



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Deval L. Patrick
GOVERNOR

Timothy P. Murray
LIEUTENANT GOVERNOR

Ian A. Bowles
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
<http://www.mass.gov/envir>

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CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : Upper Mystic Lake Dam Rehabilitation Project
PROJECT MUNICIPALITY : Medford and Arlington
PROJECT WATERSHED : Mystic River
EOEA NUMBER : 14341
PROJECT PROPONENT : **Department** of Conservation and Recreation (DCR)
DATE NOTICED IN MONITOR : November 24, 2008

Pursuant to the Massachusetts Environmental Policy Act (G. L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **does not require** the preparation of an Environmental Impact Report (EIR).

Project Description

The project consists of the rehabilitation of the Upper Mystic Lake Dam to bring the dam into compliance with current dam safety regulations. The project consists of three elements: modifications to the primary spillway, construction of a secondary spillway and modifications to the right abutment. Modifications to the primary spillway are proposed to improve the capacity of the spillway during high intensity flood events, to improve flood control operations and to support fish migration. Construction of a secondary spillway is proposed to eliminate the possibility of dam failure by improving the ability to pass low-frequency flooding events without overtopping the dam. Modifications to the abutment are proposed to minimize flooding of private properties adjacent to the dam associated with flooding events up to the 500-year flood. Project construction is proposed in two phases which will extend from Labor Day 2009 to Memorial Day 2009 (Phase 1) and Labor Day 2010 to Memorial Day 2010 (Phase 2). The project cost is estimated at \$3.5 million to \$4 million dollars.

Project Site

The Upper Mystic Lake Dam is located on the Mystic River and within the Department of Conservation and Recreation's (DCR) Mystic River Reservation. It is an approximately 17-foot-high earthen embankment with a six-bay, stop log-controlled spillway which impounds the Upper Mystic Lake and separates it from the Lower Mystic Lake. The facility, which was built in 1864-1865, was originally used for drinking water supply but is now used primarily for recreational purposes. The dam is located in Arlington and Medford with the right abutment (west) in Arlington and the left (east) abutment in Medford. The site includes a gatehouse, outlet works and brick aqueduct tunnel associated with the dam's original water supply purpose. The Medford Boat Club occupies a structure built on the downstream side of the right half of the embankment. It is a three-story wood framed structure with a masonry foundation and the bottom floor is built into the downstream slope. Several other outbuildings and a playground are located on or adjacent to the dam.

The Upper Mystic Lake Dam is classified as a Significant – Class II Hazard Potential as defined in the Massachusetts Dam Safety Regulations (302 CMR 10.06). A July 18, 2007 Follow-Up Inspection/Evaluation Report conducted by GZA Geo Environmental, Inc. identified the condition of the dam as poor requiring major rehabilitation. The following safety deficiencies are identified in the report: significant deterioration/failure of the spillway's concrete and masonry apron; significantly reduced operability of the spillway stop logs due to deteriorated condition and accumulation of sediment and debris in the approach channel on the upstream side; displaced masonry and loss of mortar on primary spillway wing walls and piers; aging wooden bridge over primary spillway requires replacement; embankment slopes are eroded and include tree, vegetation growth and animal burrows; displacement of riprap on the upstream slope; uncontrolled embankment seepage at high water levels; and significantly impaired operation of low-level outlet (aqueduct) and unknown condition of aqueduct tunnel. It also identifies the following design and/or systemic deficiencies: spillway capacity inadequate to pass Spillway Design Flood (SDF) (500-year flood event) without major overtopping to the low area to the right of the dam which acts as auxiliary spillway; stability of embankment slopes do not meet recommended minimum safety factors; potential liquefaction concerns in loose foundation soils; and no capacity for fish passage.

Environmental Impacts

Potential environmental impacts are associated with the following: temporary and permanent impacts within wetland resource areas including 25,600 square feet of Bordering Land Subject to Flooding (BLSF), 30,500 sf of Land Under Water (LUW) (including dredging of 1,100 to 2,000 yards) and 1,210 linear feet of Bank; land alteration including removal of mature trees and clearing of vegetation from the embankment; temporary impacts to public access at the site; and alteration of historic resources. Measures to avoid, minimize and mitigate project impacts include: use of cofferdams (rather than a drawdown of the lake), erosion control barriers and silt curtains during construction to minimize wetland impacts, inclusion of drainage improvements in the parking lot, inclusion of a fish and eel ladder within the project design to support migration, provision of a kayak and canoe landing and ramp adjacent to the east embankment to improve access to the Lower Mystic

Lake, replacement of trees within the northern end of the parking lot and identification of temporary parking for use during construction periods. Public access to Sandy Beach and the Mystic River Trails will not be affected. Access and use of the Upper Mystic Lake and Lower Mystic Lake will not be affected during construction because lake levels will be maintained. In addition, construction is scheduled outside of peak recreational periods to minimize impacts to recreational users.

Permits and Jurisdiction

The project is undergoing MEPA review pursuant to 301 CMR 11.03(3)(b)(1)(b), 11.03(3)(b)(1)(f) and 11.03(10)(b)(1) because it requires a state permit and will consist of alteration of 500 or more linear feet of bank along a fish run or inland bank, will consist of alteration of ½ or more acres of any other wetlands and will include demolition of all or any exterior part of any Historic Structure listed in or located in any Historic District listed in the State Register of Historic Places or the Inventory of Historic and Archaeological Assets of the Commonwealth. The project requires a Chapter 91 License and a 401 Water Quality Certificate from the Massachusetts Department of Environmental Protection (MassDEP) and a Chapter 253 Dam Safety Permit from the DCR Office of Dam Safety. It requires review by the Massachusetts Historical Commission (MHC). The project requires an Order of Conditions from the Arlington and Medford Conservation Commissions (and a Superseding Order of Conditions if the local Order is appealed). In addition, the project requires a Section 404 Programmatic General Permit (PGP) from the United States Army Corps of Engineers (ACOE).

Because the project is being conducted by a state agency with state funds, MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment as defined in the MEPA regulations. These include wetlands, waterways, water quality and historic resources.

Review of the ENF

The ENF includes a detailed description of the project and project plans, an alternatives analysis, identifies existing environmental conditions and identifies measures to avoid, minimize and mitigate environmental impacts. The ENF indicates that DCR has consulted with state agencies to ensure the project is developed consistent with regulatory standards. In addition, it indicates that DCR has consulted with abutters, recreational users and environmental advocacy groups to identify concerns with the proposed project and address those concerns to the extent possible. Comment letters indicate strong support for the goals of the project and the Preferred Alternative.

Alternatives Analysis

The ENF includes an alternatives analysis and indicates that DCR analyzed several project alternatives and variations on these alternatives including leaving the dam in place, rehabilitation of the dam, full removal of the dam, and a partial breach/removal of the dam. Rehabilitation of the dam has been identified as the Preferred Alternative by DCR for its ability to address dam safety deficiencies while minimizing the cost and environmental impacts of the project and while

maintaining the historic, recreational and aesthetic functions of the dam. The Preferred Alternative includes the following elements:

- Construction of reinforced permanent concrete ogee-shaped weirs in the middle four stop-log bays with a fixed crest elevation of 114.2;
- Installation of electro-mechanically controlled (with manual override) adjustable crest gates in the end bays to provide flexibility for controlling Upper Lake levels;
- Rehabilitation of the deteriorated primary spillway apron and wingwalls;
- Construction of a downstream end sill on the spillway apron to facilitate fish passage;
- Replacement of the existing wooden footbridge across the spillway with the potential for light truck loading;
- Construction of a secondary spillway consisting of a concrete weir near the left abutment on the upstream side of the dam and reinforced concrete box culverts that will discharge under the dam and downstream slope; and
- Reconstruction of the existing stone masonry lake wall adjacent to the right abutment to a maximum elevation of 119.0 feet (MDC Datum).

Flood Control

The ENF indicates that the normal pool elevation of the lake will be maintained at an average of 114.2 feet (MDC Datum) and DCR will continue to respect existing operational agreements with upstream and downstream communities in regards to pre- and post-storm response. The improvements will provide DCR with greater reliability and operational flexibility in terms of flood control efforts. Although the primary purpose of the project is to address safety deficiencies, the new structure will provide the ability to draw down the lake by two feet to approximately 112 feet (MDC Datum) within two days of a predicted storm event and will reduce significantly the amount of time required to restore the Upper Lake to pre-storm levels compared to existing conditions. Dam modifications will allow for passage of the SDF 500-year flood without overtopping the residential area to the right of the abutment.

The ENF indicates that hydraulic/hydrologic modeling of the project demonstrates that it will reduce flooding upstream and downstream of the dam. Water surface elevations on the Upper Mystic Lake and along a portion of the Aberjona River may decrease by as much as 0.5 feet during flooding events equal to or greater than the 10-year flood. Water surface elevations along the Mystic River and Alewife Brook may decrease by as much as 0.3 feet during flooding events equal to or less than the 10-year flood.

This is one of four projects identified during review of the Aberjona River Flood Control Program (EEA #13046) as necessary to address existing flooding problems along the Mystic River and Alewife Brook and mitigate impacts associated with flood control projects proposed by the Town of Winchester. I note that the modeling included in the Supplemental Draft EIR for the Aberjona River Flood Control Program assumed a three-foot drawdown of Upper Mystic Lake. DCR should consult with the Town of Winchester to ensure that the Final EIR and associated modeling for the Flood Control Program will reflect the current design and operating procedures.

Commentors have also requested that DCR work with affected communities and the public to provide clear and detailed operational plans for the rehabilitated dam including the timing and amount of pre-storm drawdown and post-storm restoration.

Wetlands

According to the comment letter from MassDEP, the project is proposed as a limited project. These comments note that, consistent with the performance standards for BLSF, compensation must be provided for the proposed fill within the 100-year floodplain (at elevations 114-118.7) which is associated primarily with the reconstruction of the embankment. The proponent is consulting with MassDEP regarding floodplain compensation and MassDEP comments indicate that this issue can be addressed in permitting.

I note that the existing parking lot does not provide any stormwater controls. The ENF indicates that the project will incorporate drainage improvements within the parking lot. DCR should consult with MassDEP regarding measures that can be incorporated into the project design to provide treatment and control of stormwater.

Recreation and Public Access

Several comment letters, including those from the Medford Boat Club and the Winchester Yacht Club, identify their interest in maintaining lake levels and being able to re-establish levels after storm events. As noted previously, the dam rehabilitation will increase DCR's ability to maintain the normal pool elevation at 114.2 feet (MDC Datum) by eliminating leakage through the stop log bays and to restore lake levels swiftly after storms.

In addition, several commentors have requested that DCR expand public access at the site to allow access over the dam which is currently restricted. The ENF indicates that DCR is working with the Mystic River Watershed Association (MyRWA) and the Medford Boat Club to provide access to the fish ladder on the dam for educational purposes. I encourage DCR to continue consultations with stakeholders regarding provision of public access at the site while balancing this interest with security concerns.

Historic Resources

The Upper Mystic Lake Dam and the Mystic Gatehouse are listed in the State and National Registers of Historic Places and are included in the Water Supply System of Metropolitan Boston which is also listed in the State and National Registers of Historic Places. Modifications to the gate house are limited to the interior of the structure. Modifications to the primary spillway piers will include rehabilitation of existing stonework. A historically sympathetic deck and matching stonework, wingwalls and spillway aprons are proposed on the primary and secondary spillways and fishladder. Comments from MHC recommend that existing historic materials be used where feasible and indicate that the project will have no adverse effect if project plans and specifications, including the installation specifications for aqueduct bulkheads and gratings, are developed explicitly in accordance with the Secretary of the Interior's Standards for Rehabilitation.

Conclusion

Based on the information in the ENF and after consultation with relevant public agencies, I find that no further MEPA review is required. Outstanding issues can be addressed in project permitting. The project may proceed to permitting.

December 24, 2008

Date


Ian A. Bowles

Comments Received:

12/15/08	Department of Environmental Protection (MassDEP)/Northeast Regional Office (NERO)
11/25/08	Massachusetts Historical Commission (MHC)
12/19/08	Arlington Belmont Cambridge Flooding Group (ABC Group)
12/17/08	Interlake Beach Trust II
12/18/08	Medford Boat Club
12/18/08	Mystic River Watershed Association (MyRWA)
12/11/08	Town of Winchester/Board of Selectmen
12/18/08	Winchester Boat Club
12/16/08	Steve Kaiser
12/15/08	Keith Saxon

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