Natural Resource Damages Settlements and Groundwater Restoration

Karen I. Pelto

Massachusetts Department of Environmental Protection

Massachusetts Water Resources Commission

June 14, 2018

Natural Resources Held in Trust for the Public by the Commonwealth

Resources include:

Biota (fish and wildlife)

Surface Water

Groundwater

Air

Soils and Sediment

Services provided by Natural Resources include:

Fishing, hunting and shellfishing

Habitat for wildlife

Recreation

Spiritual or cultural use

Water supply

When oil spills or releases of hazardous materials, cleanup and assessment occur

Cleanup

Determine nature and extent of contamination

Evaluate, select and take actions to eliminate or reduce risks to human health and the environment

Damages Assessment

Determine type and extent of injuries to natural resources

Evaluate, select and take actions to restore natural resources that compensates the public for injuries

Natural Resource Damages Authority and Trustees

Massachusetts General Laws:	**Federal Laws:**
• Chapter 21E, sections 5A and 11A • Chapter 21A section 2A	• Superfund (CERCLA) • Oil Pollution Act of 1990

State Trustee:	**Federal Trustees:**
• Secretary of Energy and Environmental Affairs • MassDEP delegated authority to administer NRD Program	• National Oceanic and Atmospheric Administration • U.S. Fish and Wildlife Service • Federally recognized Tribes

Over $76 million in Natural Resource Damages settlements in Massachusetts

New Bedford Harbor $20 M

GE/Housatonic $15 M

Fireworks (Tronox) $6.8 M

Bouchard B-120 $19.3 M

IndustriPlex $4.3 M

Nyanza $3.1 M

Sutton Brook Disposal Area $1.65 M

Textron/MMR $1.3 M

Charles George $1.2 M

Blackburn & Union $1 M

Rubchinuk $747,000

Holyoke Coal Tar $500,000

Global/Irving $312,500

Island End $300,000

Reed & Barton $236,447

Framingham GM $157,425

PSC Palmer $157,000

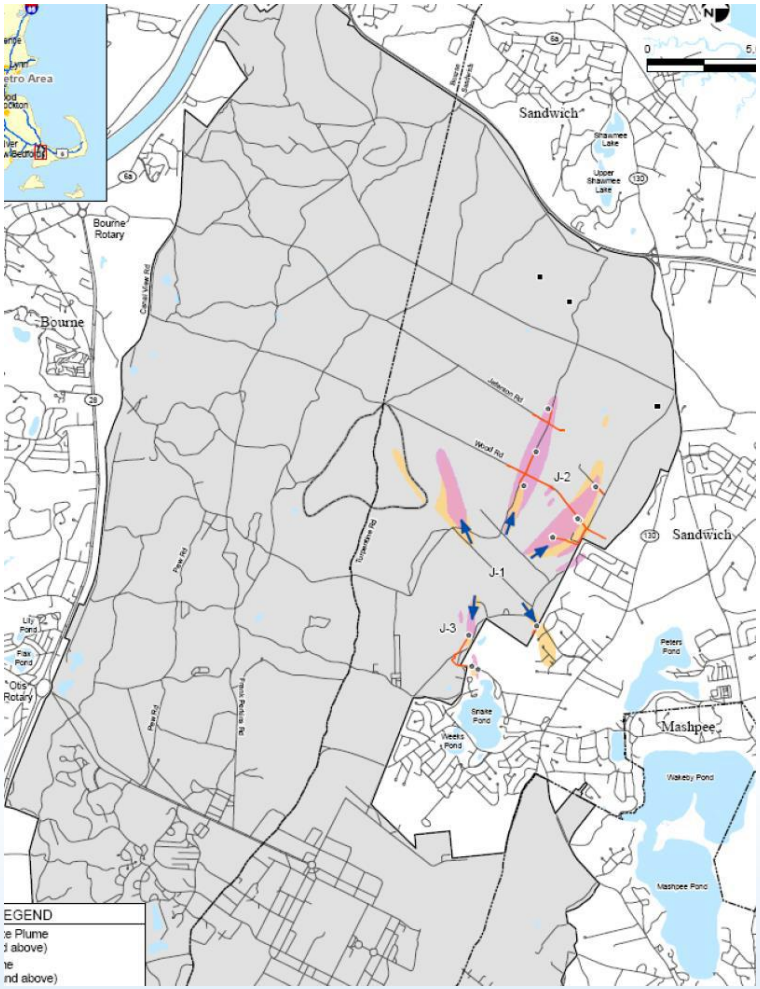
Posavina $155,000

JP Noonan $55,100

Colrain Acid Spill $30,000

Hallmark/Mystic $26,801

Example of Natural Resource Injury and Restoration: Textron/MMR 21E & CERCLA



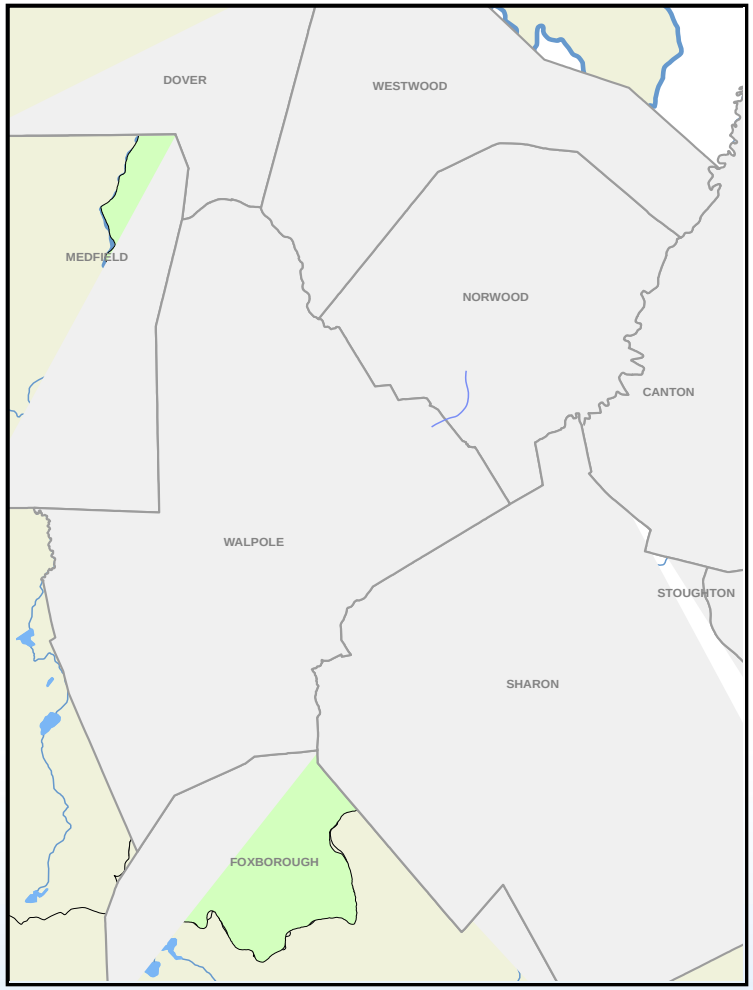
- Exceedance of MA drinking water or other standards is considered an injury to groundwater
- Munitions testing within J ranges
- Sagamore Lens within Sole Source Aquifer
- Wellhead protection areas
- Groundwater contaminated with perchlorate

MassDEP

Example of Natural Resource Injury and Restoration: Textron/MMR

- $259,200 to purchase 13.7 acres in Mashpee
- $61,200 to purchase 5.3 acres in Sandwich
- $442,700 for Phases I, II, and III of Sandwich's Comprehensive Water Resources Management Plan
- $371,800 for Upper Cape Regional Water Supply Cooperative Sagamore Lens Sustainable Management Plan

Example of Natural Resource Injury and Restoration: Blackburn & Union NPL



- Head of the Neponset River Sole Source Aquifer
- Groundwater contaminated with VOCs, SVOCs, metals
- $300,000 for groundwater restoration

Example of Natural Resource Injury and Restoration: Blackburn & Union

Groundwater Recharge

- Protect the quality of current and potential drinking water supplies through aquifer land conservation
- Reduce losses of clean water to aquifers (reduce infiltration and inflow to a sewer system)
- Provide quality recharge to aquifers, (capture, store and infiltrate stormwater that would otherwise be discharged directly to a stream via an existing storm drain system)

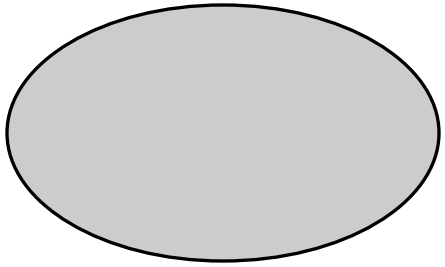
Demand Management

- Implement measures to conserve water (water audits, leak detection surveys and repair)
- Reduce impacts of drought conditions on aquifers and ecosystems

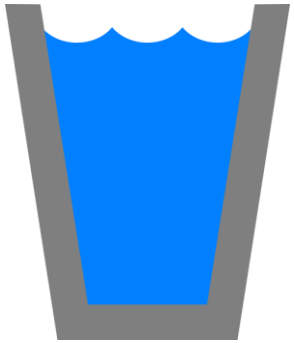
Integrated Management

- Integrate planning and management of current and potential drinking water supplies and wastewater treatment

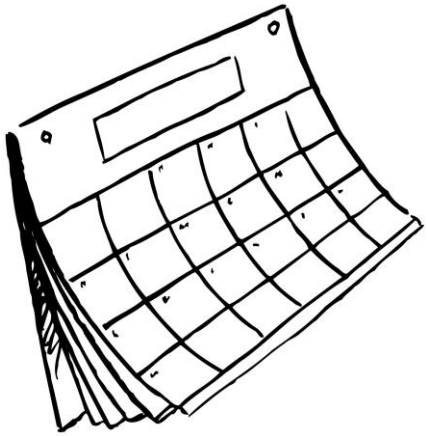
Schematic of MA Groundwater Method



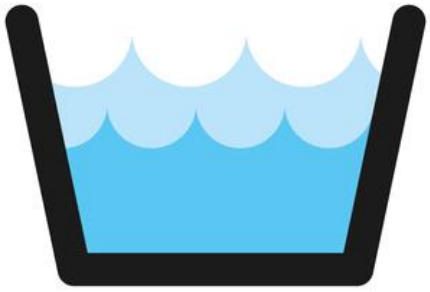
Area



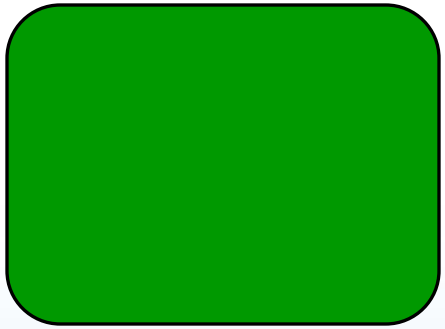
Volume



Time



Total Volume



Area

Theoretical Well (gallons per minute)

Annual Replacement Volume

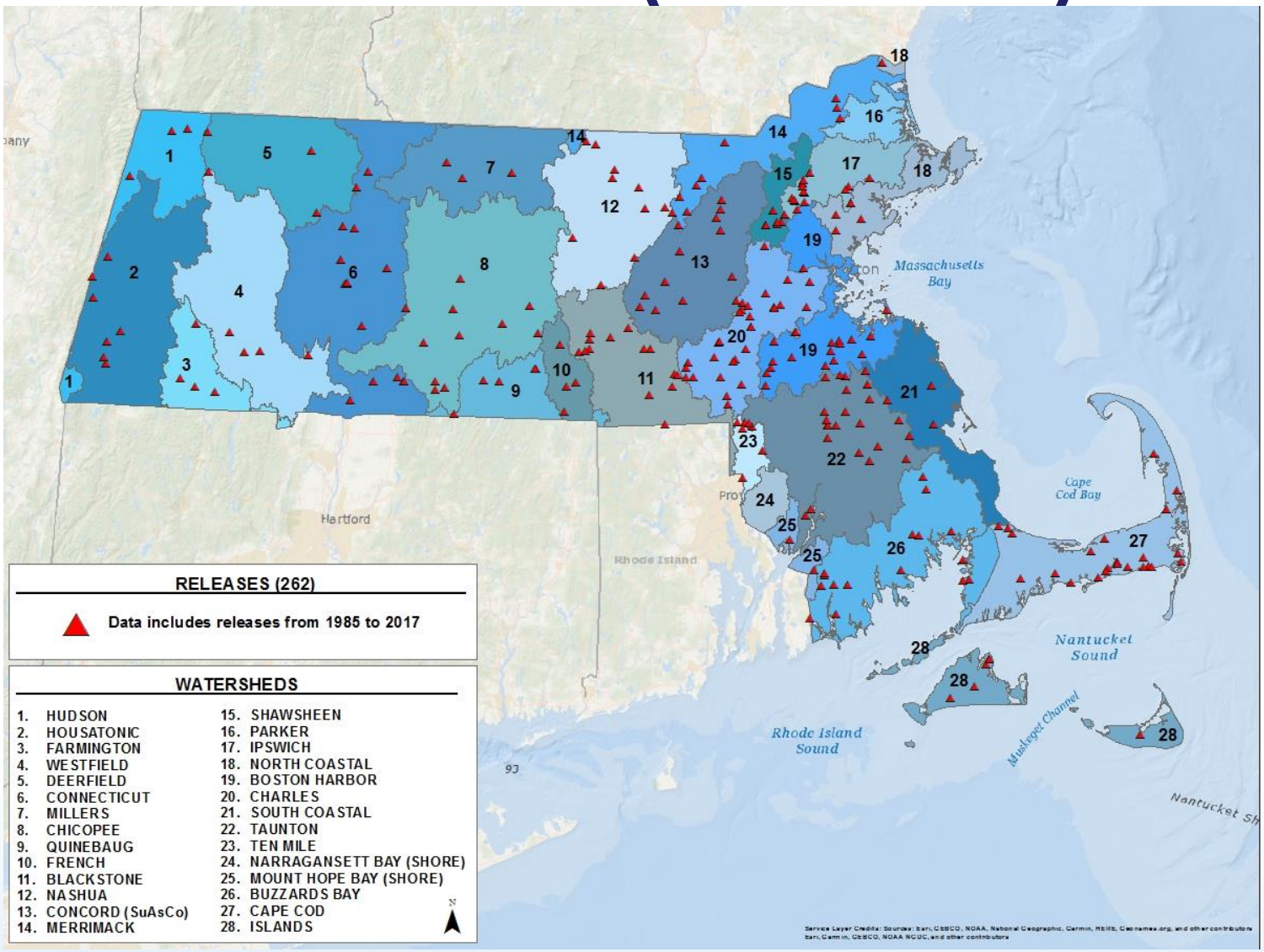
Resource Equivalency Analysis - Debit

Input	Potential Source/Notes
Injury Determination	Contamination above a threshold
Injury Start Year	Year contamination was first identified
Current Year	Year in which the assessment occurs
Injury End Year	Year of permanent solution or year of predicted permanent solution
Baseline	Conditions but for the contamination
Discount Rate	3% (standard NRDA practice)
Recharge Rate (ft/year)	USGS estimates or fraction of precipitation rate
Change in Area of Contamination	Reflects remedial activities
Area of contamination (acres)	Surface area of contaminated groundwater

Resource Equivalency Analysis - Credit

Input	Source/Notes
Restoration Start Year	Year of assessment
Current Year	Year in which the assessment occurs
Restoration End Year	Benefits of restoration endure in perpetuity
Discount Rate	3% (standard NRDA practice)
Pumping Rate	gpd or gpm of annual replacement volume
Required Land Protection Area	Land required to protect the annualized replacement volume by treating that volume as if it were the approved pumping rate
Zone I or IWPA	Zone I radius in feet = (150 x log of pumping rate in gpd) – 350 IWPA radius in feet = (32 x pumping rate in gallons per minute) + 400
Cost of Land ($/Acre)	Assessor data, transaction data, reimbursable state-owned land valuations

Historical Releases (all releases)



MassDEP Stakeholder & Standard NRD Assessment Process

- Stakeholder Meetings:
  - Surface Water (Oil) on March 1, 2018
  - Groundwater (Oil and Hazardous Materials) on April 23, 2018
  - SAC on January 25 and April 26, 2018
- Evaluating oral and written feedback from Stakeholders and SAC
- Revised Report and Proposed Regulatory Language Summer 2018

https://www.mass.gov/service-details/development-of-standardized-nrd-assessments