

Massachusetts Drought Management Task Force – Meeting Summary

July 12, 2018 100 Cambridge Street, 2nd floor, Room A

Attendees:

Vandana Rao, EEA	Heidi Waugh, WSCAC	Allan Fierce, Mass Rivers Alliance, OARS
Gardner Bent, USGS	Richard Friend, DEP	Liz Walk, Office of Rep. Dykema
Michelle Craddock, DFG	Emily Myron, TNC	David Glater, GB Trout Unlimited
John Gregoire, MWRA	Kate Bentsen, DFG	Vanessa Curran, DCR
Duane Levangie, DEP	Marilyn McCrory, DCR	Margaret Van Deusen, CRWA
Michael Celona, DPH	Sara Cohen, DCR	Adam Sacks, Biodiversity for a Livable Climate
Doug Fine, DEP	Anne Carroll, DCR	Todd Melanson, Chelmsford WD, MWWA
Sara Zalieckas, MEMA	Jeff Jackson, BCB Gov. Relations	Paula Phipps, Biodiversity for a Livable Climate
Steve Olson, MWWA	Sean Larkin, DRG/DER	
Thomas Maguire, DEP	Eva Murray, EEA	

Introductions

- Rao called the meeting to order at 10:03 am and introduced herself and Sara Zalieckas from Massachusetts Emergency Management Agency (MEMA) as co-chairs of the DMTF.
- Zalieckas gave an overview of MEMA's role in drought management planning:
 - MEMA plays a strong coordinating role among many agencies and partners in drought response activity, focused on public health and safety
 - MEMA coordinates with EEA and other public agencies on public information and messaging, including hosting a state information-sharing platform for situational awareness public messaging and other key data and information.
 - MEMA coordinates federal, state, local, and private entities to support firefighting resources during drought.
 - If needed, MEMA will establish points of distribution for drinking water
 - Additionally, MEMA helps in all emergency planning, including developing the State Drought Management Plan.
- Meeting attendees were asked to introduce themselves.
- Rao reminded attendees about the role of the DMTF and stated that some concerning developing conditions warranted convening the task force today and taking note of these conditions. The hope is to stay ahead of things if conditions continue to worsen. She also reminded people that staff and cooperating agencies are working on a drought retrospective document for the 2015-2017 drought, which will hopefully be available later in the summer. This will provide some institutional memory about the drought onset and progression, its impacts, and drought response.

Updates on Current Conditions and Impacts from Members of the Task Force

National Weather Service (NWS) Update, provided by Viki Zoltay and Vandana Rao with slides from NWS

Precipitation as measured by percent-of-normal for the April – June period was mostly normal (between 25-75%). Six-month lookback was normal to above normal. 12-month lookback shows some deficits, reflecting the end of the 2015-2017 drought. Meanwhile, temperatures were in record-high range from mid-May to mid-June, although closer to normal since then.

The US Drought Monitor (USDM)'s most recent update, representing conditions on July 10th, showed the whole state except the Southeast and Cape and Islands at "Abnormally Dry" (D0), with a small portion in the northwest of the state showing D1.

The 8-14 day forecast and the 3-month forecast both call for higher than normal temperatures and equal chances of above and below normal precipitation. This combination contributes to a "Development of Drought Likely" assessment for the coming months.

Streamflow and Groundwater Conditions in Massachusetts - USGS

During April 2018, mean monthly streamflows across the state were normal (25-75th percentile) or above normal (76 to 90th percentile). By May, streams in Central and Western MA started to drop below normal, and by June many were below normal. As of July 10th, many are still below normal. By Hydrologic Unit Code (HUC), the CT River valley shows the lowest streamflows, with West, Central, and Northeast also trending low.

Groundwater:

April groundwater levels were mostly normal or above normal. By May, levels were mostly normal with Central and Western MA starting to show some below normal. June brought deeper lows in Western and Central MA with some lows spreading east. Cape and Plymouth-Carver aquifer areas are still normal.

Discussion:

- It was noted that the Sudbury streamflow gage had been showing erratic readings. High flows have been due to MWRA manipulating flow as part of testing the new Wachusett Aqueduct pump station, which will be going on into August. MWRA has been communicating with USGS and Northeast River Forecast Center on releases. Low flows have been due to false readings due to backwater arising from debris. Rao suggested that more communication to the public that views the gage data would be helpful.

Brief Overview of Current Hydrologic Conditions - DCR Office of Water Resources, Viki Zoltay

Zoltay reflected that the data we've just been over shows groundwater with below normal readings across much of the state, with some wells showing record lows, despite the precipitation and streamflow indices coming in less extreme. However, recent precipitation has been quite low across much of the state for July so far. This is an unusual pathway into dry conditions, where groundwater symptoms usually lag precipitation and streamflow deficits. The combination of low precipitation and record high temperatures mid-May to mid-June may have caused unusually high spikes in evapotranspiration, intercepting recharge. Additionally, the distribution of rainfall into few larger events rather than spread over smaller events may have led much of the precipitation to become direct runoff rather than recharging to groundwater. Additionally, patterns of impervious surface could affect relationship of precipitation and groundwater.

Crop Moisture Index (CMI) is normal across the state. However, Evaporative Demand Index and SPEI show intensification of deficits.

KBDI (fire danger index) has most of the state in Advisory level. West is getting into the Watch level. The Cape and Islands are normal.

DEP - Water Supply

Duane Levangie reported wide-spread watering restrictions, although he noted many of these communities implement restrictions on a calendar basis, per an option under their Water Management Act permit, so these

don't necessarily reflect environmental conditions. The current pattern of outdoor restrictions follows patterns from 2016 for this time of year more closely than those for 2017, suggesting environmental conditions may be more closely aligned with 2016, which was a drought year. If restrictions continue to follow 2016 pattern, we may see a large spike in restrictions in August and September. Anecdotally, there has been little feedback from suppliers indicating supply concerns at this point.

Discussion:

- Request by several attendees to have DEP break down data on watering restrictions to more clearly identify those that reflect environmental conditions, and to more specifically group restrictions into descriptive categories.

DEP – Wetlands

Tom Maguire reported an increase in inquiries, mostly from Western region, related to observations of no-flow conditions on streams categorized as perennial. This suggests abnormally dry conditions in that part of the state.

Massachusetts Water Resources Authority

John Gregoire reported the Quabbin is currently at 95%, which is above long-term average. He noted this water body lags substantially in showing any drought impacts. Long-term forecasting shows the Quabbin staying in normal range for at least the next six months and likely the next year, unless we start to see very extreme drought conditions. Wachusett Reservoir is also normal, although Gregoire noted this water body is highly regulated.

Gregoire did note that the Chestnut Hill Reservoir, a system backup supply, showed a cyanobacteria bloom in April, earlier than ever before. MWRA is investigating possible reasons, including possible contamination from nearby large construction projects at Boston College.

Massachusetts Water Works Association

Steve Olson reported no drought impact reports.

Dept. of Fish and Game

Michelle Craddock reported low flow conditions in headwaters, but so far nothing going completely dry. By way of comparison, no-flow conditions were starting by mid-July of 2016. Some reports of fish kills across state at a slightly elevated level, most likely due to high temperatures and normal to below-normal flows.

Discussion:

- Comment from David Glater of Trout Unlimited that headwater streams are very important to trout, as temperatures increase. Looking for information on fish kills specifically in headwater areas.

Department of Agricultural Resources

Rao reported impacts from DAR and UMass Extension. Plants have been stressed by high heat, but current impacts are most severe for farm workers, due to high heat and humidity. Salad greens are getting toasted in the field before harvest; cucumbers experiencing transplant shock; sunburn in basil; increased pests in garlic and onion. Overall, impacts are not significant, but conditions are starting to affect younger plants in particular.

Department of Public Health, Michael Celona

Not much to report. Monitoring of cyanobacteria blooms has been the quietest season of the last ten years. No calls on private wells so far.

Discussion of Drought Level Recommendations

- West: Normal precipitation for all lookback periods. Normal streamflow, but starting to show effects of drying conditions. Groundwater has been below normal for two months, but current methodology requires 3 months to trip a category, so the metric is Normal. KBDI is at Watch level. The task force agreed that the region should be characterized as in a **Normal** condition.
- CT River Valley: Normal precipitation for all lookback periods. Streamflow and Groundwater Indices were starting to look pretty bad by June, but with the current metrics requiring 2 and 3 months below normal, respectively, to trip a category, both Indices are still Normal. KBDI is at Advisory level. The task force agreed the region should be characterized as in a **Normal** condition.
- Central: Normal precipitation for all lookback periods. The streamflow situation is starting to deteriorate but groundwater still looks pretty good here; both Indices are Normal. This region has the Reservoir Index at a watch level, as two medium size reservoirs are below normal. KBDI is Advisory level. The task force agreed the region should be characterized as in a **Normal** condition.
- Northeast: Normal precipitation for all lookback periods. Streamflow and groundwater both deteriorating but not tripping the majority below normal criteria for either of the last two months; both Indices Normal. Reservoirs are Normal. KBDI is Advisory. The task force agreed the region should be characterized as in a **Normal** condition.
- Southeast: Normal precipitation for all lookback periods. Streamflow in good shape. Groundwater in reasonable shape but deteriorating; both Indices still Normal. Reservoir Index is at Advisory as a result of Cohasset's small reservoir being below normal. KBDI is at Advisory level. The task force agreed the region should be characterized as in a **Normal** condition.
- Cape and Islands: No signs of drought conditions. All Indices normal. The task force agreed the region should be characterized as in a **Normal** condition.

Discussion:

Task Force members and attendees discussed the fact that new metrics and methodologies have been developed over the past two years and are currently proposed to replace existing metrics. A quick analysis suggests that using these metrics would have precipitation, streamflow, and groundwater Indices tripping into Advisory level across parts of the state, and even have the majority of Indices at Advisory level or higher in one or more region. As these revised metrics are not yet approved and activated within the plan, the Task Force cannot use them for drought declaration recommendations, however it can certainly rely on them to help shape the public message at this point. See below under next steps.

Next Steps

Since all the regions are at Normal but conditions are deteriorating and the new metrics would be more strongly suggesting the onset of drought, the recommendation to the Secretary is not declare drought at this time, but to alert stakeholders and the public that we are in a state of heightened awareness, with conditions beginning to deteriorate. The DMTF will be meeting more frequently to closely monitor conditions.

July 26 and August 9 were proposed as tentative next meeting dates, 10:00 am - 12:00 pm.

The meeting was adjourned at 12:20 pm.