THE MASSACHUSETTS WATER RESOURCES COMMISSION

FY2023 ANNUAL REPORT

The Commonwealth of Massachusetts
Maura T. Healey, Governor | Rebecca L. Tepper, Secretary, Executive Office of Energy and Environmental Affairs

MEET THE WATER RESOURCES COMMISSION

THE COMMISSION'S ROLE AND STRUCTURE

The Water Resources Commission (Commission or WRC) was established in 1956 by the Massachusetts Legislature and was set up to address flood prevention and water conservation among other things. It is responsible for developing, coordinating, and overseeing the Commonwealth's water policy and planning activities to ensure that Massachusetts will have plentiful water to support health, safety, economic development, and ecological vitality for generations to come.

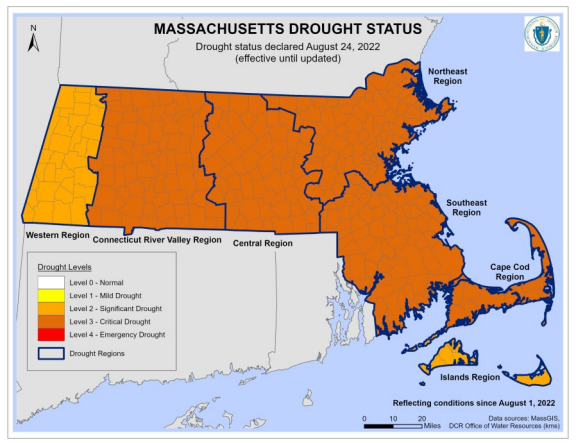
The twelve-seat Commission includes five public members and appointees from seven state agencies or offices.

The Commission's Executive Director, based at the Executive Office of Energy and Environmental Affairs (EEA), and its technical staff, based at the Department of Conservation and Recreation's (DCR) Office of Water Resources, work with state and federal agencies and members of the public to support the Commission's work.

RESPONSIBILITIES OF THE COMMISSION

The responsibilities of the Commission, highlighted below and described in this report, establish the scientific and policy foundation for the sustainability of Massachusetts' water resources.

- Establish statewide Water Conservation Standards and policies to encourage efficient use of water
- Administer the Interbasin Transfer Act
- Cooperate with the United States Geological Survey (USGS) and manage the statewide precipitation network to provide real-time water data for monitoring and research
- Approve the Massachusetts Drought Management Plan, monitor hydrologic conditions, and advise the state Drought Management Task Force during drought
- Provide water needs forecasts for communities' long-range planning and permits
- Develop and provide a forum for public input, coordination, and diverse viewpoints on current and long-term water policies and issues
- Act as the state coordinating agency to assist in the implementation of the National Flood Insurance Program



PROGRAM DESCRIPTIONS AND FY2023 WORK

TRACKING HYDROLOGIC CONDITIONS AND ADVISING ON DROUGHT

Staff gage at A-1 Reservoir in Westborough, August 2022

WRC staff monitors and analyzes hydrologic conditions monthly and produces a report covering precipitation trends, streamflows, groundwater levels, lakes and impoundments levels, and other hydrologic data. Staff uses these data to monitor for droughts, inform the WRC at its monthly meetings, and, as needed, advise the state's Drought Management Task Force (DMTF).

Of the hydrologic monitoring networks, staff manages the precipitation network, which provides data from 50 active stations in Massachusetts and has been in operation since 1956. Other networks are operated cooperatively with the U.S. Geological Survey (USGS).

The DMTF continued to meet in **FY2023** to track a drought that began in FY22. The drought reached its worst at Critical/Level 3 in five drought regions in August 2022. In addition to monthly meetings, the fast intensification of the drought required mid-month meetings in July and August to closely track the conditions. With gradual recovery, the drought ended in January '23.

WRC staff worked with the Northeast Regional Climate Center at Cornell University to improve the Massachusetts Drought Dashboard (www.mass.gov/massdd). Enhancements included creating weekly calculations and products in addition to the existing monthly analyses. The one index that remains to be integrated is the Evapotranspiration Index. Recommendation for the Evaporative Demand Drought Index to be incorporated was presented to the WRC at the beginning of FY23 and will be reflected in the next version of Drought Management Plan.

THE USGS COOPERATIVE PROGRAM

The U.S. Geological Survey and the state have had a cooperative, hydrologic monitoring partnership since 1904. The program currently maintains and provides data from the following stations: 59 real-time streamflow, 32 manual and 61 automated groundwater, 7 precipitation, and 4 tidal. State staff from MassDEP and DCR and Steve Mabee, the state geologist, and his students from UMass Amherst perform the monthly manual measurements at groundwater wells.

In FY2023, staff continued to implement the National Groundwater Monitoring Network (NGWMN) grants in cooperation with USGS. Work included upgrading additional wells to real-time data transmission and replacing aging equipment at existing sites. This work is ensuring continued, reliable real-time measurement and data provision for the groundwater network.

January 18, 2023 King tide, Newburyport MA

FLOOD HAZARD MANAGEMENT PROGRAM

Executive Order 149 (1978) designated the Commission as the state coordinating agency to implement the National Flood Insurance Program (NFIP) and implement the flood plain management criteria for state-owned properties in special hazard areas. Through the Commission's Flood Hazard Management Program (FHMP), staff provides technical assistance to NFIP communities on a wide range of matters, including floodplain management best practices, flood-resistant standards for construction, floodplain mapping issues, flood insurance questions, and mitigation options to reduce flood losses.

Highlights of the FHMP **in FY2023** include:

- Support and technical assistance directly to 295 MA communities (84% of all MA communities)
- Review of more than 100 MEPA projects located in 80 different communities
- 18 training events on topics including floodplain construction codes, the state model bylaw, FEMA maps and mapping processes, substantial improvement & substantial damage, pre-disaster planning for post-disaster work, and floodplain management basics
- 23 one-on-one meetings with local communities to offer guidance on specific projects or issues
- Work on numerous special projects including the FEMA state assessment, the BRIC building code project, the 2022 MA Climate Assessment and the update of the State Hazard Mitigation & Climate Adaptation Plan
- Successfully guided all 14 Quinebaug watershed communities through the map adoption process
- Offered testimony at 13 Building Code Appeals Board variance hearings

WATER NEEDS FORECASTS

Commission staff works with public water suppliers to develop 15- to 20-year water needs forecasts, using a methodology approved by the Commission. The forecasts are used by suppliers in applying for Water Management Act (WMA) permits and in long-range planning. **In FY2023,** WRC staff consulted with MassDEP and five public water suppliers in five river basins (Blackstone, Charles, Nashua, Taunton, Westfield) to review, revise, or prepare new water needs forecasts.

THE INTERBASIN TRANSFER ACT (ITA)

The ITA protects Massachusetts' vital water resources and the communities that rely on them by requiring WRC review of proposals to transfer water or wastewater between river basins. It ensures:

- Hydrology and environmental resources in the donor basin are protected
- The receiving basin is using water as efficiently as possible
- The process is transparent and promotes robust public input

In FY2023, the Commission voted to approve the following project:

- Town of Foxborough Witch Pond Wells 2022 Amendment to the September 3, 2001 Interbasin Transfer Act Approval

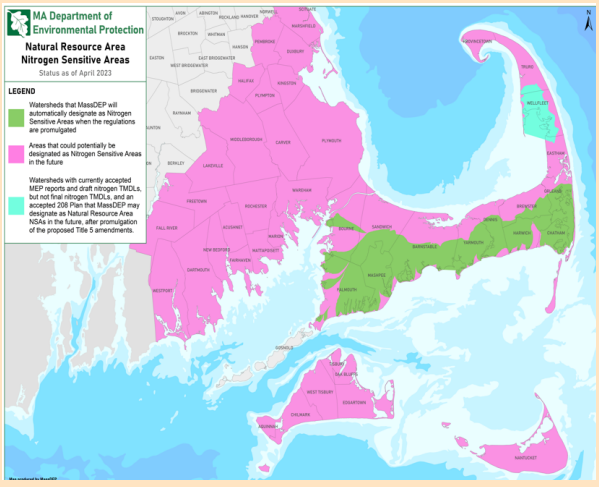
Additionally in FY2023, staff:

- Continued a comprehensive review of the ITA Performance Standards with proposed revisions to be brought before the WRC in FY2024
- Monitored continued compliance with Conditions for previously approved ITA projects
- Provided consultations to project proponents with potential new interbasin transfers

OVERSIGHT OF STATE WATER PROGRAMS

By statute, the Commission reviews certain water regulations promulgated by the Department of Environmental Protection (MassDEP), and other water resource-related programs, providing a forum for public comment.

In FY2023, the Commission heard a presentation and discussion on proposed revisions to the Water Management Act Regulations (310 CMR 36.00), and voted to approve these revisions; WRC also voted to approve new regulations at 314 CMR 21.00: Massachusetts Watershed Permit Regulations. The WRC also heard an update from MassDEP on the implementation of 314 CMR 16.00: Notification Requirements to Promote Public Awareness of Sewage Pollution, which were approved by the Commission in FY2022.



This April 2023 MassDEP map indicates current and future potential Nitrogen Sensitive Areas in Southeast Massachusetts.

PL566 SMALL WATERSHED PROTECTION PROGRAM

This program continues to oversee the operation, maintenance, and repair of state-owned PL566 flood control lands across the Commonwealth.

FY2023 SPECIAL PROJECTS

Low Flow Statistics at Gaged and Ungaged Sites

In cooperation with WRC staff, USGS calculated low flow statistics at least impacted gages across the Commonwealth. To determine these statistics at other locations in the state, regression equations were developed on the low flow statistics at least impacted gages considering a wide range of characteristics such as basin area, aquifer characteristics, land use, precipitation, and water use. These regression equations will be used in the USGS StreamStats application to allow users to get low flow statistics for any point on a stream in the Commonwealth. In FY23, the statistics at least impacted sites were calculated and draft regression equations developed. The final equations and draft report are expected by the end of CY23.

Drivers of Low Flow

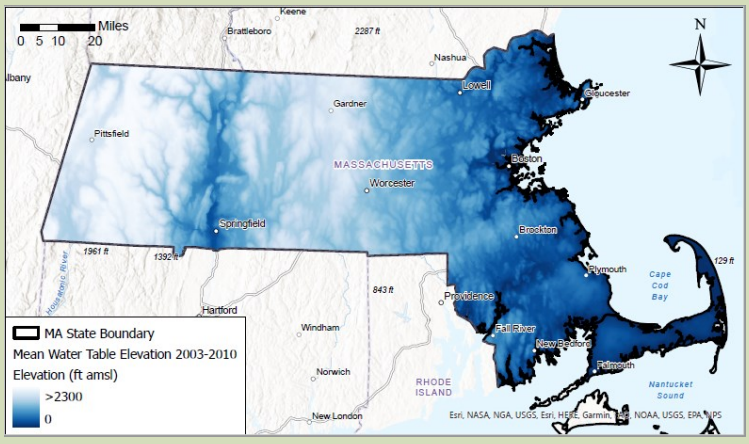
Recently, new record low flows are being set with each drought even as annual precipitation increases. USGS in collaboration with WRC staff will use spatial and temporal regression techniques to determine the factors contributing to this trend. These factors include climate variables, contributing area characteristics, land use, and water use. The project began in April 2023 with the compilation of datasets needed for the regression approach. This project will last into FY25.

Streamflow & Groundwater Network Analyses

Federal and state stakeholders met in May 2023 to review the networks and advise on locations to discontinue due to high human impact and on gaps in the network such as spatial gaps or aquifer material types. Following the meeting, WRC staff and USGS started to review recommendations, assess the human impact levels at all stations, and make final recommendations for creating more comprehensive networks. The recommendations are expected by the end of CY23.

Groundwater Flooding Vulnerability Mapping

Working with WRC staff, the University of Massachusetts at Amherst created the first statewide, steady-state groundwater model that estimates average groundwater table depth. Groundwater flooding risk was categorized based on these current depths with respect to its ability to reach underground utilities, basements, septic systems and stormwater controls. To determine future risk under climate change and based on projected precipitation increases, recharge rates were increased and their impact on groundwater levels and flooding risk were assessed. Data compilation, modeling and draft results were completed in FY23. Final products, webinars and report are expected by the end of CY23.



Evaluation of Lakes and Impoundments Drought Index for the MA Drought Management Plan

WRC staff contracted with USGS to evaluate the MA Drought Management Plan Lakes and Impoundments Drought Index. WRC staff chose a subset of the currently monitored water bodies to test the index and document the methodology. Work completed by USGS in FY2023 included fieldwork, data collection and review, data analysis, and computation of statistics. A data release and final report are expected by the end of CY23.

Guidance for Local Water Suppliers on Developing Local Drought Management Plans

In FY2023, WRC staff contracted with Comprehensive Environmental, Inc. (CEI) to develop robust guidance to assist public water suppliers in the creation of Local Drought Management Plans. CEI is guided in this work by a steering committee comprised of WRC staff, MassDEP staff, and representatives from the water supply community. Work will continue in FY2024 and is anticipated to be finalized by the end of that fiscal year.

Drought Retrospective for the 2020-2021 Drought

WRC staff developed a retrospective report for the 2020-2021 drought, similar to the document previously developed for the 2016-2017 drought. The retrospective includes background information, an overview of the conditions that led into the drought, and data highlights including monthly summaries of the hydrologic conditions during that time period. The document is undergoing final review, with release expected in FY24.

Jones River downstream of Forge Pond Dam and Silver Lake, Kingston in July 2020

Water Impact Reporter

WRC staff worked with other DCR staff to develop an online portal for the public to be able to report drought and flood impacts (www.mass.gov/wir). This portal is based on the national version put out by the National Drought Mitigation Center. Although currently focused on droughts, this portal will be further developed to include flooding related questions as well. Staff will be able to download and analyze reports to identify hotspots for such extreme events.

WATER CONSERVATION

OUTREACH

In FY2023, staff worked with a graphic design firm to create new social media graphics, which are available in the Water Conservation online toolkit (www.mass.gov/conservemawater). Some of these graphics were used for outreach during the 2022 drought and for national campaigns such as *Imagine a Day Without Water* and *Fix-A-Leak Week*. Staff also worked with the same firm to create the first video in a series on drought and water efficiency recommendations, specific to Massachusetts.

Staff also got involved with statewide and agency-specific climate resiliency initiatives including the Leading By Example program, NetZero Taskforce, and Climate Adaptation Workgroup to ensure water use efficiency remains a priority during climate resiliency planning.

ALLIANCE FOR WATER EFFICIENCY STATE SCORECARD AND OTHER COLLABORATIONS

In FY2023, WRC staff worked with the Alliance for Water Efficiency (AWE) to produce an updated water efficiency "scorecard". This exercise highlighted areas in which the state is excelling in water efficiency-related policy, as well as areas in which Massachusetts can improve. Staff continues to use the scorecard report to evaluate ways to improve water efficiency targets throughout the Commonwealth.

Staff also kept MA water efficiency priorities on the national stage by participating in AWE's education & outreach and research committees, as well as serving on the advisory committee for AWE's inaugural water efficiency and conservation symposium.

WEBLINKS

Interbasin Transfer Act: www.mass.gov/interbasin-transfer-act

Precipitation Data: https://www.mass.gov/info-details/precipitation-data

Drought: https://www.mass.gov/drought-management

Flood Hazard Management Program: www.mass.gov/guides/floodplain-management

Water Needs Forecasts: www.mass.gov/doc/water-needs-forecast-policy-and-methodology/download

Water Conservation Standards: www.mass.gov/service-details/details-on-the-2018-massachusetts-water-conservation-standards

Massachusetts Water Conservation Toolkit: mass.gov/conservemawater

USGS: www.mass.gov/cooperative-water-resource-planning-program

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CURRENT COMMISSION MEMBERS AND DESIGNEES

AGENCY MEMBERS:

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Designee - Vandana Rao,
Commission Executive Director

Executive Office of Housing and Livable Communities
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Designee - Chris Kluchman

Department of Conservation and Recreation
Member - Brian Arrigo, Commissioner
Designee - Anne Carroll

Department of Environmental Protection
Member - Bonnie Heiple, Commissioner
Designee - Kathleen Baskin

Department of Agricultural Resources
Member - Ashley Randle, Commissioner
Designee - Hotze Wijnja

Department of Fish and Game
Member - Tom O'Shea, Commissioner
Designee - Todd Richards

Office of Coastal Zone Management (non-voting member)
Member - Lisa Berry Engler, Director
Designee - Tyler Soleau

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