



US Army Corps
of Engineers ®
New England District

Engineering/Planning
696 Virginia Road
Concord, MA 01742

PUBLIC NOTICE

Date: September 22, 2011

Comment Period Ends: October 24, 2011

In Reply Refer To: Robert Russo

Or by e-mail: Robert.s.russo@usace.army.mil

30-DAY PUBLIC NOTICE EMERGENCY STREAMBANK PROTECTION PROJECT Connecticut River Middletown, Connecticut

Interested parties are hereby notified that the U.S. Army Corps of Engineers, New England District, plans a stream bank protection project to stabilize approximately 1,300 feet of riverbank along the Connecticut River in Middletown, Connecticut (Attachment 1). The project is located along the banks of the Connecticut River along the eastern side of the John S. Roth Memorial Well Field, on River Road. The purpose of the proposed project is to restore the 50 foot set-back in the most eroded areas of the well field, protecting the banks from erosion. Riverbank erosion has jeopardized the integrity of the public water supply for Middletown.

The well field currently provides approximately 70 percent of the drinking water for the city of Middletown, a city of approximately 48,000 residents. The banks along the river in this area range between 10 and 12 feet high and are composed of fine alluvial material and vegetated with well established large trees and understory. Since approximately 1980, greater than 10 feet of bank in the vicinity of Well #3 has been lost allowing the river to encroach upon the well's 50 foot required set-back from high water. Without permanent stream bank protection, continued action of river currents will further erode the stream bank beyond the required 50 foot set-back rendering the most affected wells unusable. This would require the City to provide an alternate source of water for approximately 34,000 residents. Development in the City has left relatively few areas and/or surface water bodies available that are suitable for use as an alternate water supply. Therefore the City would have to purchase water from an adjacent municipality in order to replace the water lost from their municipal well field, which could place an additional drain on the resources of the city as well as those of the adjacent municipality. The proposed project will be designed to restore the 50 foot set-back in the most eroded areas of the well field and protect the banks from further erosion, thereby preserving the integrity and function of the well field.

The proposed project is to provide streambank protection for this area and is being conducted under Section 14 of the Flood Control Act of 1946 as amended. Section 14 provides for the U.S. Army Corps of Engineers to participate in the planning and construction of economically justified stream-bank erosion control projects in situations where public facilities are threatened. Due to the emergency nature of this erosion problem, there is a streamlined implementation process allowing the project study and design to be concurrently completed. The intent is to

abbreviate the time required for the completion of the project. Section 14 requires a complete and comprehensive solution that solves the immediate erosion problem in a manner that does not obligate or imply future Federal participation. Once Section 14 projects are completed, they are relinquished to the local non-federal sponsor for operation and maintenance. The goal of the process is the protection of public infrastructure from present and future erosion with minimal ecological consequences. Attachment 1 is a project area Vicinity Map and Attachment 2 includes a list of pertinent laws, regulations, and directives considered in project planning. The proposed plan is shown in Figures 1-4.

Project Description: The plan selected for the stream-bank protection for the Middletown well field adjacent to the Connecticut River is a multi-tiered system consisting of stone revetment along the toe of the bank below the water surface, and then a layer of articulating concrete blocks (ACB) placed along the upper slope leading to the well field. In some areas a level shelf of rooted vegetation along the lower level of the floodplain above the bank may be left intact, which would provide habitat between the ACB and the lower protected bank. This type of system is necessary given the existing topography of the land adjacent to the river which consists of historic riverbanks at the edge of the channel, forested flood plain several feet above that channel, and then banks formed by artificial fill on which the well field is built, rising approximately ten feet above the historic vegetated flood plain. The articulating blocks will be placed only along selected locations of the bank, leaving approximately 33% of the existing floodplain forest intact. Stone protection will be placed along the entire toe of the bank, including those sections that will not be reinforced by the articulating blocks.

The articulating concrete blocks proposed for the protection of the upper bank immediately adjacent to the well field will rest at an approximate 1:2 Vertical to Horizontal slope. The blocks are underlain by a geotextile erosion protection fabric. The blocks interlock, and are set into the stream-bank with the block slope buried into the bottom of the bank (at the interface between the upper bank and the lower level of flood plain forest) in order to form a stable toe (Figure 3). Each block contains a central opening into which a shrub plug is inserted into the substrate in order to vegetate the structure above the normal water line. This allows the softening of the hard structure that should become completely vegetated in a few seasons, thus improving stream-bank cover (Figure 4). In addition, artificial undercuts are planned to be placed at the base of the lower bank immediately adjacent to the flow of the river in order to provide additional fish habitat and cover. The upper portion of the bank above the articulating block will be covered with biodegradable erosion fabric and vegetated with woody shrubs and vines. Stone revetment will be placed along the toe of the bank including those areas that will not be stabilized with the articulating blocks.

The construction sequence involves complete tree and vegetation removal along 1000 feet of the area where the ACB will be placed, and flank stone protection and select tree removal along 400 feet of toe stone protection. Following stripping and clearing, the gravel fill and stone slope protection would be placed and compacted until design elevations are reached. Once the toe protection is established, the gravel bedding, ACB, and stone flank protection would be placed. The crest is then constructed, and topsoil is placed in the ACB voids and at the crest. Vegetation plugs are then used to plant the ACB's, a turf reinforcement mat is placed on the upper slope and crest, and trees are planted along the crest at select locations. Placement of gravel bedding and

stone protection from shore is anticipated. Benching of the slope may be required to place gravel bedding and stone protection from shore.

Construction is planned to begin during Fall of 2012 and take several months to complete. A private construction company under contract to the Government will perform the work. Appropriate erosion control measures such as silt fence and staked hay bales will be implemented throughout construction.

Project Alternatives

The following proposals were also considered as solutions to stabilize the stream banks as part of the alternative analysis process.

No Action- The No Action Alternative (“without project condition”) is required to be evaluated as prescribed by the National Environmental Policy Act (NEPA) and the Council on Environmental Quality (CEQ). The No Action Alternative serves as a baseline against which the Proposed Action and alternatives can be evaluated. Evaluation of the No Action Alternative involves assessing the environmental effects that would result if the proposed action did not take place. Without permanent erosion protection, the embankment would continue to erode allowing the river to encroach upon the wellhead protection areas threatening the water quality of the underlying aquifer (in the vicinity of the wells), as well as the integrity of the related pumping and treatment structures. This would ultimately result in the loss of the wellfield. This was not considered an acceptable alternative.

A. Stone Revetment - In this alternative a stone revetment would be constructed along the entire 1,300 foot reach of the affected bank. The stone protection would consist of a 24-inch layer of rip-rap on a 1:2 vertical to horizontal slope underlain by a 1 foot layer of gravel bedding. The toe of the revetment would extend into the river a distance of approximately 25 to 30 feet and to a depth of approximately 5 feet. This alternative was not selected due to the large amount of stream bank disruption and filling of the river that would be involved in its construction as well as the lack of vegetation on the finished slope.

B. Placement of Vertical Steel Sheet Piling-In this alternative steel sheeting would be driven vertically into the top of the upper bank in order to control further erosion and protect the affected wells. However, in the areas of the most extreme erosion, the well is already less than 50 feet from the high water line and therefore without additional backfilling of the bank toward the river, the well would still be in violation of the required set-back. Also, once the erosion has progressed to where the sheeting is exposed, there would be an abrupt un-vegetated vertical slope which would not provide useful habitat value either for fish or terrestrial wildlife. Therefore this alternative was not selected.

C. Relocation of Wells and Well Field- In this alternative, several of the wells, including Well #3 would be relocated away from the bank in order to provide the required 50-foot set-back from high water, or the well field itself (i.e. all of the wells would be relocated westward). However, a main sewage pipeline, an active rail line, as well as River Road would all need to be relocated in order to provide the space necessary for the relocated wells. In addition, the relocation would

not stop the erosion, which could ultimately result in the contamination of the aquifer with surface water and closure of the wellfield. Therefore, this alternative was not selected.

D. Bioengineering with Stone Revetment at Toe - In this alternative, a layer of rip rap would be placed at the toe of the bank slope below the normal water level and would extend up the bank several feet. The remaining bank would be either left intact with its existing vegetation, or in the eroded areas, be stabilized by planting vegetation such as willows that would protect the bank from further erosion. It should be noted however, that most of the bank that is eroded had been vegetated with native riparian vegetation, and there are still intact root masses in many of these eroded areas. Therefore, the existing bank vegetation is not able to withstand the shear stress being exerted on it by the higher velocity flows in the Connecticut River, so it will be necessary to provide additional stability by using more permanent structures. Therefore this alternative was not selected.

E. Rock Filled Timber Cribs – In this alternative, a series of wooden timber cribs filled with approximately 3-4 inch diameter cobbles would be placed along the eroding sections of the upper bank adjacent to the well field. These would be set into the lower bank which extends toward the actual boundary of the river. There would be no other protection along the lower bank; however the timber crib structure along the upper bank would prevent further erosion of the well field area. In sections where the erosion has encroached upon the 50 foot set-back, the bank would be backfilled and the timber cribs placed in along the edge where the bank meets the lower vegetated shelf. Rip rap would be used to stabilize the toe of the slope. Although this alternative would effectively stop the erosion of the well field, the result would be a near vertical un-vegetated wall that would provide minimal habitat value. Therefore this alternative was not selected.

F. Combination of Stone Revetment, Vertical Sheet Piling and Bioengineering-In this alternative, the sections of the bank that are not eroding would be left intact, and only the areas where progressive erosion is present will be stabilized using appropriate structures for the type of erosion present. Vertical sheet piling may be used at Well #3 and other areas where the river has eroded beyond the required 50 foot setback, and stone revetment would be placed along areas of the upper bank where the erosion is less severe; with many of the other areas of floodplain forest either left intact or planted with supplemental vegetation in order to help maintain the stability of the bank. However, once the actively eroding areas are protected, it is likely that the energy would be transferred downstream to unprotected areas along the bank, and cause additional erosion in these locations. Since this alternative has the potential to exacerbate erosion along unprotected areas, this alternative was not selected.

G. Precast Modular Retaining Walls with Stone Protection at the Toe- This alternative would be similar to Alternative F described above, where instead of a timber crib wall along the upper bank, a precast concrete wall would be used. Stone protection would be placed at the toe of the wall, and in areas where it directly contacts the water's edge. As with the timber crib described in alternative F, the result would be a smooth vertical concrete wall that would remain un-vegetated providing little habitat value.

H. Multi-Tiered System Incorporating Stone Revetment, Bioengineering, and Articulating Concrete Blocks (Selected Alternative, see description in Section A).

Additional Information: Additional information may be obtained from the Engineering/Planning Division of the U.S. Army Corps of Engineers, Mr. Rob Russo, the Project Manager, and Mr. Kenneth Levitt, of the Environmental Resources Section at the return address shown. These individuals may also be reached by phone or email, Mr. Russo at 978-318-8553 or email at robert.s.russo@usace.army.mil and for Mr. Levitt at 978-318-8114 or email at kenneth.m.levitt@usace.army.mil. Collect calls will be accepted weekdays between 9:00 a.m. and 3:00 p.m.

Coordination: The proposed work is being coordinated with the following Federal, State, and local agencies:

Federal:

U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
National Marine Fisheries Service

State:

Connecticut Department of Environmental Protection (Inland Fisheries Div.)
Connecticut Department of Environmental Protection (Bureau of Natural Resources)
Connecticut State Historic Preservation Office

Local:

City of Middletown
Middletown Conservation Commission
Middletown Water & Sewer Department

Other Information: Local sponsor(s): City of Middletown, Connecticut is the local sponsor for the proposed project.

Purpose and Need for Work: The purpose of the proposed project is to restore the 50 foot setback in the most eroded areas of the well field, protecting the banks from erosion. Riverbank erosion has jeopardized the integrity of the public water supply for Middletown.

Floodplain Management: In accordance with Executive Order 11988, the Corps of Engineers has determined that the proposed project will not contribute to negative impacts or damages caused by floods.

Cultural Resources: The proposed stream-bank protection project is not expected to impact any structures or sites of historic, architectural or archeological significance as defined by the National Historic Preservation Act of 1966 as amended. Coordination is being conducted with the Connecticut State Historic Office.

Endangered Species: Coordination with the National Marine Fisheries Service (NMFS) has indicated that the federally endangered shortnose sturgeon (*Acipenser brevirostrum*) inhabits the

Connecticut River in the vicinity of the proposed project. It is expected that the proposed project will not have any adverse effects to this species. When project plans have been completed, further coordination with the National Marine Fisheries Service will be conducted with a request for their concurrence that the proposed project will not affect listed species. In addition, the New York Bight Distinct Population Segment of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) was recently proposed to be listed as endangered under the Endangered Species Act, and may also require further coordination with the NMFS. It is expected that the proposed project will not have any adverse effects to this species.

Coordination with the State of Connecticut Bureau of Natural Resources, Division of Wildlife Natural Diversity Data Base has indicated that the Cobra clubtail dragonfly (*Gomphus vastus*) which is a state listed species of special concern, inhabits the riparian areas including emergent stumps, tree canopy and sandy aquatic substrate along River Road in the vicinity of the John S. Roth Memorial Well Field in Middletown. Therefore in order to avoid and minimize the potential impacts to this species, a survey will be conducted to determine whether or not this species is present and/or using the specific habitat along the river in this location. If this species is found to inhabit the area, then specific measures will be taken to avoid impacts, such as either relocation of various life stages or implementing construction windows that would avoid work during breeding or emergent periods.

Coordination with the U.S. Fish and Wildlife Service has indicated that there are no federally-listed or proposed, threatened or endangered species or critical habitats under their jurisdiction known to occur in the project area.

Essential Fish Habitat: A copy of the draft Environmental Assessment will be sent to the National Marine Fisheries Service Pursuant to the Magnuson-Stevens Fishery Conservation Management Act for their concurrence that the proposed project is not expected to adversely affect designated Essential Fish Habitat in the vicinity of the proposed project.

Federal Permit Requirements: An application will be submitted to the Connecticut Department of Environmental Protection under Section 401 of The Clean Water Act of 1977 (P.L. 95-217). A Section 404(b)(1) evaluation, pursuant to the Clean Water Act, is provided as an attachment to the draft Environmental Assessment. In addition a request for consistency with the Coastal Zone Management Act of 1972 will be submitted to the Connecticut Office of Coastal Zone Management.

Environmental Impacts: An Environmental Assessment of the proposed work is being prepared and will be available upon request to either Mr. Russo, or Mr. Levitt at the telephone numbers noted above. I have made a preliminary determination that an Environmental Impact Statement for the proposed stream-bank protection structures is not required under the provisions of the National Environmental Policy Act of 1969. This determination will be reviewed in light of the facts submitted in response to this notice, and if appropriate, a Finding of No Significant Impact (FONSI) will be developed.

Comments: Any person who has an interest that may be affected by the proposed stream-bank protection structures 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 this project.

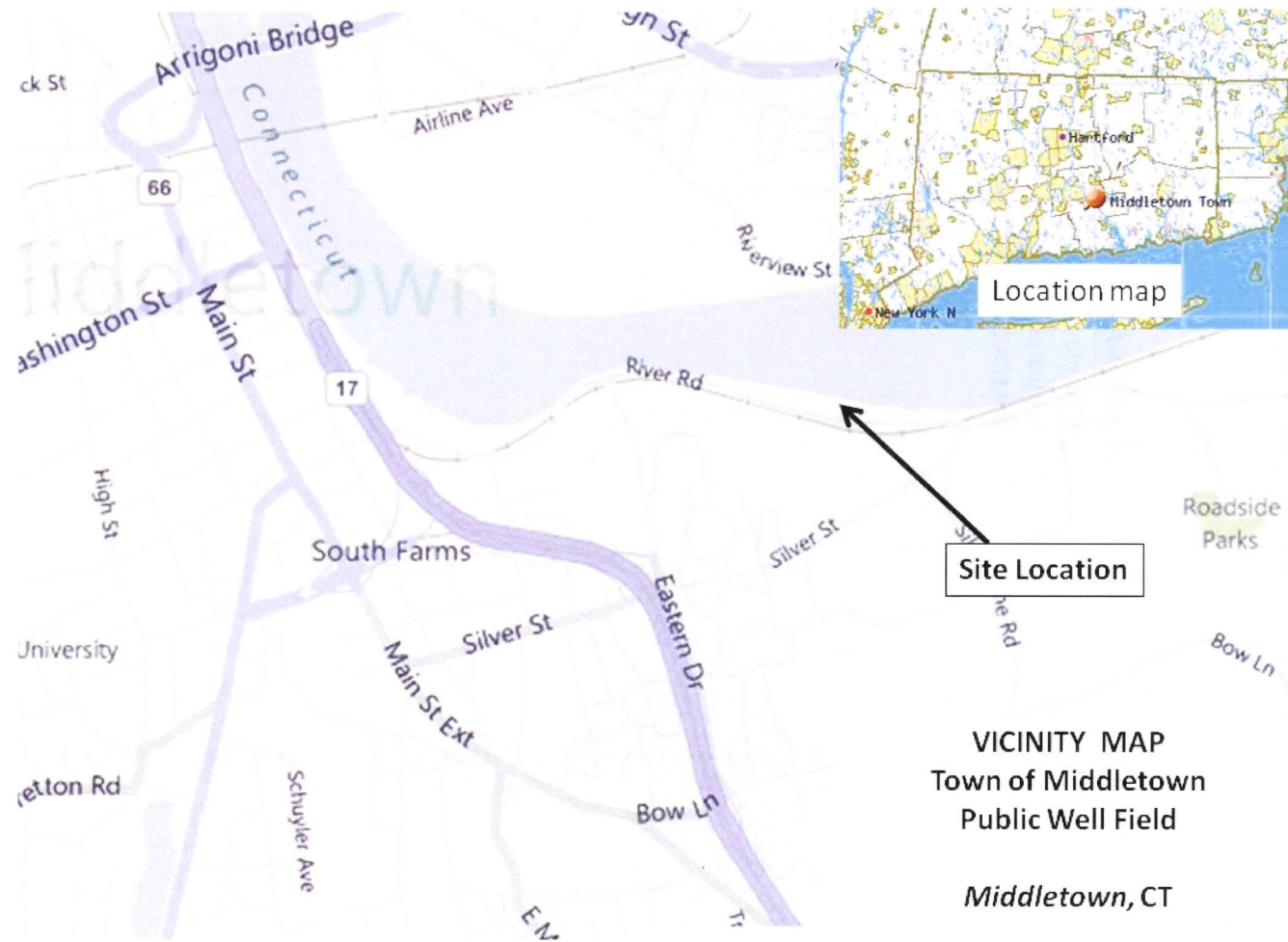
Comments are invited from all interested parties and should be directed to me at, U.S. Army Corps of Engineers, New England District, 696 Virginia Road, Concord, Massachusetts, 01742-2751, ATTN: Engineering-Planning Division, within 30 days of this notice.

September 22, 2011
Date

William J. Sully, P.E. Deputy District Engineer
for **Charles P. Samaris**
Colonel, Corps of Engineers
District Engineer

Attachments

Attachment 1



Attachment 2

PERTINENT LAWS, REGULATIONS AND DIRECTIVES

American Indian Religious Freedom Act of 1978, 42 U.S.C. 1996.

Archaeological Resources Protection Act of 1979, as amended, 16 U.S.C. 470 et seq.

Clean Air Act, as amended (42 U.S.C. 7401 et. seq.).

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

Endangered Species Act of 1973 as amended (16 U.S.C. 1531 et seq).

Federal Water Project Recreation Act, as amended (16 U.S.C. 460L-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. 661-667e).

Land and Water Conservation Fund Act of 1965, as amended (16 U.S.C. 460L-4 et. seq.).

Magnuson-Stevens Fishery Conservation and Management Act, (16 U.S.C. 1801 et. seq.).

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

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

Preservation of Historic and Archaeological Data Act of 1974, as amended, 16 U.S.C. 469 et seq.
This amends the Reservoir Salvage Act of 1960 (16 U.S.C. 469).

Watershed Protection and Flood Prevention Act, as amended, 16 U.S.C. 1001 et seq.

The Wild and Scenic Rivers Act (16 U.S.C. 1271 et. seq.).

Executive Order 11988, Floodplain Management, 24 May 1977.

Executive Order 11990, Protection of Wetlands, May 24, 1977.

Executive Order 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971.

Executive Order 13007, Accommodations of Sacred Sites, 24 May 1996.

Executive Order 12898, Federal Actions to Address Environmental Justice in
Minority Populations and Low-Income Populations, 11 February 1994.

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

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000.

White House Memorandum, Government-to-Government Relations with Native American Tribal Governments, 29 April 1994.

Figure 2. Proposed Design Plan for Stream bank Restoration at Middletown Well Field



MIDDLETOWN, CT - PROPOSED PROTECTION

A: ~30 LINEAR FT OF RIPRAP TOE PROTECTION (~EL -7 TO 7)

B: ~200 LINEAR FT OF RIPRAP TOE PROTECTION (~EL -7 TO 7) AND PLANTED ACB'S ON 2H:1V SLOPE (~EL 7 TO 12); ~100 LINEAR FT (TOTAL) OF RIPRAP FLANK PROTECTION (~EL 7 TO 12) AND RIPRAP TOE PROTECTION (~EL -7 TO 7)

C: ~260 LINEAR FT OF RIPRAP TOE PROTECTION (~EL -7 TO 7)

D: FISH HABITAT/LUNKERS (~12 OR ONE EVERY 50')

E: ~60 LINEAR FT OF RIPRAP TOE PROTECTION (~EL -7 TO 7)

F: ~500 LINEAR FT OF RIPRAP TOE PROTECTION (~EL -7 TO 7) AND PLANTED ACB'S ON 2H:1V SLOPE (~EL 7 TO 12); ~100 LINEAR FT (TOTAL) OF RIPRAP FLANK PROTECTION (~EL 7 TO 12) AND RIPRAP TOE PROTECTION (~EL -7 TO 7)

G: ~100 LINEAR FT OF RIPRAP FLANK PROTECTION (~EL 7 TO 12) AND ~130 LINEAR FEET OF RIPRAP TOE PROTECTION (~EL -7 TO 7)

H: FISH HABITAT/LUNKERS (~14 OR ONE EVERY 50')

ADDITIONALLY, TREES MAY BE PLANTED ALONG THE TOP OF SLOPE AT THE 2 LOCATIONS.

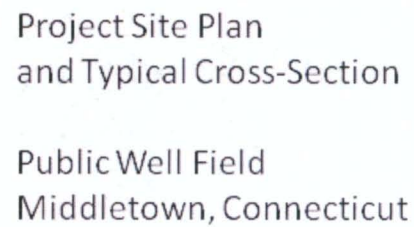


Figure 3. Articulating Blocks being Placed at Stream bank Restoration Project in New Hampshire.



Figure 4. Photo of Completed New Hampshire Project with Re-vegetation.

