THE COMMONWEALTH OF MASSACHUSETTS

WATER RESOURCES COMMISSION

100 CAMBRIDGE STREET, BOSTON MA 02114

Meeting Minutes for April 8, 2010

Minutes approved May 13, 2010

Members in Attendance:

Kathleen Baskin	Designee, Executive Office of Energy and Environmental Affairs
Marilyn Contreas	Designee, Department of Housing and Community Development
Jonathan Yeo	Designee, Department of Conservation and Recreation
Glenn Haas	Designee, Department of Environmental Protection
Gerard Kennedy	Designee, Department of Agricultural Resources
Joseph E. Pelczarski	Designee, Massachusetts Office of Coastal Zone Management
John Lebeaux	Public Member
Bob Zimmerman	Public Member

Others in Attendance:

Phillip Zarriello	USGS	Jane Pfister	EEA
Roy Socolow	USGS	Jennifer Pederson	Massachusetts Water Works Assn.
Linda Hutchins	DCR	Paul Marinelli	U.S. Army Corps of Engineers
Rich Zingarelli	DCR	Sara Cohen	DCR
Chris Markesich	DCR	Larissa Liebmann	DCR
Bruce Hansen	DCR	Alison Bowden	The Nature Conservancy
Anne Carroll	DCR	Carolyn Hayek	The Nature Conservancy
Roger Frymire	Citizen	Mark Breslow	EEA
Marilyn McCrory	DCR	Rich Bradley	Irrigation Assn. of New England
Vandana Rao	EEA	Frank Koll	Irrigation Assn. of New England & Ecological Landscaping Assn.

Agenda Item #1: Executive Director's Report

Baskin announced several upcoming meetings. On June 2, the New England Water Works Association and U.S. EPA will host their 2010 Sustainability Congress at Bentley College in Waltham. The event will feature sustainability partnership case studies, sessions on water management and land protection, and integration of water quality and quantity. On May 24, the New England Water Works Association will host representatives from the Connecticut Department of Environmental Protection to discuss Connecticut's proposed streamflow standards and the public response. On April 13, USGS will present the draft results of its preliminary Fish and Habitat study to the technical subcommittee of the Sustainable Water Management Initiative; the meeting will take place at MassDEP's Boston office. The next meeting of the Advisory Committee will be April 27 at EEA's offices.

Hansen provided an update on the hydrologic conditions for March 2010. He reported that statewide, March is likely to be rated by the National Weather Service as the wettest March on record. In Boston, March 2010 had the second highest monthly rainfall on record, with observers at some sites reporting more than 19 inches of rainfall for the month. He described the three major flood events in March, with 17 USGS gaging stations reporting the highest flood levels on record as well as reporting record high average March discharges for four major river basins in

eastern Massachusetts. (A full hydrologic conditions report is available at http://www.mass.gov/dcr/watersupply/rainfall/index.htm.)

Baskin acknowledged staff members Hutchins, Markesich, and Pelczarski, who spent extended hours staffing the Massachusetts Emergency Management Agency Emergency Operations Center during the flood events.

Agenda Item #2: Update: Zebra Mussel Task Force Recommendations

Carroll provided a presentation on recommendations of the Zebra Mussel Task Force. She reviewed the history of the zebra mussel problem, noting that zebra mussels were first confirmed as present in Massachusetts in 2009, at Laurel Lake in Lee, Massachusetts. She summarized actions that the Department of Conservation and Recreation has taken in response to this discovery, including updating and implementing a previously developed action plan and convening a task force. She summarized results of a detailed survey of lakes in areas identified as being highly susceptible to infestation, based on their water chemistry and substrate. These are primarily located in western Massachusetts. Two additional locations in the Connecticut and Merrimack River (Nashua) basins require more research. She noted that there is no known way of eradicating zebra mussels, once they are introduced to a water body.

Carroll summarized key recommendations of the task force. These recommendations recognize the need to balance ecosystem protection with the right of public access. The task force does not recommend closing lakes to public access. Recommendations focus on education and outreach and require boaters to self-certify in writing that they have complied with approved vessel decontamination procedures. Legislation has been proposed to provide DCR with authority to manage invasive species.

Carroll thanked the DCR commissioner for securing funding for the department's Lakes and Ponds program to hire six full-time boat-ramp monitors to provide seven-day-a-week coverage at Laurel Lake and increased coverage in other high-risk areas in the Berkshires region. These seasonal staff inspect boats as the boats enter and leave the lake and survey and educate boaters. If an organism is found on a boat, the monitor educates the boater on options for decontamination and the location of boat washing stations. Compliance is voluntary, but the public has been generally cooperative. The program also sponsors boat wash stations and is working to expand boat washing stations at existing car wash facilities. In addition, the program has developed new educational materials and signage. Carroll noted that, in their larval stages, zebra mussels are not observable by visual inspection.

Yeo added that the Quabbin Water Supply Reservoir follows different procedures, which include a tagging program for 800 boats that use the Quabbin for recreation. These procedures are aimed primarily at preventing the introduction of aquatic invasive plants to the reservoir but also address concerns about zebra mussels.

Agenda Item #3: Update and Presentation: Spring 2010 Floods

Hutchins, Socolow, Zarriello, Markesich, and Zingarelli discussed the magnitude and impacts of and the response to the floods that occurred in February and March 2010.

Hutchins reviewed three large rain events in late February and March 2010 that resulted in historic levels of flooding. She reviewed some of the tools used to track storms and make flood forecasts, noting the importance of the data obtained from the USGS river gage network. She also summarized the variety of impacts from these storms, ranging from river flooding and coastal erosion to damage to mass transit and other infrastructure.

Hansen added that all three storms were related to the El Nino condition in the mid-Pacific Ocean, which resulted in hot, humid air in the central United States, which, in turn, established a moisture connection that primed all three storms in the Northeast.

River Discharge Measurements during Recent Floods

Socolow reviewed data collected by USGS during and after the storm events, focusing on the many records that were broken. A major effort by USGS during the storm events was ensuring that the continuous river gage network remained operational, providing the ability to measure and monitor both river stage and flow rate. He noted that only 6 of the 127 gages in the region failed to record the entire event. He showed a map of the existing 109 real-time streamflow gaging stations in Massachusetts. The USGS Massachusetts-Rhode Island office estimates it spent 1,200 person-hours between March 13 and April 5 making discharge measurements and gage visits during the high-flow events. Discharge (flow) measurements at record-high events allow for extension of the stream gage's rating curve, which relates water level to flow rate. Seven gages with long-term records set new records for high flows in Massachusetts. Five long-term observation wells also set new groundwater-level highs.

Socolow also discussed the stage-discharge rating graphs, pointing out that the geometry of streams is dynamic, and stage-discharge ratings are constantly changing. He pointed out several rivers where new ratings will increase flows by as much as ten percent. High flow data for this period should be considered highly provisional until it has undergone full quality assurance at USGS. He discussed composite hydrographs of various rivers in Massachusetts and Rhode Island.

Baskin noted that state budget cuts will unfortunately result in a reduction in state support for the USGS gage network and may result in deactivation of some gages. USGS noted that staff from the Massachusetts-Rhode Island office are being detailed to work at other locations as a result of the budget cuts.

USGS Equations for Estimating Flood Frequency

Zarriello discussed proposed revisions to the USGS equations for estimating flood frequency. He noted that, nationally, floods are one of the most costly hazards. He reviewed the services USGS provides, including maintaining a national streamflow statistical database, which allows calculation of recurrence intervals (exceedance probabilities); providing real-time data on streamflow and river stage during storm events; and documenting flood flows, water levels, and ratings. He noted that, without real-time data, flood forecasting and warnings would not be possible. He demonstrated the data available on the Water Watch web site.

Zarriello described the work USGS engages in after floods, including marking high-water marks, characterizing the magnitude of the flood in terms of exceedance probability at individual gage locations, flood mapping, and developing regional equations to determine the magnitude and frequency of floods. Regional equations use basin characteristics so that they can be applied at any site, not just at gage sites. The last time regional equations were developed for Massachusetts was in 1983, using the available data up through 1976. Massachusetts regional equations are considerably outdated on the basis of the more than 35 years of additional data that have been collected since the equations were developed. USGS recently completed a study on the April 2007 flood event that estimated flood frequency for 10 gages. Zarriello showed an example of a site were the magnitude of a "100-year flood event" used in the flood insurance study (FIS) is now about a "25-year flood event" when calculated with all the available data. This implies that FISs developed from out-of-date estimates of flood magnitude can result in

appreciable changes in flood plains, bridge design, and other related flood work. Zarriello also discussed the trends in the magnitude of peak flows using the Ipswich River at South Middleton as an example.

He explained that recurrence intervals ("100-year flood") can be misinterpreted and are better described in terms of exceedance probability (" 0.01"), indicating that an event has a 1% chance of being exceeded in any given year. Hansen added that even 100 years of weather data provide only a snapshot of trends. Zingarelli added that one major flood event can dramatically change the results of the flood-frequency analysis; for example, the flood of 1936 is not included in many of the stream gage records in Massachusetts. USGS is not planning to issue recurrence intervals for the March 2010 flood event because cooperative funding is needed to undertake this work.

Flood Impacts on Communities

Markesich provided an overview of the flood event's impacts to communities and structures. He reviewed case studies of impacts at Spectacle Pond in Littleton and Ayer and Forge Pond Dam in Freetown. Damage to infrastructure, such as regional rail lines, extended the impacts of the floods to the greater New England region.

Markesich also described staff responsibilities at the state's Emergency Operations Center, including receiving and verifying reports from the field, monitoring gage height information, providing predictions of river flow, coordinating placement of barriers at high-risk areas, and coordination with neighboring states.

Overview of the Flood Hazard Management Program

Zingarelli described the ongoing efforts of the Flood Hazard Management Program (FHMP) in floodplain management. He pointed out that the Water Resources Commission is the state coordinating agency for the National Flood Insurance Program, with the Department of Conservation and Recreation designated to perform this function. The FHMP also coordinates with the Massachusetts Emergency Management Agency on the hazard mitigation program, i.e., identifying measures that can be taken in advance of events to minimize damage.

Zingarelli explained how the National Flood Insurance Program works. He noted that all but 16 of the 351 communities in Massachusetts participate in the program. If a community participates, people living within mapped special flood hazard areas are required to carry flood insurance as a condition of a federally backed mortgage. The community commits to regulating development within the mapped flood areas. In Massachusetts, many of these FEMA requirements have been required by the state building code and wetlands regulations since the 1970s. He pointed out that, as a result, Massachusetts experiences fairly low levels of flood damage to structures. He explained the factors that affect flood insurance premiums.

Zingarelli showed the mapped distribution of flood insurance claims in Massachusetts, noting that historically, claims are focused on the coast. He added that it is important to look at a long period of record when evaluating risk.

Zingarelli described the activities of the FHMP in responding to and recovering from the recent flood events. He outlined potential FEMA disaster assistance as a result of the presidential disaster declaration to seven counties in Massachusetts. This assistance includes individual assistance, loans for small businesses, and, potentially, assistance to cover damage to public property. He also described the elements of DCR's hazard-mitigation strategy, including obtaining high-water marks, evaluating hydraulic and hydraulic analyses for Flood Insurance

Studies, and providing outreach, training and technical assistance. He concluded by outlining grant programs and other funding resources for projects that provide protection from natural hazards. Communities develop project proposals, which are reviewed by the State Hazard Mitigation Team. The state makes recommendations to MEMA and DCR, which then forwards the proposals to FEMA for funding. These proposals can include land acquisition in areas that have experienced severe repetitive losses (with the owner's permission).

Agenda Item #4: Update: Sustainable Water Management Initiative

Baskin briefly summarized the most recent Advisory Committee meeting, which reviewed work of the technical subcommittee on the elements that would go into streamflow classification. These include defining the physical characteristics of watersheds and relating those characteristics to the fish community – i.e., identifying the fish that would be expected in watersheds with certain physical characteristics. Another step is looking at the data to see what fish are present, and correlating those data with data on impervious surfaces, water withdrawals, and wastewater returns. USGS will present draft results of its accelerated study that correlates habitat alterations with the presence of fluvial and cold water fish at the next meeting of the technical subcommittee on April 13, 2010. The final report will be available in July 2010.

Meeting adjourned

Attachments distributed at meeting:

- Current Water Conditions in Massachusetts, April 8, 2010
- Recommendations of the Zebra Mussel Task Force are available at http://www.mass.gov/Eoeea/docs/eea/water/Zebra_Mussel_Task_Force_Recommendations.pdf