THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

Draft Meeting Minutes for October 12, 2017

100 Cambridge Street, Boston, MA, 1:00 p.m.

Minutes approved January 11, 2018

Members in Attendance:

Vandana Rao, Chair	Designee, Executive Office of Energy and Environmental Affairs (EEA)
Jonathan Yeo	Designee, Department of Conservation and Recreation (DCR)
Doug Fine	Designee, Department of Environmental Protection (MassDEP)
Hotze Wijnja	Designee, Department of Agricultural Resources (DAR)
Linda Balzotti	Designee, Department of Housing and Community Development (DHCD)
Todd Callaghan	Designee, Massachusetts Office of Coastal Zone Management (CZM)
Michelle Craddock	Designee, Department of Fish and Game (DFG)
Kenneth Weismantel	Public Member
Raymond Jack	Public Member
Bob Zimmerman	Public Member

Members Absent

Thomas Cambareri	Public Member
Paul Matthews	Public Member

Others in Attendance:

Ed Capone	NOAA/NWS NE River Forecast Center
David Vallee	NOAA/NWS NE River Forecast Center
Gardner Bent	USGS
Viki Zoltay	DCR
Peter Weiskel	USGS
Sara Cohen	DCR
Marilyn McCrory	DCR
Erin Graham	DCR
Vanessa Curran	DCR
Anne Carroll	DCR
Joy Duperault	DCR
Kate Bentsen	DFG
Gerald Clarke	Dover Board of Health

Rao called the meeting to order at 1:03 p.m.

Agenda Item #1: Executive Director's Report

- DCR held an internal workshop called Great Ideas which had focused group discussions on various topics. Staff from the Office of Water Resources contributed to a session on water conservation and usage at DCR facilities.

- As a follow-up to a petition received to condition registrations, DEP is working on some initial planning for a statewide outreach program for water conservation, and also water usage analysis in stressed basins (particularly the Parker and Ipswich). This is in the internal early development stage and DEP will likely be able to update the Commission in the next few months.

Agenda Item #2: Hydrologic Conditions Report

The Hydrologic Conditions Report is available at: http://www.mass.gov/eea/agencies/dcr/water-res-protection/water-data-tracking/monthly-water-conditions.html. Zoltay provided an update on the hydrologic conditions for September 2017. There are developing dry conditions, which started in the Southeast Region the previous month and are spreading to the whole state. Some drought categories are triggered in the Southeast. Most regions received below normal rainfall (except for Cape and Islands). For rainfall measured as percent of normal, the Southeast Region is at the Advisory level. The Northeast and CT River Regions are approaching the Advisory level but not there yet. The forecast is for continued dry conditions.

Zimmerman arrived at 1:10 pm.

Streamflow is starting to show some effects. The Southeast is at Advisory and has some record low flows into the beginning of October. Groundwater remains at Normal but more wells are seeing lower water levels since the previous month. Reservoirs are at normal levels. The US Drought Monitor has expanded dry conditions in the state. The 1 month and 3 month outlooks both indicated continued dry conditions.

Callaghan asked if any members of the Commission would find it useful to also know when levels are above normal.

Agenda Item #3: Presentation: Recent Activities of the USGS Cooperative Water Program in Massachusetts: Observation Well Upgrades and Results of Flood Frequency Analysis, Peter Weiskel, USGS

This presentation is available on the MA Water Resources Commission website (https://www.mass.gov/service-details/review-our-meetings). USGS is expanding the network of real-time observation wells in MA. In 2017, USGS and DEP signed an agreement to upgrade 11 wells to report in real-time (to bring the total number of automated wells in the state to 42). DCR and USGS will fund operation, maintenance, and data management. There are two main benefits to upgrading: to better understand the impacts of climate and seasonal variation and trends, geologic conditions, and hydrologic position on groundwater levels and to support timely decision making such as during a drought or projecting high/low groundwater levels.

Questions posed during the presentation:

- What is the cost to upgrade one well? It costs approximately $10,000 to install the equipment.

- How does upgrading these sites help with understanding the effect of elevation within the watershed? It makes data available to do the analyses. The large increase in the number of data points provides enough information to, for example, observe the effect of individual precipitation events.
- Jack stated that in the past there was discussion of there not being enough wells or funding and he is in favor of these upgrades which will provide greater data reliability and capacity.
- How many wells have already been upgraded and will they all be in the future (next 10-20 years)? 42 out of approximately 100 have been upgraded. If it's done in batches of 10 it should not take that long.

The second portion of the presentation discussed a flood frequency analysis completed for MA. The objectives of the work were to update flood flow information at MA streamgages, to develop new equations for estimating flood flows at ungaged locations, and make information and equations available on the web through USGS Streamstats. There is new technology, more recent data, and new statistical methods available to improve upon past analyses and equations. Results show that bigger drainage areas lead to bigger floods. Floods also increase with basin elevation. Increasing basin storage decreases flood flows. Annual peak flood flows are changing (mainly increasing) at certain gage sites and could be due to climate change and urbanization. Gardner Bent of USGS then gave a demo for Streamstats, a USGS web application for looking at streamflow at gages and ungaged sites.

Agenda Item #4: Presentation: Examining Changes in Rainfall and Temperatures in MA and their Impact on Flood and Drought Behavior, David Vallee and Ed Capone, Northeast River Forecast Center

This presentation is available on the MA Water Resources Commission website (https://www.mass.gov/service-details/review-our-meetings). The River Forecast Centers rely on climatology as a starting point. They use precipitation, temperature, and streamflow data to predict river flow and elevation. Data have shown a shift toward more extreme events. Storm behavior has changed to the following two responses: large slow moving systems, and multiple back-to-back events. There has been a major increase in flooding from before 1970 compared to the period between 1970-2013. Capone is a National Weather Service Cooperative Observer in Norton and reported on changes in temperature, growing season, etc. that he has observed at his station since the 1970's. Nationally, there has been an increase in flood events and flood-related losses over the past few decades. The Forecast Center has approached changes in flood frequency by normalizing the number of floods at forecasted locations over the periods of record. Floods have spread out throughout the calendar year, with most floods occurring during spring snowmelt or during summer tropical events prior to 1970, while since 1970 the patterns have evolved such that floods are spread out throughout the year. In summary, the Northeast has become a hot spot for record floods/heavy rainfall over the past 10 years. Portions of MA have seen a 1-2 inch increase in rainfall. Smaller and more urbanized watersheds are more vulnerable to increased flooding. In the future, a new model (the National Water Model) will move beyond forecasting floods at specific points (gage locations) to provide simulations of hydrologic impacts at a catchment level or street level.

Meeting was adjourned at 3:11 pm.

Documents or Exhibits Used at Meeting:

1. Interbasin Transfer Act project status report, September 27, 2017

Compiled by: VC
Agendas and minutes are available on the web site of the Water Resources Commission at www.mass.gov/eea/wrc under "MA Water Resources Commission Meetings." All other meeting documents are available by request to WRC staff at 251 Causeway Street, 8th floor, Boston, MA 02114.