Update on DCR Land Acquisition

Water Supply Citizen’s Advisory Committee
March 19, 2012

Presented by
Jonathan Yeo
Director, Division of Water Supply Protection
“To utilize and conserve water and other natural resources to protect, preserve and enhance the environment of the Commonwealth and to assure the availability of pure water for future generations”
Why Land Acquisition?

“...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.”

- DWSP Land Acquisition Strategy document
Watershed Protection Planning

4 overarching concepts guiding DWSP watershed management:

1. **Protect the most sensitive areas of the watershed through ownership or agreements with land owners.**
2. Manage DWSP-owned properties to protect water quality and provide stewardship of natural resources.
3. Work with watershed communities to protect water resources while accommodating community needs.
4. Monitor to identify potential or existing water quality problems.

**Land Procurement and Land Preservation Programs** are major control program for 8 out of the 12 identified sources of pollutants to the watershed system.
Annual Work Plans

Tasks related to the Land Procurement and Land Preservation (Watershed Preservation Restrictions) are identified in the Annual Work Plans.
The Beginning – 1980s

- 7.9% owned
- 5,608 acres
- almost all around Res, 2 main tribs
- Little buffer
- 1987 Open Space Bond Bill Passed
Second Phase – 1990s

- 1992 Watershed Protection Act - $135 million for acquisition and development rights
- MWRA/MDC develop Watershed Plans
- EPA sets 25% target for Wachusett
Scientific Method for Targeting Acquisitions in Wachusett Watershed

- Land Acquisition Panel is formed in 1993
- Bob O’Connor leads group of DCR + MWRA scientists, planners, engineers and foresters in “Expert Choice” analysis of land factors determining water quality protection
- GIS used immediately to rate every parcel of land
- Method heralded across water supply and land planning world
Three “Overlay” Basins

- Worcester Water Supply Basin
- Central Wachusett Basin
- Route 12 Bridge Basin
GIS Used to Screen Parcels

- Green is DCR Protected
- Yellow is Other Protected
- Grey is developed
GIS Used to Screen Parcels

Yellow is Potential Developable Land
## Wachusett Land Acquisition Model

### Expert Choice Comparison Analysis

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Weight</th>
<th>Example #1</th>
<th>Example #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A &gt; 8% Slope</td>
<td>0.018</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>B Low yield aquifer</td>
<td>0.013</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>C Medium/high yield aquifer</td>
<td>0.061</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>D HD Res. zone, unsewered</td>
<td>0.072</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>E HD Res. zone, sewered</td>
<td>0.027</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>F Comm/Ind zone, unsewered</td>
<td>0.107</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>G Comm/Ind zone, sewered</td>
<td>0.039</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>H 0-200 WsPA buffer</td>
<td>0.136</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I 200-400 WsPA buffer</td>
<td>0.088</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>J 0-200 non-WsPA buffer</td>
<td>0.278</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>K 200-400 non-WsPA buffer</td>
<td>0.150</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>L Other watershed lands</td>
<td>0.011</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Subtotal: 0.531

<table>
<thead>
<tr>
<th>Overlay Basin</th>
<th>Weight</th>
<th>Weight</th>
<th>Rating</th>
<th>High Priority?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Worcester Water Supply Basin</td>
<td>0.056</td>
<td>0.243</td>
<td>6</td>
<td>YES</td>
</tr>
<tr>
<td>2 Central Wachusett Basin</td>
<td>0.243</td>
<td>0.243</td>
<td>3</td>
<td>NO</td>
</tr>
<tr>
<td>3 Route 12 Bridge Basin</td>
<td>0.701</td>
<td>0.243</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Score: 0.129

Rating: 6

High Priority?: YES
Breakdown of Watershed Protection Lands by Rating Group
Wachusetts Watershed - 2007

Remaining High Priority Lands

Breakdown of Watershed Protection Lands by Rating Group
Wachusetts Watershed - 2007
LAP Process
LAP Process
LAP Process
LAP Process – WsPA Zones
LAP Process - Pictometry
LAP Process - Pictometry
LAP Process – Model Score Overlay
DWSP Owned Land - 1985

Wachusett Watershed

1985 Fee
DWSP Protected Land - 2005

Wachusett Watershed

1985 Fee
1985-2005 Fee, WPR
DWSP, Other Protected Land - 2012

Wachusett Watershed

- 1985 Fee
- 1985-2012 Fee, WPR
- Other Protected Lands
## DWSP Land Ownership Over Time: 1985 - 2012

<table>
<thead>
<tr>
<th>Watershed</th>
<th>1985</th>
<th>% of Watershed</th>
<th>1998</th>
<th>% of Watershed</th>
<th>2003</th>
<th>% of Watershed</th>
<th>2007</th>
<th>% of Watershed</th>
<th>2012</th>
<th>% of Watershed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wachusett Reservoir</td>
<td>5,608</td>
<td>7.9%</td>
<td>15,861</td>
<td>22.4%</td>
<td>18,387</td>
<td>25.9%</td>
<td>18,990</td>
<td>26.8%</td>
<td>19,627</td>
<td>27.8%</td>
</tr>
<tr>
<td>Quabbin Reservoir</td>
<td>51,792</td>
<td>54.3%</td>
<td>54,203</td>
<td>56.9%</td>
<td>54,321</td>
<td>57.2%</td>
<td>54,517</td>
<td>57.1%</td>
<td>55,787</td>
<td>58.4%</td>
</tr>
<tr>
<td>Ware River</td>
<td>19,300</td>
<td>31.3%</td>
<td>22,838</td>
<td>37.0%</td>
<td>23,694</td>
<td>38.2%</td>
<td>23,568</td>
<td>38.2%</td>
<td>23,576</td>
<td>38.2%</td>
</tr>
</tbody>
</table>
### DWSP Watershed Acquisitions: 1985 - 2012

<table>
<thead>
<tr>
<th></th>
<th>Total Fee</th>
<th>Total CR</th>
<th>Total Acquired</th>
<th>Total Awards</th>
<th>avg/ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wachusett</td>
<td>11,420.7</td>
<td>2,504.3</td>
<td>13,925.0</td>
<td>$110,782,135</td>
<td>$7,956</td>
</tr>
<tr>
<td>Ware</td>
<td>3,395.7</td>
<td>980.8</td>
<td>4,376.5</td>
<td>$12,950,150</td>
<td>$2,959</td>
</tr>
<tr>
<td>Quabbin</td>
<td>2,043.8</td>
<td>1,970.0</td>
<td>4,013.8</td>
<td>$7,114,200</td>
<td>$1,772</td>
</tr>
<tr>
<td><strong>All</strong></td>
<td><strong>16,860.2</strong></td>
<td><strong>5,455.1</strong></td>
<td><strong>22,315.3</strong></td>
<td><strong>$130,846,485</strong></td>
<td><strong>$5,864</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>DCR % watershed 1985</th>
<th>DCR % watershed 2012</th>
<th>other protected lands % watershed</th>
<th>Total Protected</th>
<th>1% of watershed area (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wachusett</td>
<td>7.9%</td>
<td>27.8%</td>
<td>16.7%</td>
<td>44.5%</td>
<td>706</td>
</tr>
<tr>
<td>Ware</td>
<td>31.3%</td>
<td>38.2%</td>
<td>9.4%</td>
<td>47.6%</td>
<td>620</td>
</tr>
<tr>
<td>Quabbin</td>
<td>54.3%</td>
<td>58.4%</td>
<td>10.1%</td>
<td>68.5%</td>
<td>960</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>54.3%</strong></td>
<td><strong>58.4%</strong></td>
<td><strong>10.1%</strong></td>
<td><strong>68.5%</strong></td>
<td><strong>960</strong></td>
</tr>
<tr>
<td><strong>Active System</strong></td>
<td><strong>33.6%</strong></td>
<td><strong>43.4%</strong></td>
<td><strong>11.9%</strong></td>
<td><strong>55.3%</strong></td>
<td><strong>2,290</strong></td>
</tr>
</tbody>
</table>
Land Acres Acquired Annually by Watershed: 1985 - 2012
Land Acquisition Spending by Watershed:
1985 - 2012
Milestones Reached

• During 27 year program, now over 500 parcels acquired
• Over 22,000 acres protected
• Over 5,000 acres in WPRs acquired
• $130 million Spent
• Wachusett watershed acquisitions played large role in successful filtration avoidance decision by federal courts
• Program is a national model in science-based acquisition targeting and use of GIS
Overall DCR-MWRA Water System
Quabbin-Ware-Wachusett Watersheds
WSPA Enforcement in Action: Bear Hill Subdivision, Rutland

What can happen without land acquisition
WSPA Enforcement in Action: Bear Hill Subdivision, Rutland
WSPA Enforcement in Action:
Bear Hill Subdivision, Rutland

2005
WSPA Enforcement in Action: Bear Hill Subdivision, Rutland
WSPA Enforcement in Action: Bear Hill Subdivision, Rutland
WSPA Enforcement in Action:
Bear Hill Subdivision, Rutland

2010
WSPA Enforcement in Action: Bear Hill Subdivision, Rutland
DCR has worked with DEP and the Attorney General for over six years to control the environmental damages from this construction site in the Ware River watershed.

**Bear Hill Timeline**
- **2004**: Proposed 53 houses on 71 acres on steep hill adjacent to Moulton Pond.
- **2005-2006**: Initial application for local (Zoning and Wetlands), state (Watershed Protection Act), and federal (401 Water Quality Certification) permits.
- **Fall 2006**: Construction Begins
  - October – Immediate erosion problems identified by DCR.
  - November – DEP investigation.
  - December – Initial state enforcement action.
- **2007**: Attorney General files complaint after one year of efforts to stop environmental degradation.
Builder has been found guilty of violating both the Watershed Protection Act and the Wetlands Protection Act. Currently awaiting final penalty.

**Bear Hill Timeline**

- **2008:** Ongoing Enforcement
  - Process started for new WsPA Variance and other permits for improved wetland crossing.
  - New violation identified relating to an encroachment into the WsPA Primary Zone.
- **2009:** New permits granted with focus on improved erosion control measures.
- **2010:** Enforcement proceedings continue.
  - WsPA encroachment resolved without court involvement.
  - Wetland and water quality violations proceed to Superior Court. AG submits a motion for a penalty of $925,188.
- **2011:** Site continues to pose water quality threats to the watershed.
  - Superior Court hearings to determine penalty. Ruling expected in spring 2012.
  - Ongoing inspections find continual sediment and erosion problems. DCR, DEP, and AG pursue additional enforcement efforts to control the site.

Overwhelmed erosion controls with sediments flowing through wetland to Moulton Pond, November 2008.
Use of Non-MWRA Funds

- Gifts and Bargain Sales (Fed Deductions + State Tax Credits)
- Collaboration with Non-Profits
- USDA's Forest Legacy Program
- Municipal Acquisitions
“Q2W” Forest Legacy Application

Quabbin Reservoir to Wachusett Mountain (Q2W)
FY13 Forest Legacy Grant Application
“Q2W” Forest Legacy Application

Forest Legacy Project
Quabbin Reservoir to Wachuset Mountain (Q2W), Greater Hubbardston area (Worcester County), Massachusetts

FUNDING HISTORY

<table>
<thead>
<tr>
<th>Description</th>
<th>FY 2013 Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest Legacy Program FY 2013</td>
<td>$5,940,000</td>
</tr>
<tr>
<td>Non-Federal Cost Share FY 2013</td>
<td>$2,435,000</td>
</tr>
<tr>
<td>Project Costs FY 2013</td>
<td>$8,375,000</td>
</tr>
<tr>
<td>Project Acres FY 2013</td>
<td>3,275</td>
</tr>
<tr>
<td>Forest Legacy Funding to Date</td>
<td>$0</td>
</tr>
<tr>
<td>Total Project Costs</td>
<td>$8,375,000</td>
</tr>
<tr>
<td>Total Project Acres</td>
<td>3,275</td>
</tr>
</tbody>
</table>

Project Location

Forest Legacy Area

DcR, Massachusetts
“Q2W” Forest Legacy Application

Involvement
• 23 Landowners
• 7 Towns
• 4 Land Trusts
• 1 Watershed Group
• 1 State Agency (DCR)

Primarily CRs/WPRs

Exemplary benefits: economic, biodiversity, water supply protection, recreation
DWSP’s Watershed Preservation Restriction Program

- Voluntary agreement between landowner and the Division.
- Landowner gives up certain rights to his or her land.
- Rights are permanently removed from the property, even when it is subsequently sold.
- Defined in M.G.L. Chapter 184 Section 31.
WPR Program

• Statute also defines the Conservation Restriction, which is a similar and more commonly used legal tool.

• In other states, Restrictions are called Conservation Easements.

• To avoid confusion, throughout this presentation, the Division’s Watershed Preservation Restrictions will be referred to as WPRs, and Conservation Restrictions or Conservation Easements held by others will be called Restrictions.
WPR Program

Total Number of WPRs

## WPR Program – Landowner’s Perspective

<table>
<thead>
<tr>
<th>Why a Landowner Would Prefer a WPR</th>
<th>Why a Landowner Would Prefer to Sell Land in Fee to the Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Can continue to own their land.</td>
<td>• Do not wish to have any ownership responsibilities.</td>
</tr>
<tr>
<td>• Can continue allowed activities on their land (i.e. passive recreation, hunting, forestry).</td>
<td>• Receive more money for sale of land in fee.</td>
</tr>
<tr>
<td>• Eligible for tax incentives for donating Restrictions (if they wish to donate the Restriction).</td>
<td></td>
</tr>
<tr>
<td>• Pay reduced property taxes.</td>
<td></td>
</tr>
</tbody>
</table>
# WPR Program – DWSP’s Perspective

<table>
<thead>
<tr>
<th>Why the Division Would Prefer to Acquire a WPR</th>
<th>Why the Division Would Prefer to Acquire Land in Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>• WPRs cost less than acquiring land in fee.</td>
<td>• When complete control of the land is required, fee ownership is necessary.</td>
</tr>
<tr>
<td>• WPRs do not incur Payment in Lieu of Taxes (PILOT) obligations.</td>
<td></td>
</tr>
<tr>
<td>• WPRs do not require active land management required of fee lands (i.e. road maintenance, forest management, control of public access). However, they do still require stewardship.</td>
<td></td>
</tr>
</tbody>
</table>
Each WPR is negotiated separately and the language within it varies based on the landowner’s requirements and the Division’s site-specific requirements. WPR language has also evolved over time. The current WPR Template prohibits activities that can harm water quality, such as:

- construction of buildings, structures, roads, or paths;
- excavation; storage or use of hazardous materials;
- grazing or sheltering of livestock or animals;
- motorized vehicle use, unless required for land management purposes.

Landowners can still use their land for passive recreation and timber harvesting (in compliance with the Massachusetts Forest Cutting Practices Act).
WPR Program – Stewardship Basics

- Baseline Documentation Reports
  - Photos, maps, narrative
  - Conditions at time of closing

- Monitoring
  - Semi-annually
  - On-the-ground; restrictions are being upheld

- Landowner relations
  - Working relationships
  - When land changes hands

- Enforcement
A Baseline Documentation Report ("baseline") consists of

- Photos
- Maps
- Narrative

which portray the condition of the restricted property relative to the terms of the CR.

The purpose of the baseline is to provide a baseline from which future changes to the property can be measured.
WPR Program – Monitoring

- On-the-ground monitoring consist of making contact with the landowner and walking the property to make sure the provisions of the WPR are being upheld.
- Regular monitoring reduces the chances that WPRs will be violated, and increases the chances of correcting a violation if one does occur.
WPR Program – Landowner Relations

- Maintaining good working relationships with landowners is the easiest way to prevent violations.
- The most important time to reach out to landowners is when the land changes hands.
The pace of WPR acquisition increased dramatically.

Staffing for the WPR stewardship program inadequate and not focused.

Resulted in an increasing stewardship backlog:
- Baseline report production did not keep up with WPR acquisition.
- WPRs monitored infrequently.
- Violations went undiscovered.
- Landowners did not know who to contact.
WPR Program – Stewardship 2009 to Present

• In 2009, a Watershed Preservation Restriction Coordinator was hired to oversee WPR stewardship in the three watersheds.

• The Division began addressing the backlog of stewardship activities, as well as revising our procedures in light of best practices that had been developed since 2005.

• Massive progress made on baselines, monitoring (now every two years), landowner relations and enforcement
## WPR Program – Context with Others

<table>
<thead>
<tr>
<th>Agency/Division</th>
<th>Number of Restrictions</th>
<th>Dedicated Stewardship Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>DCR – Division of Water Supply Protection</td>
<td>~100</td>
<td>1</td>
</tr>
<tr>
<td>DCR – Division of State and Urban Parks</td>
<td>~300</td>
<td>0</td>
</tr>
<tr>
<td>Fisheries and Wildlife</td>
<td>~200</td>
<td>½</td>
</tr>
<tr>
<td>Agricultural Resources</td>
<td>~800</td>
<td>1</td>
</tr>
</tbody>
</table>

- The other Divisions and Agencies use contractors to carry out some of their stewardship duties, but others are left undone.
- The other Divisions and Agencies look to the WPR program as a model of how Restriction Stewardship can be accomplished with adequate staffing.
WPR Program

Fever Brook Acquisition, Petersham-Quabbin Watershed
Watershed Outreach

*Downstream* produced every spring and winter for the past 13 years! Evolved from large landowner outreach to reach all residents in the watershed system, focusing on general environmental issues with spotlights on DCR activities.

New bi-annual publication targeted to Watershed Preservation Restriction (WPR) holders.
Clean water for millions

By Bradford L. Miner
TELEGRAPH & GAZETTE STAFF

Quabbin Reservoir water looks good enough to drink as it flows over the spillway and down into the granite gorge of the Swift River, imagine how good it is when it comes from a faucet in Boston, 60 miles to the east — or a tap in Marlboro, Northboro, Southboro and Clinton for that matter. A blind taste test a month ago on NBC’s “Today Show” confirmed what countless people among 3.4 million greater metropolitan Boston water users already know — their tap water is among the best provided by major cities across the country.

Wine tasting expert David Lynch and Joe Bastianich described Boston’s water to “Today” co-hosts Meredith Vieira and Matt Lauer as “very crisp and appealing,” and “its purity that’s straight down the middle.”

Second to Salt Lake City, Boston’s water was judged to be better than that of Cleveland, Columbia, S.C., Miami, Chicago, St. Louis, Memphis, Tenn., Dallas, Portland, Ore., and San Francisco.

Quenching Boston’s thirsty reservoirs and their homes while the Massachusetts Water Resources Authority provides wholesale water and sewer services:

People served: 2.5 million in 800,000 households
Businesses served: 5,500
Communities served: 61 in metropolitan Boston
Area communities that receive some or all water from MWRA: Clinton, Mattawa, Northboro, Southboro
Avg. gallons/day water supplied: 826 million
Avg. gallons/day sewage treated: 362 million
Acres of watershed land acquired: 10,000

The watershed: Watershed area and total percent of protected land

James M. French, land acquisition coordinator for the state Division of Water Supply Protection, on site at Keyes Brook in Keyes Brook Gorge in Princeton, where 10 acres were purchased for protection in the Wachusett Reservoir watershed.
2010 Exemplary Source Water Protection

Large System Award presented to the
Massachusetts Department of Conservation & Recreation
Massachusetts Water Resources Authority
Boston, Massachusetts