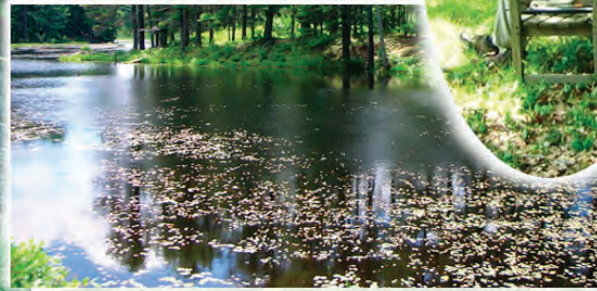




downstream

Land Acquisition



Marking 25 year milestones

Joel Zimmerman, DCR Regional Planner

The people who developed the Wachusett Reservoir at the dawn of the 20th century used human ingenuity and steam power to construct an engineering marvel. It remains today as an integral component of the drinking water supply for more than 2 million people. The designers of this (at the time) state-of-the-art facility did not, however, anticipate the general use of automobiles. Their water quality models did not predict the transformation of the landscape from agrarian to suburban, the transition of fields and forests to housing and paved roads. It was expected that the basin would remain rural, therefore only a limited amount of land was kept in public trust surrounding the Wachusett Reservoir.

Within a generation this small protective buffer was seen as ineffective. When the state moved forward in the 1930s with the building of the Quabbin Reservoir and the diversion of the Ware River, significant tracts of land were bought

The management and maintenance of watershed lands in a natural condition is paramount to the continuous supply of pure water. The finest drinking waters in the world are a product of the natural filtering processes of a forested landscape. The replication of these natural processes using infrastructure-based treatment and filtration is inferior to, and more expensive than, the incomparable benefits derived from watershed land protection.

to ensure the highest possible water quality. The state made only sporadic land acquisitions for water supply protection over the next fifty years, despite the impacts from the Wachusett region's post-World War II development booms.

The 1986 federal Safe Drinking Water Act Amendment kick-started the modern day watershed land acquisition program. The regulations mandated water supply protection parameters that were specifically linked to land ownership. Pledges were made so that the Wachusett and Quabbin Reservoirs would not only meet the minimum requirement of the law, but also become a national model, providing

Continued on Page 4

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Division of Water Supply Protection
www.mass.gov/dcr/watersupply.htm

The Winsor Memorial

DCR reinigorates a landmark and landscape

By Clif Read, Quabbin Visitors Center Coordinator



Left: The unveiling of the Winsor Memorial by the grandson of Frank E. Winsor at the original dedication ceremony held on June 17, 1941.



Looking Westerly at the Winsor Memorial from the Quabbin Hill Road ~ 4-29-41 ~ Photo Barbier ~ #2543

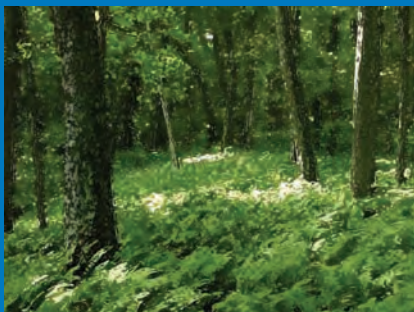
Right: The Winsor Memorial at the time of completion in April of 1941. The view looks west over the Quabbin Reservoir.

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The Winsor Memorial sits off Quabbin Administration Road in Quabbin Park. It was constructed in 1941 as a tribute to Frank E. Winsor, the Chief Engineer from 1926 until his death in 1939 of the Metropolitan District Water Supply Commission (MDWSC, a predecessor agency to the Department of Conservation and Recreation, was created specifically to build the Quabbin Reservoir). Mr. Winsor was hired by the MDWSC to oversee the entire development of Quabbin Reservoir, from its planning and design to construction and filling. Unfortunately, he died as the construction phase neared comple-

tion, so he never saw the full reservoir.

The memorial was built at a scenic location overlooking the Winsor Dam, also named in his honor, and the Quabbin Administration Building. A dedication ceremony was held on June 17, 1941, unveiling a special stone monument recognizing the significant contributions Mr. Winsor made towards the creation of the Quabbin Reservoir.

A Winsor Memorial re-dedication ceremony was held in June 1988 as part of commemorative events marking the 50th anniversary since the disincorporation of the former Swift River valley towns of Dana, Enfield,



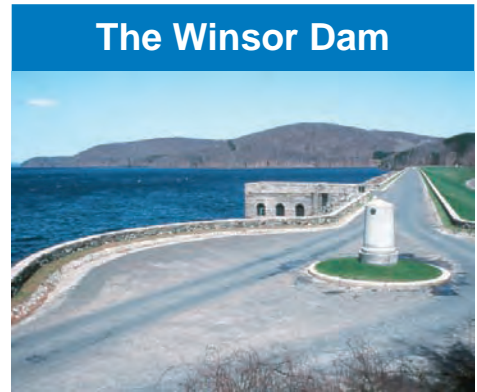
Winsor Memorial in Winsor Park on Westerly Side of Administration Road During Dedication Ceremony June 17, 1941 - Looking South-westerly - Photo Barbier #2555

This historic photograph shows the crowd of well wishers attending the Winsor Memorial dedication ceremony on June 17, 1941.

Greenwich and Prescott. Landscape design plans for the memorial were developed as part of this celebration that aimed to revitalize the area by recreating some of the vistas that had become obscured by tree growth in the intervening years and rejuvenating the garden beds along the pathways and around the monument. The Winsor family also contributed funds to purchase new granite benches to

surround the monument. Former residents and political dignitaries mingled and reminisced about the days before the reservoir and the impact of the reservoir to the region. Speakers included Winsor's son Edward as well as State Senator Robert Wetmore. The invocation was delivered by Reverend Edward Winsor, grandson to the Chief Engineer.

Continued on Page 6

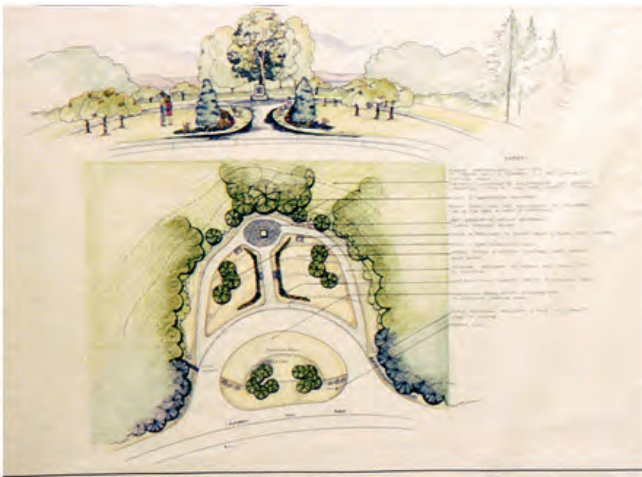


The Winsor Dam

The Winsor Dam took five years to construct. When it was completed in 1939, it was one of the largest earthen dams in the United States. The unique hydraulic fill process utilized water to transport, distribute, and sort the soil material by size.

The massive structure, with 4 million cubic yards of fill, spans a half mile across the Swift River valley. From the expansive base, measuring more than 700 feet at its greatest width, the dam rises some 170 feet from the valley floor, tapering to 35 feet at the top of the structure. The Dam holds back enough water for a safe yield of 300 million gallons a day of drinking water for 47 communities — most are in the Boston area but this number includes western Massachusetts' Chicopee, Wilbraham and South Hadley. The Winsor Dam also uses a system of pipes and valves to release a minimum daily flow of up to 70 million gallons of water back into the Swift River.

While the impoundment structure has a spillway, it is not physically connected to the dam itself, but is located a short distance to the east, solidly anchored to bedrock, which is a stronger and more stable structure. The top of the 400 foot long spillway wall is 530 feet above Boston City Base (roughly equivalent to the height above sea level). When the reservoir exceeds its capacity of 412 billion gallons of water, water will begin to flow over the top of the spillway wall, down the spillway channel, over the 65 foot water fall, before it joins water released from the piping structure in the dam back into the original channel of the Swift River. Water has been released over the top of the spillway wall in approximately half the years since the reservoir's completion in 1946.



Above: The 1988 rededication Winsor Memorial planting plan.

Above Right: Close-up of the Frank E. Winsor Memorial Plaque.

Right: Edward Winsor, Frank's son, at the 1988 rededication ceremony. His son, Reverend Edward Winsor, the grandson who appears in the 1941 image on the opposite page, stands to his left.

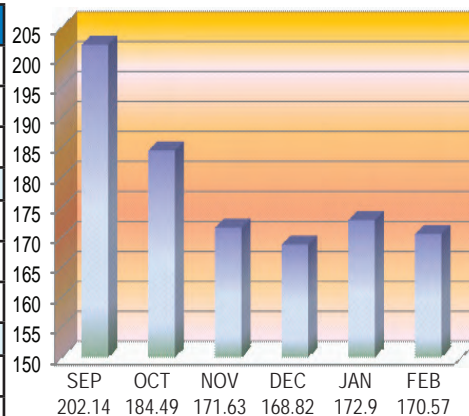


Reservoir Watch

Reservoir levels and 6-month precipitation

Reservoir	Quabbin	Wachusett
Minimum	527.59'	389.95'
% Full	95.5%	90.0%
Date	9/5/11	1/9/12
Maximum	530.26'	391.45'
% Full	100.5%	92.9%
Date(s)	12/23-28/11	9/11/11
Precipitation	27.94"	25.49"
Seas. Av.	23.21"	22.33"

System-wide 6-month Water Usage (million gallons per day) September 2011 to February 2012



Source: MWRA

Land Acquisition

From Page 1

superlative drinking water without the use of filtration. This approach required a significant investment in land acquisition – a cost that would nevertheless be lower than the construction of a filtration system while providing superior drinking water.

Major milestones have recently been reached in this 25-year land acquisition effort. Jim French, the DCR Watershed Land Acquisition coordinator, has had a role in practically every transaction. French reflected, “It’s been an honor and a privilege to be welcomed into people’s kitchens to talk about land conservation, and many times to come to an agreement to permanently protect their property.” The following benchmarks demonstrate DCR’s commitment to meeting its legislative mandate to “provide pure water for future generations.”

22,000 Acres Purchased/ 100,000 Acres Controlled in Source Watersheds

Since 1985, DCR’s Office of Watershed Management and its predecessor agency have acquired the rights to 22,315 acres of land. All of these

Land Acquisition Acres by Watershed 1985 - 2012				
Watershed	Fee	WPR	Total Acres	Cost
Wachusett	11,421	2,504	13,925	\$110,782,135
Ware	3,396	981	4,377	\$12,950,150
Quabbin	2,044	1,970	4,014	\$7,114,200
TOTAL	16,860	5,455	22,315	\$130,846,485

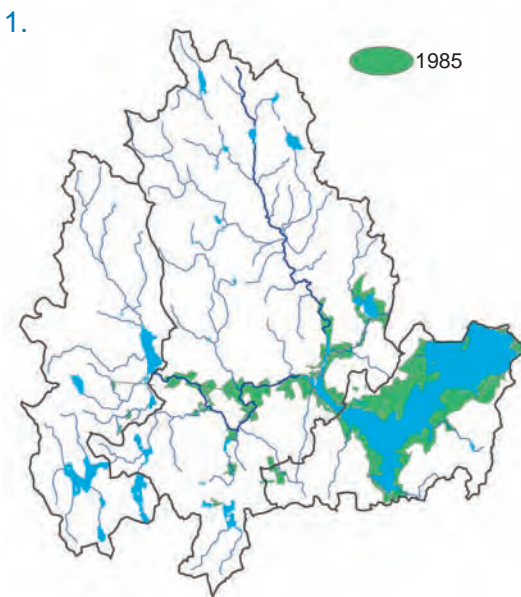
Percentage of Protected Land by Watershed 1985 – 2012				
Watershed	DCR % Watershed 1985	DCR % Watershed 2012	Other Lands % Watershed 2012	Total % Protected 2012
Wachusett	7.9%	27.8%	16.7%	44.5%
Ware	31.3%	38.2%	9.4%	47.6%
Quabbin	54.3%	58.4%	10.1%	68.5%
Total	33.6%	43.4%	11.9%	55.3%

acquisitions were “friendly”: terms were negotiated based on fair market appraisals and the owner willingly sold the property to DCR. More than 60% of this area – 14,000 acres – is within the Wachusett Reservoir watershed. DCR currently controls close to 30% of the watershed, compared to the 8% it managed when the program started. The other purchases were relatively evenly divided between the Ware River and Quabbin Reservoir

watersheds – the two western basins that already had significant holdings from the original work of the 1930s – so they are now, respectively, up to 40% and 60% DCR controlled. Total DCR acreage within the three source watersheds is now over 104,000 acres.

\$130 Million

All of these purchases combined have cost approximately \$130 million. The Watershed Land Acquisition Program has been funded from three

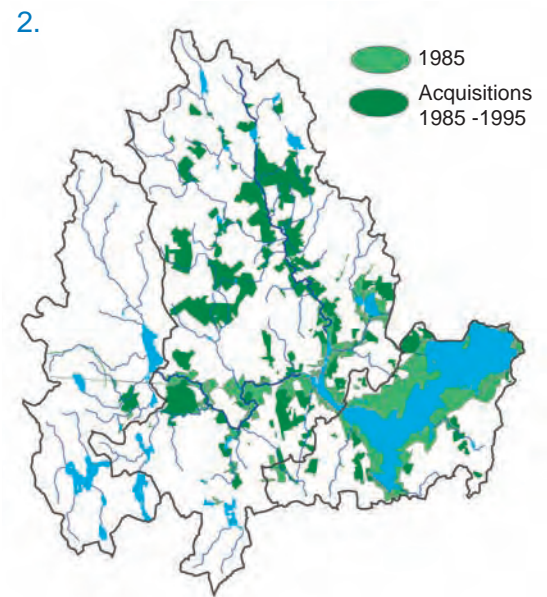


Wachusett Time Lapse

These four maps show the 25 year progression of DCR protection around the Wachusett Reservoir.

Map 1: 1985 – 5,600 acres.
Area mostly purchased with construction of the reservoir in the late 1800s, but an inadequate buffer for a 21st century water supply.

Map 2: 1995 – 12,700 acres.
Ten years of initial land acquisitions sees a 125% increase focused on critical lands along the Quinapoxet and Stillwater Rivers.



bonds and a fiscal year budget allocation: Commonwealth open space bonds established in 1983 and 1987 of \$3 million and \$30 million dollars respectively, a \$135 million dollar bond established by the Watershed Protection Act of 1992, and a fiscal year 1997 budget allocation of \$16 million dollars.

These transactions, however, could not have been accomplished without the fiscal commitment of the Massachusetts Water Resources Authority (MWRA) ratepayers. The law that created the MWRA (Chapter 372, Acts of 1984) originally set their contribution to watershed land acquisition at 50%, however by the late 1980s the General Court had increased MWRA's responsibility to covering 100% of these costs. In other words, the MWRA funds all of these state-owned land acquisitions.

Due to the fluctuation of budgets and real estate markets, some years have seen many more purchases than others. Spending peaked in 1998 when \$15 million was used to buy 2,000 acres. This helped the agency achieve the 25% ownership goal in the Wachusett Reservoir watershed, set by EPA for MWRA to obtain a filtration waiver. The waiver has allowed

MWRA to redirect a filtration plant's estimated \$180 million construction and \$3.7 million annual operating costs towards the replacement of old, unlined, cast iron distribution pipes.



A WPR boundary marker.

100 Watershed Preservation Restrictions

Buying land is an expensive venture. Early in the program's development, a new process was established by the state's real property directors that would allow an arrangement where a private landowner can sell the conservation value of a piece of property to a government or non-profit agency while retaining fee ownership of the land along with a limited bundle of rights. This arrangement – specifically called a Watershed Preservation Restriction (WPR) when done for the Office of Watershed Management but

also known for other purposes as a Agricultural Preservation Restriction (APR) or Conservation Restriction (CR) – keeps land in private hands while permanently protecting critical natural resources, all at a cost much lower than if bought outright.

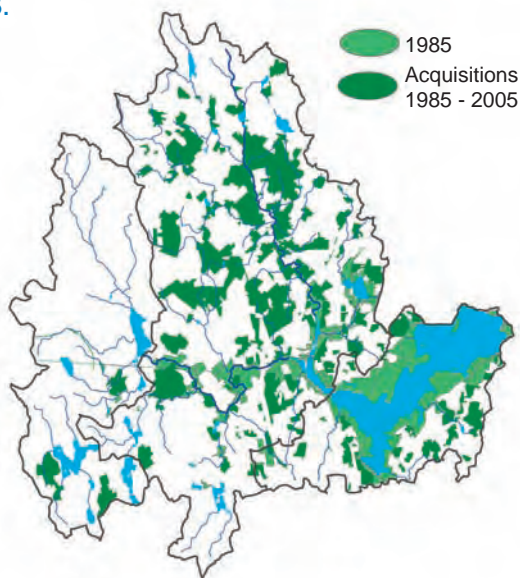
The first few WPRs, totaling 275 acres in Barre and Petersham, were conveyed in June 1990. DCR proudly recorded its 100th WPR in 2011, securing the development rights to 7.5 acres of land in Princeton. The Division of Water Supply Protection is also leading the state's environmental agencies by hiring a WPR coordinator to manage the sites' annual reviews as well as integrating new WPRs into the program. Caroline Raisler has brought great expertise to this position. "I love walking the WPR properties with the owners. DCR has established a long-term relationship with an extraordinary diversity of both the natural resources and people," said Raisler. WPR administrative tasks that had languished are now up-to-date, allowing initiatives such as the biannual newsletter, *Watershed Currents*, to flourish.

50 Land Acquisition Panel Meetings

The 1992 Watershed Protection Act's

Continued on Page 6

3.



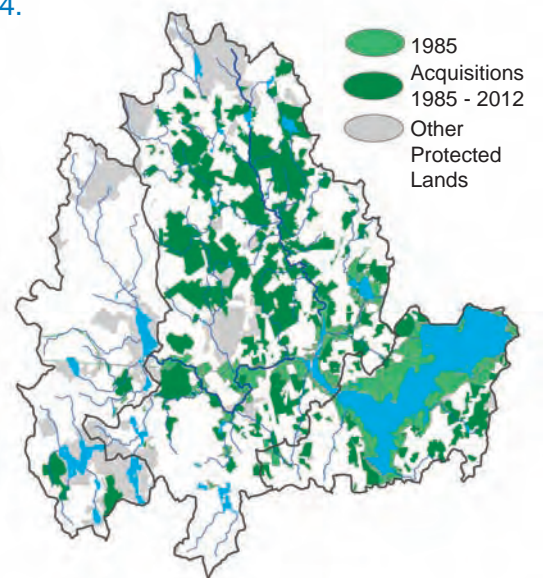
Map 3: 2005 – 19,000 acres.

2,100 acres of this total are Watershed Preservation Restrictions (WPRs), privately owned land with perpetual conservation easements held by DCR.

Map 4: 2012 – 19,627 acres.

The Division of Water Supply Protection controls 28% of the watershed. Other public and non-profit entities protect an additional 17% of the watershed area. Over half of the entire source water supply system from Quabbin to Wachusett – more than 104,000 acres – is permanently protected land that is either DCR-owned or bound by a WPR.

4.



Winsor Memorial - continued from Page 3

Over the past twenty five years, management of the Winsor Memorial site has been limited due to budgetary and personnel restrictions. The area has been kept safe for visitors with routine maintenance, such as mowing the grassy areas, removing leaves, and periodic tree trimming for the vista. The flower beds that help beautify the area have been tended to by volunteer organizations. Structural repairs required due to the ravages of time and weather, however, had been deferred.

Starting in the spring and summer of 2011, DCR's Quabbin Section staff initiated several long-term maintenance projects on the Winsor Memorial. The focus of this work includes:

- Re-setting the circular stone path around the memorial making the walk area flat and free of plant growth.
- Removal of overgrown weeds from walkways, adding new gravel.
- Pouring concrete foundations to properly set and stabilize the granite benches donated by the Winsor family.
- Cutting back and removing invasive species, such as Asian Bittersweet and Japanese Barberry.
- Pruning the two prominent vistas in order to expand views that have been constricted over time.

- Pruning ornamental shrubs to neaten up the appearance of the park.
- Replacing and enhancing the existing vegetation in the garden beds.
- Repairing the stone drainage ditches at the periphery of the memorial that had filled with leaves, soils and sticks, so that they function as designed.

The Quabbin Park Plan currently being drafted will articulate ongoing maintenance requirements for the future upkeep of this beloved Quabbin destination. These efforts will ensure that the Winsor Memorial will continue to be a place of sweeping views and inner reflection for future generations. For more information on the Winsor Memorial, contact the Quabbin Visitor Center at (413) 323-7221. 💧

Right: 2011 view from the hillside across from the Winsor Memorial. Compare this to picture on page 2 from the same location.

Below: Quabbin staff working on new gravel walkway and landscaping.



Land Acquisition - from Page 4

\$135 million bond authorization for land acquisition necessitated a methodical process to efficiently target these funds toward the purchase of the most critically important properties. The Land Acquisition Panel (LAP) was convened in August 1993, bringing together staff representing natural resource, engineering, planning, environmental quality, and management expertise. LAP developed an advanced GIS model combined with an Analytical Hierarchy Process to

prioritize land procurement options that incorporated geographic, hydrologic, and regulatory parameters. LAP has now met over fifty times, helping field and legal staff shepherd all watershed land protection projects from initial inquiries to the final closing.

Future Steps

These milestone achievements, the result of countless hours of work by both public officials and private property owners, are benchmarks for the future. One of four main goals

of the DCR's Watershed Protection Plan is to protect the most sensitive areas of the watershed through ownership or agreements with land owners. Alternative funding arrangements are sought whenever possible, such as the Q2W Forest Legacy Project (see page 8). Meanwhile, private property owners continually solicit DCR interest in purchasing their land for watershed protection, while DCR also approaches selected landowners with critical pieces of watershed real estate. 💧

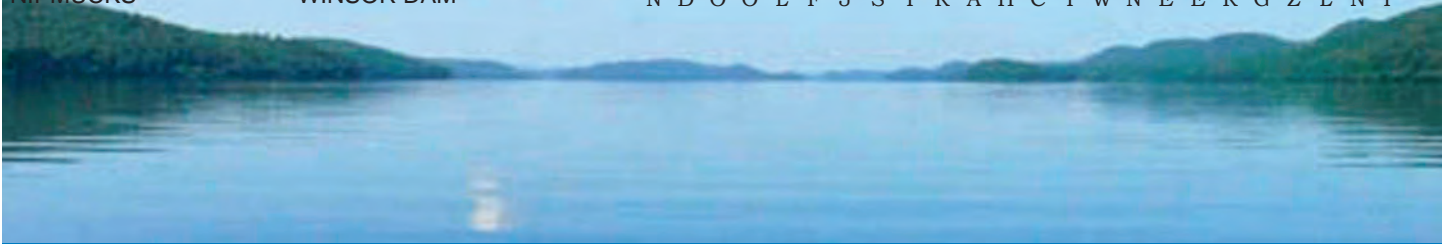
Kids Corner

The Quabbin Word Find

Circle the following words in the puzzle at right. They can be forward, backward, down, up or on a diagonal. Good Luck!

- | | |
|----------------|---------------|
| AQUEDUCT | QUABBIN |
| CEMETERY | PRECIPITATION |
| DANA | PRESCOTT |
| EARTHEN DAM | SPILLWAY |
| ENFIELD | SWIFT RIVER |
| EVAPORATION | TRANSPIRATION |
| GREENWICH | WARE RIVER |
| GOODNOUGH DIKE | WATERSHED |
| NIPMUCKS | WINSOR DAM |

W R R E V I R T F I W S D H K L M X C E D G W Z
 A S D G L C W Y F T H P U O R W H L E Y I O E K
 P W A T E R S H E D A I A Q U E D U C T D O A N
 R E R S O L Y G O L A L D Y H R Y N S M E D R O
 E V G R Y H I P V E R L E B R E T E K S O N T I
 C A C A H I G R H A N W N Q V R I L C W P O H T
 I P W A T G R E U N D A A T E I R W U I T U E A
 P O S I T R I S U T A Y Y F I V V T M L U G N T
 I R A N S E P C E M E T E R Y E E Y P U I H D I
 T A D I U Y R O N O F F W B L R R H I P S D A P
 A T Q R S T A T X P A E Q U A B B I N O R I M A
 T I W Z A H G T R A N S P I R A T I O N C K I N
 I O A R T I Q X T B K A R L B A D A R J I E L A
 O N S W I N S O R D A M G A K C E E N F I E L D
 N D O O L F J S T R A H C I W N E E R G Z L N P



And another thing...

by J. Taylor



“Honey, I ate the kids!”

For more information about land acquisition in Massachusetts:

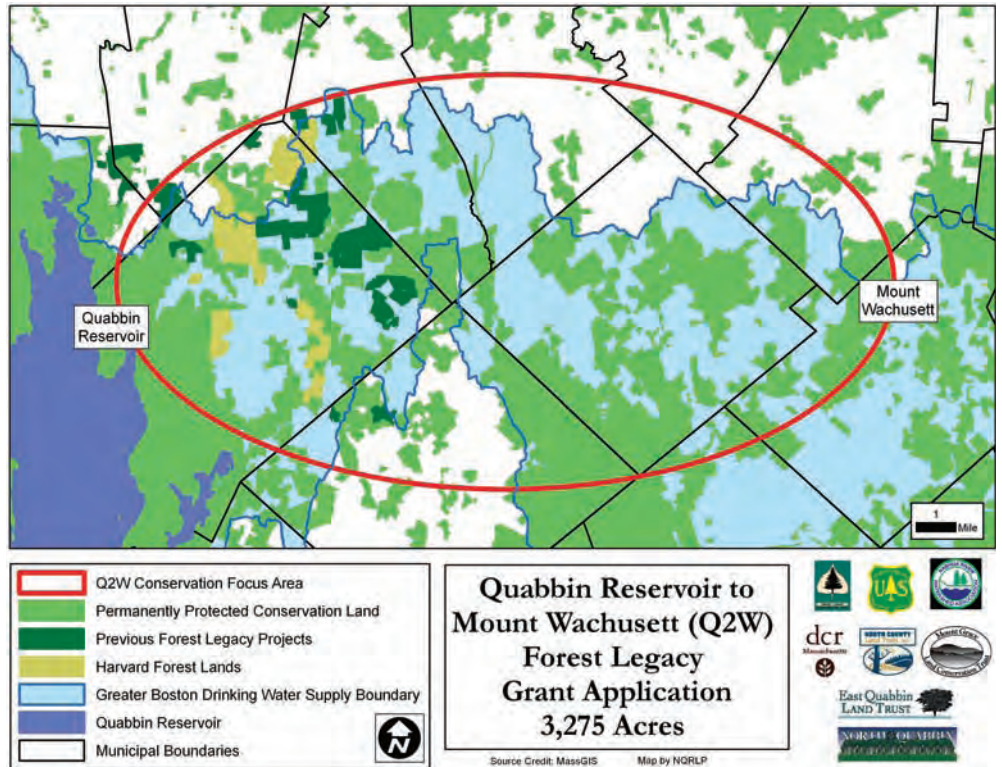
DCR's State Park Land Acquisition Program
www.mass.gov/dcr/stewardship/landacq/index.htm
Executive Office of Energy and Environmental Affairs' Division of Conservation Services
www.mass.gov/eea/grants-and-tech-assistance/grants-and-loans/dcs/dcr-rant-programs/

For more information about the Q2W partners:

- US Forest Service Forest Legacy Program**
www.fs.fed.us/spf/coop/programs/loa/flp.shtml
- Mt. Grace Land Trust**
www.mountgrace.org
- East Quabbin Land Trust**
<http://eqlt.org>
- North County Land Trust**
www.northcountylandtrust.org
- North Quabbin Regional Landscape Partnership**
www.nqpartnership.org
- Nashua River Watershed Association**
www.nashuariverwatershed.org

Federal grant boosts land preservation

The Quabbin to Wachusett Forest Legacy Project (Q2W) was ranked as the number two forest conservation project in the United States for Fiscal Year 2013 by the US Forest Service's Forest Legacy program. This proposal is a partnership between DCR, four land trusts and one watershed group (see Page 7). The \$5 million grant, pending Congressional allocation, will be used to acquire Watershed Preservation Restrictions on 3,275 acres from 23 landowners in the towns of Barre, Hubbardston, Petersham, Phillipston, Princeton, and Westminster. This project will keep these private lands perpetually protected for water supply protection, nature study, recreation, and sustainable forestry. It is a national model for federal, state, non-profit and private land owner cooperation. 💧



downstream

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Downstream is produced twice a year by the Massachusetts Department of Conservation and Recreation, Division of Water Supply Protection. It includes articles of interest to the Watershed System communities. Our goal is to inform the public about watershed protection issues and activities, provide a conduit for public input and promote environmentally responsible land management practices.

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