

On the WATER Front

Massachusetts Water Conservation Standards
&
Drought Management Plan

WSCAC Meeting

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Executive Office of Energy and Environmental Affairs

**Update on the
Massachusetts Water Conservation
Standards**

Purpose of the Standards

- Set statewide goals for water conservation & water-use efficiency; provide guidance on effective conservation measures.
- Standards represent best practices; should be adopted by water suppliers, water users, & state agencies in water resources planning & management programs, and in issuing water-use permits or approvals.
- Recommendations indicate trends in water-use efficiency; encouraged where practicable.



Revision Process

- Workgroups convened 2013-2014 with stakeholders and content experts
- 12 meetings
- Focus on updates to
 - Metering
 - Water Audits and Leak Detection
 - Residential
 - Outdoor Water Use
 - Pricing
 - Agriculture
- Voted on and Adopted by MA Water Resources Commission in May 2015

WATER CONSERVATION STANDARDS



Workgroup Members

- Wayne Castonguay, Ipswich River Watershed Association
- Eileen Commane, Dedham Westwood Water District
- Stephen Estes-Smargiassi, MWRA
- Colleen Heath, CDM Smith
- Christine Millhouse, Attleboro Water Dept
- Matt Mostoller, Acton Water District
- Leah Stanton, Weston and Sampson
- Samantha Woods, North and South Rivers Watershed Association
- Staff from DCR, DEP, DFG, DAR and EEA

Content Experts Chapter 4, Pricing

- Alan Cathcart, Concord Water & Sewer
- Eric Hooper, Sharon DPW
- Nancy Hammett, Consultant
- Dr. Rob Johnston, Clark University
- Chris Woodcock, Woodcock Associates

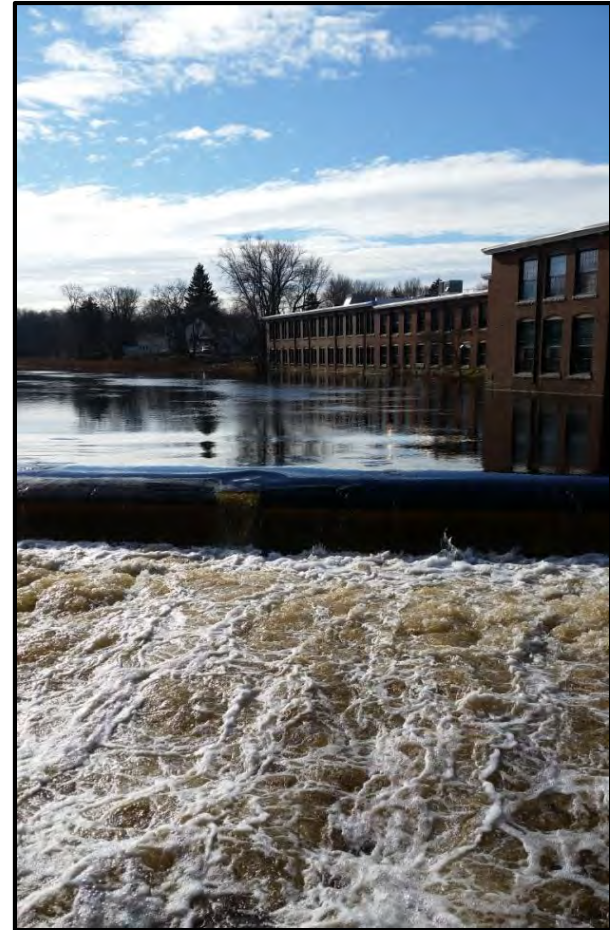
Content Experts Chapter 9, Outdoor

- Rich Bradley, Superscape Landscape
- Dr. J. Scott Ebdon & Mary Owen, UMass



Overall Revision Goals

- Reflect current best management practices in the water industry
- Incorporate updates in technology and national efficiency standards
- Improve readability and user experience
- Review in light of 2016 drought



Water Loss Control (Chapter 2)

- New title to reflect more comprehensive approach to water loss control
- Align chapter with latest industry guidance from: International Water Association (IWA), AWWA, EPA, Water Research Foundation (WRF)
- Standards reworked to emphasize importance of:
 - Implementing comprehensive water loss control program
 - performing AWWA M36 Water Audit
 - performing leak detection as part of a program
- New recommendations added for:
 - water loss control programs
 - pressure management
 - service leakage
 - automated leak detection



Metering (Chapter 3)

Updates to Standards:

- New standard for metering water sources
- New standard requiring annual calibration of source, raw, treatment, & finished master meters
- Combined two standards to clarify calibration requirements for other meters, including large customer meters
- Minor edits to meter/repair replacement policy, meter sizing, and billing frequency

Recommendations, updates:

- New: bill monthly (or at a minimum, bi-monthly)
- Expanded remote reading recommendation includes advanced metering (e.g., AMR & AMI)



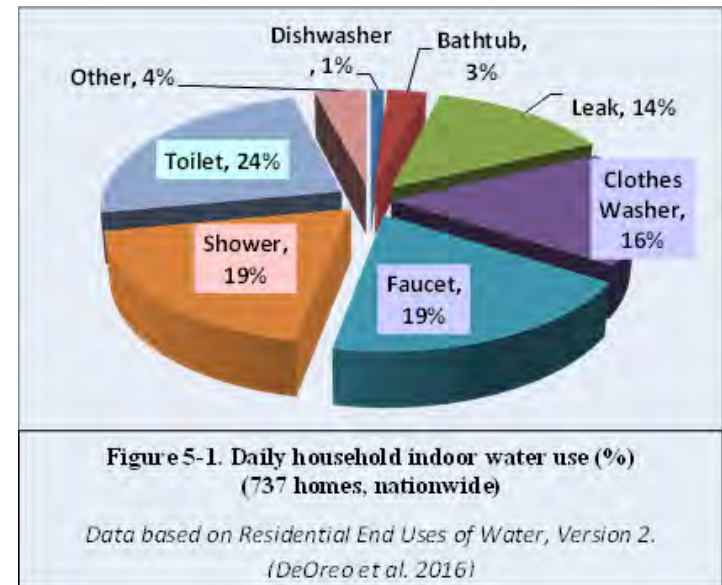
Pricing (Chapter 4)

- Updated to emphasize balancing competing goals of water supply budgeting & rate setting.
- Focus on sending strong water conservation price signals while achieving necessary cost recovery, stable revenue streams, & affordability.
- Recommendations augmented to provide new guidance on:
 - innovative conservation-oriented rate structures
 - long-term planning & budgeting
 - pricing tools to improve equity and affordability of customer costs & utility revenue stability
 - billing practices & positive messaging that support conservation price signals
 - robust public engagement practices
- Lists tools to help suppliers meet standards & implement recommendations.



Residential Water Use (Chap. 5, Appendixes D & E)

- Highlights EPA's Water Sense program (2006), esp. higher efficiency standards for water-using fixtures & appliances
- Standard 2 rewritten & divided into two parts:
 - New Standard 1: directed to the public; states residential per capita standard simply & clearly for all water users.
 - Standard 2: directed to communities; states 65 rgpcd standard as a performance standard for communities & water suppliers.
- Recommendations consolidated & reorganized by audience
- Lawn & landscape recs moved to Chap. 9, Outdoor Water Use
- Appendixes D & E: updated content to reflect more recent data & studies



Outdoor Water Use

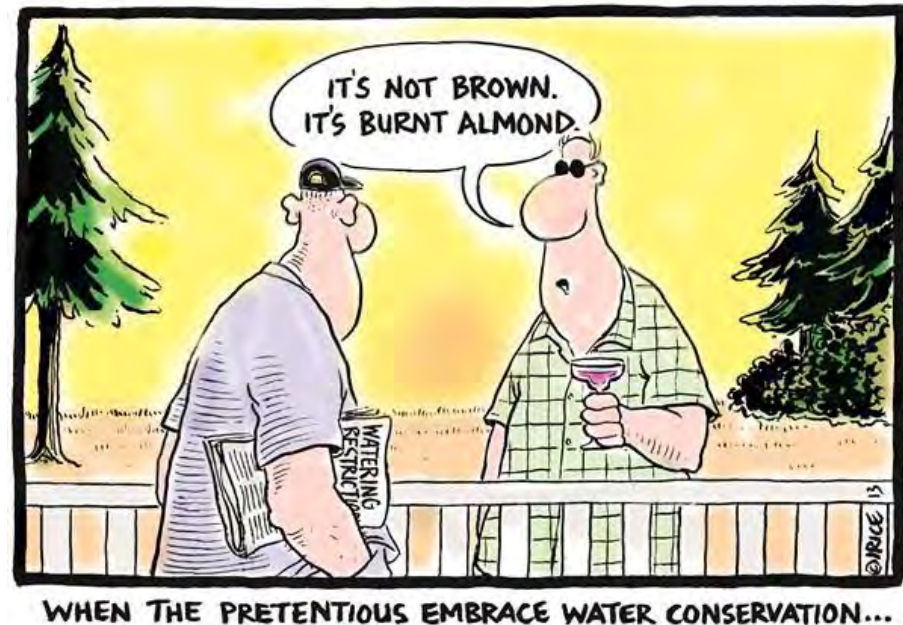
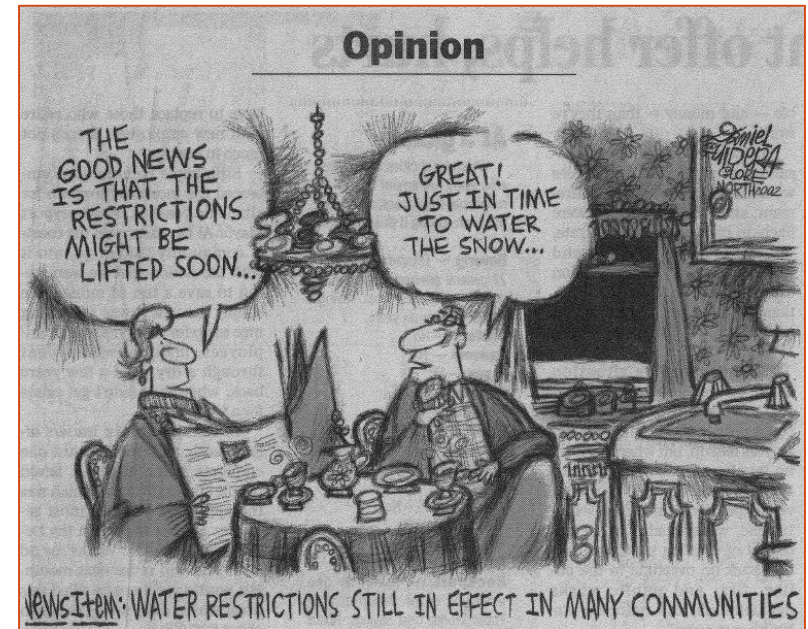
(formerly Lawn & Landscape: Chap. 9 & Appendixes I, J, & K)

- New title, broadened focus
- Emphasis:
 - Minimize need for watering by following established **water-smart principles**
- Water-Use Restriction Bylaw Standard
 - Apply to private wells *where warranted*
 - Clarifies applicability-Municipal Governments and Water Districts
- Two new standards added:
 - #2, addressing efficiency of irrigation systems
 - #3, addressing actions during drought conditions



Outdoor Water Use

- Recommendations consolidated & reorganized
- New recommendations:
 - #1, planning landscapes to reduce watering needs
 - #2 – 5, other outdoor uses of water besides landscape watering
 - #7 and #10, municipal government actions
- Added case study highlighting a success story



Agricultural Water Use - Chapter 8

- Standards: One new standard was added to address soil health management.
- Recommendations, some new ones added; old recommendations reworked to advance and encourage:
 - #1, maintaining industry-specific best management practices
 - #2, developing and implementing a conservation plan
 - #3, use of micro-irrigation as a supplement
 - #4, uniform application of water from sprinkler systems
 - #5, periodically evaluating irrigation system efficiency
 - #6, maintaining adequate soil moisture
 - #7, adding organic matter to soil
 - #8, covering production soils throughout the year

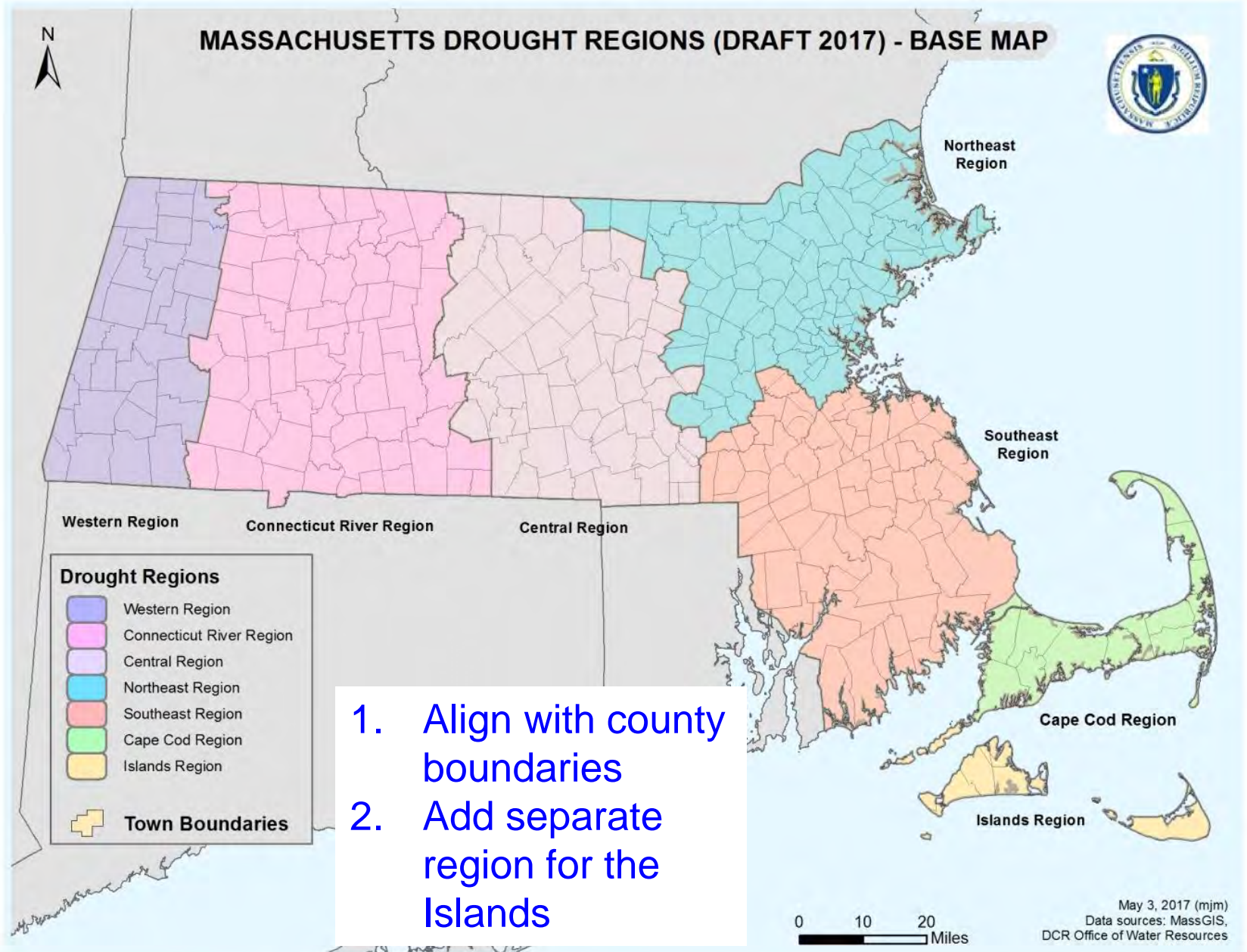


Chapters 1, 6, 7 & 10

- **Chapter 1:** minor updates to reference recent drought & reflect current sources of planning guidance, including state-developed guidance
 - Added information on new resources for innovative water banking & water-neutral community growth
- **Chapter 6:** no additional changes
- **Chapter 7:** minor edits clarifying existing language
- **Chapter 10:** minor updates & improvements for clarity; eliminated recommendation to establish a State Water Conservation Coordinator at EEA

Update on Revisions to the Massachusetts Drought Management Plan

7 Drought Regions



Proposed Drought Levels

Drought Monitor	MA Percentile Range	MA New Drought Nomenclature	MA Current
D0: Abnormally Dry	>20 and ≤30%	Mild Drought	Advisory
D1: Moderate	>10 and ≤20%	Significant Drought	Watch
D2: Severe Drought	>2 and ≤10%	Critical Drought	Warning
D3: Extreme Drought			
D4: Exceptional Drought	≤2%	Emergency Drought	Emergency

Proposed Changes to Indicators

Indicator	Current	CHANGES
Precipitation-SPI	Normalized standard deviations; 2,3,6,12 month look-back periods	Add 9 and 24 month look-back periods (1 and 36 month for information only); Use new percentile ranges
Streamflow	Percentile from monthly average; Count months <25 th percentile	Percentile from monthly median; Use new percentile ranges
Groundwater	Percentile from month end value; Count months <25 th percentile	Use new percentile ranges
Reservoirs, Lakes and Ponds	Standard deviation; Size of reservoir	Percentile from month end value; Use new percentile ranges
Fire Danger – KBDI	0-800 units, as reported by Fire Chief	Created a threshold for highest drought level
Crop Moisture	As reported by NOAA national model	Leave as is; Looking to replace with an evapotranspiration index and at higher spatial resolution- TBD
Precipitation - % of Normal	2,3,6,12 look-back periods	Remove as indicator; Report to aid with communication to public

All indicators are calculated using the entire period of record available at each site. A site must have at least 10 years of data in order to be used.

State Actions- Key Functions

- Coordination and Statewide Drought Response
- Data gathering and analysis
 - Automate analysis, increase real-time data & reporting frequency
- Communication and Public Outreach
 - Enhanced Communications Strategy, Drought Portal, impact reporting
- Demand Management
 - Improve water-use efficiencies at state facilities
- Supply Management
 - Review Emergency Plans in light of drought
- Technical Assistance
 - Provide guidance on development of local DMPs, WCPs

Menu of Local Preparedness Actions

Major Themes:

1. Local Drought Management Plan (DMP) as part of Emergency Response Plan (including supply side actions)
2. Water Conservation Program (WCP)
3. Land Use Planning to Minimize Water Use & Increase Recharge
4. Water Rates
5. Nonessential Outdoor Water Use Restrictions

Menu of Local Actions During Drought

“Top Ten”

1. Adopt and implement the state’s nonessential outdoor water use restrictions – **This should be included in all plans.**
2. Limit or prohibit:
 - installation of new sod, seeding, and/or landscaping
 - watering during or within 48 hours after rainfall
 - washing of hard surfaces (sidewalks, patios, driveways, siding)
 - personal vehicle or boat washing
 - operation of non-recirculating fountains
 - filling of swimming pools, hot tubs, and rinks
3. Promote or offer loans or rebates for removal of high-water-use plants
4. Provide incentives for installing efficient irrigation technologies
5. Establish water-use reduction targets for all water users
6. Implement drought surcharge or seasonal water rates
7. Targeted outreach to top water users to help curb their use
8. Reduce or eliminate hydrant flushing, unless essential for public safety
9. Implement or increase incentives for indoor and/or outdoor water audits
10. Provide assistance with installation of water-efficient fixtures and appliances, and leak repair

Example Local Drought Response Matrix

State Drought Level and Description	Level 1: Dry	Level 2: Very Dry	Level 3: Critically Dry	Level 4: Emergency	
Reservoir Trigger(s)	Fill in if establishing local reservoir triggers for staged drought response				
Groundwater Trigger(s)	Fill in if establishing local groundwater triggers for staged drought response				
Demand Management Actions	Nonessential Outdoor Watering	1 day per week watering, before 9 am and after 5 pm.	Hand-held watering only, before 9 am and after 5 pm.	No nonessential outdoor water use	No nonessential outdoor water use
	New sod, seeding, and landscaping	Follow best management practices for efficient watering.	Installation of new sod, seeding, and landscaping is discouraged	Installation of new sod, seeding, and landscaping is strongly discouraged.	Installation of new sod, seeding, and landscaping is prohibited.
	Water Savings Goal	55 gallons per person per day, or reduce use by __%	50 gallons per person per day, or reduce use by __%	45 gallons per person per day, or reduce use by __%	40 gallons per person per day, or reduce use by __%
Water Supply Actions	Interconnection/Backup and Emergency Supplies	n/a	Prepare activation of interconnections/ backup supplies	Activate interconnections/backup supplies	Activate interconnections/backup supplies
Communication Actions	Website/Press/Social Media	Update website/social media with latest information on drought status and restrictions/tips	Weekly Tweets on Water Conservation	Press Events and Weekly Social Media Updates	Daily Communication using all tools
Coordination Actions	Drought Management Team	Convene Drought Team, Monthly Meetings	Weekly Drought Team Meetings	Weekly or Daily Drought Team Meetings	Daily Drought Team Meetings

Statewide Guidance: Avoid Watering During a Drought

Limits on outdoor water use are critical to help ensure that enough water is available for essential needs, including drinking water and fire protection, crop irrigation, and our natural resources.

State Drought Level	Nonessential Outdoor Water Use Restrictions
Level 1 (Dry)	1 day per week watering, after 5 p.m. or before 9 a.m. (to avoid evaporative losses)
Level 2 (Very Dry)	Outdoor watering should be limited to hand held hoses or watering cans, to be used only after 5 p.m. or before 9 a.m.
Level 3 (Critically Dry)	Ban on all nonessential outdoor water use
Level 4 (Emergency)	Ban on all nonessential outdoor water use



Questions?
Comments?