sewer separation might lead to short-term solutions, but the only way to ensure that the water will remain clean is total separation.

The precautionary principle applies especially to this case, because there is so much uncertainty. A future drastic event (flood, storm, etc.) has the potential to damage the Mystic waterways to where they would be even more expensive, and maybe even impossible, to repair. In addition, that remaining 5% of CSO discharge may not seem like much, but it is enough to keep the Mystic waterways from being fishable and swimmable. Any amount of raw sewage being dumped into the river makes it unhealthy. It will still lead to an unpleasant color, odor, and the presence of bacteria. The government made a commitment to ensure that citizens live among fishable and swimmable water bodies when it created the Clean Water Act. If the authorities responsible for meeting this commitment are unwilling to do so, then citizens have the right to challenge them. In fact, the CWA (§1251(e)) encourages public involvement in enforcement of the regulations.

LIST OF ABBREVIATIONS

CSO	Combined sewer overflow
DEP	Department of Environmental Protection (Massachusetts)
EOEA	Executive Office of Environmental Affairs (Massachusetts)
EPA	Environmental Protection Agency (U.S.)
MEPA	Massachusetts Environmental Policy Act
MWRA	Massachusetts Water Resources Authority
MyRWA	Mystic River Watershed Association
NON	Notice of noncompliance
POTW	Publicly owned treatment works

Footnotes:

ⁱ Mystic Monitoring Network Yearly Review: Baseline Water Quality Data for the Watershed, July 2000 – February 2002.

ⁱⁱ The map in Figure 1 was supplied by Grace Perez of MyRWA.

ⁱⁱⁱ Tables in this document are from the Massachusetts Water Resources Authority, *Notice of Project Change*, 2001.

^{iv} 33 USC §1251. Congressional declaration of goals and policy.

^v U.S. Environmental Protection Agency. *Report to Congress on Implementation and Enforcement of the Combined Sewer Overflow Control Policy*. September 1, 2001.

^{vi} *Ibid.*

^{vii} U.S. Environmental Protection Agency. *National Combined Sewer Overflow Control Policy*. April 19, 1994.

^{viii} *Ibid.*, p. 9

^{ix} *Ibid.*, p. 25

^x *Ibid.*, p. 31

^{xi} Massachusetts Department of Environmental Protection. *Guidance for Abatement of Pollution from CSO Discharges*. August 11, 1997.

^{xii} E-mail Communication from Kevin Brander of Massachusetts DEP, Nov. 5, 2002.

^{xiii} Massachusetts Water Resources Authority. *Combined Sewer Overflow Facilities Plan and Environmental Impact Report*. EOE No. 10335. July 31, 1997, Vol I, p. 6-15.

^{xiv} *Ibid.*, Vol. I, Table 7.2-1

^{xv} Massachusetts Department of Environmental Protection. Final Administrative Determination for CSO-Impacted Waters within the Massachusetts Water Resources Authority (MWRA) Sewer Service Area, December 31, 1997.

^{xvi} Conversation with activist and Mystic kayaker, Roger Frymire.

^{xvii} Massachusetts Department of Environmental Protection. *Guidance for Abatement of Pollution from CSO Discharges*. August 11, 1997, p. 6.

^{xviii} *Ibid.*

^{xix} E-mail communication with Kevin Brander, Massachusetts DEP, November 5, 2002.

^{xx} Massachusetts Department of Environmental Protection. *Guidance for Abatement of Pollution from CSO Discharges*. August 11, 1997, p. 10.

^{xxi} U.S. Environmental Protection Agency. *National Combined Sewer Overflow Control Policy*. April 19, 1994.p. 19.

^{xxii} *Ibid.*, p. 24

