



Minutes

Nov.1, 2024

Remote

Attendees:

WAC Members: Kannan Vembu (Chair), **Dan Winograd** (Vice Chair), Adriana Cillo (BWSC), **Craig Allen**, **Wayne Chouinard** (Belmont), **George Atallah**, **Dr. Karen Lachmayr**, **Martin Pillsbury** (MAPC), Stephen Greene, Taber Keally (NepRWA), **Alfredo Vargas** (Newton), Jim Ferrara, **Christine Bennett** (Advisory Board). (Members in attendance in **bold**).

Guests: Wendy Leo, Devon Winkler, Michael O’Keefe, Chad Whiting, Kristen Hall, Denise Ellis-Hibbett, Stephen Estes-Smargiassi (MWRA), Moussa Siri, Paul Lauenstein (WSCAC), Max Rome, Julie Wood (CRWA), Hampton Watkins (Plymouth WWGWDCAC), Lou Taverna (Newton), Susy King, Christian Pasichny, Drew Cronier, Areeg Abd-Alla (MassDEP), Judy Pederson, Juliet Simpson (OMSAP), Ben Rukavina (ADS), Nash Keyes (EPA), Karen C\Groce-Horan (NepRWA)

Staff: Andreae Downs

MWRA Update—Wendy Leo:

- Recently published MWRA reports: [TRAC](#), Annual [O&M for Deer Island](#), pipe system, and Pellet plant
- Coming soon: CSO long term performance report due end of January; CSO Variance alternative analysis public meeting in January;
- DI Clarifier project continues
- Clinton Phosphorus removal plant is off line for the winter
- [DEP study](#) of beneficial re-use and PFAS
- EPA issued [RDA preliminary designation and permit](#) for large impervious surfaces in the Charles, Neponset and Mystic watersheds
- Updated MS4 permit is coming out soon

Advisory Board—Christine Bennett:

- Advisory Board TV—also reinvigorating social media presence
- Annual rate survey, new questions on differential rates (low income / senior/ multi-family), stormwater needs & costs, lead service lines.
- Tracking SF vs EPA
- Starting budget analysis
- All AB links [here](#)

WSCAC Update—Moussa Siri:

- **Nov. 12** in-person meeting at the John Carroll water treatment Plant in Marlborough with a tour of the plant. WAC members invited. Email Andreae if you are interested.
- WSCAC has formed three subcommittees—on water conservation, greenhouse gas emissions, and forestry. Non-members of WSCAC are welcome to join the subcommittees.
- In April, WSCAC will tour the Quinopoxet Dam area and WAC members are invited to join that.
- WSCAC is recruiting new members.

DIRECTOR'S REPORT—Andreae Downs: Outfall monitoring [annual report](#) was clear that two exceedances reported were both not related to the outfall.

The RDA permits may be something WAC wants to comment on, if just because the pollution in the three rivers seems mostly to be upstream of the CSO outfalls, and this may be a step toward controlling that.

WAC may just want to commend EPA for taking on a major water quality issue.

January 29th deadline.

There will be a public hearing in late January.

Consensus to have a short WAC meeting mid-January

Fact sheet may be the easiest way to get the gist of the permit. It will impact anyone with more than 1 acre of impervious surface. Will have to come up with a stormwater plan within a year, and methods and structures to reduce stormwater pollution by 30% in the first six years and 60% within 11 years. Also will need to record and do staff training.

PRESENTATION – Adapting to the New Normal: MWRA’s approach to climate Change Resiliency – Stephen Estes-Smargiassi, Director of Planning and Sustainability; Michael O’Keefe, Senior Program Manager, Planning

Engineers tend to look at history to determine the design of anything to withstand weather events, but that is changing with the climate.

Now the idea is to adapt to not just where the climate is now, but to where it will be in the future, assuming that the climate will be different, looking forward 40 years.

Michael O’Keefe is new to MWRA and is working on the Master Plan and CSO control plan. He comes to MWRA from New York, which has had to grapple with some of these issues post-Sandy.

How MWRA has adapted to sea level rise & climate change:

Deer Island was ahead of its time and is protected from its construction in 2000 for the FEMA 100-year flood, plus 2 feet of sea level rise and waves cresting up to 14 feet on the most vulnerable side.

Sewer infrastructure is particularly vulnerable to storms and sea level rise



Hurricane Sandy in 2012 was a wake-up call as in NY and NJ it overwhelmed sewage facilities and resulted in billions of gallons of raw sewage in city streets and waters.

MWRA then started to think about how to avoid that happening here. Before acting, looked at how vulnerable facilities were and set priorities, find a working model (many projections for sea level rise, but none will be right), and approach each site with multiple tools, with a goal of developing long-term resiliency.

MWRA decided to adopt a benchmark of building to the 100-year FEMA flood (1% chance of occurrence in any one year), plus 2.5 feet of sea level rise, with wave action also considered where needed.

The Planning Department assessed all coastal facilities for lowest elevations, critical equipment elevations, and possible water entry points, then prioritized them by vulnerability in a 100-year storm and in 100-year plus 2.5 feet.

Projected onto facilities, this is what the analysis looks like:



Braintree Weymouth Pump Station



MWRA then developed plans that would protect critical equipment during storms—looking at door and window sizes, hatches, other openings, and devised plans to protect them.



Protect Most Vulnerable Facilities from Flooding

- At-risk buildings fitted with deployable flood barriers
- Sandbags for areas that cannot be outfitted
- Build protective walls around critical equipment, such as generators
- Move or raise electrical equipment



Stop logs, sand bags, hatch coverings and manhole coverings are now available at vulnerable facilities, and MWRA conducts regular training so that staff know how to deploy these temporary measures against water intrusion, and know to prevent them from theft (aluminum stop logs are valuable as scrap). MBTA suffered flooding at Kenmore Square in the 1990s that could have been prevented by stoplogs — the grooves were there, but staff didn't know to install them.

In addition, as MWRA rehabs its vulnerable facilities, it is incorporating storm and sea level rise to protect equipment and the process.



Alewife Brook Pump Station



On average, MWRA rehabilitates facilities every 15-20 years.

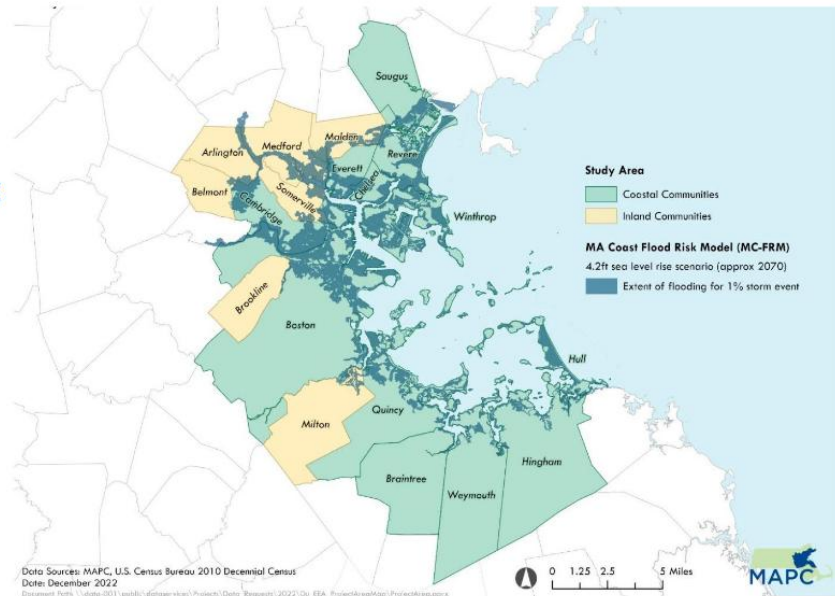
Recently, more detailed models have become available, and these match MWRA benchmarks closely. These show sea level rising at 2.4 feet by 2050. Increases above 3 feet will require a regional approach, because while a specific building may be protected, the area around it would be flooded and make that facility inaccessible.

MAPC's projected that widespread flooding by 2070 would be at 4.2 feet of sea level rise, and mapped it here:



Regional Approach is Necessary for Future Protection

- Protecting facilities much beyond 2050 requires a regional approach
- At this level of flooding and sea level rise, facilities could be protected, but might not be accessible
- Understand how our facilities would be protected by regional adaptation



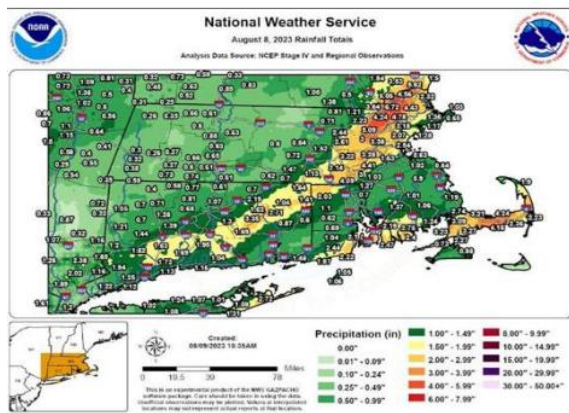
As an example of using a regional approach, MWRA waited to address one of its more vulnerable facilities until Boston finalized plans for a seawall at Moakely Park. Now that MWRA knows the seawall will protect the facility, they don't need to spend ratepayer funds on it. More details in the [ABTV podcast](#).

The region is seeing changes in precipitation—two of the top five wettest summers and some of the driest also in the last five years.



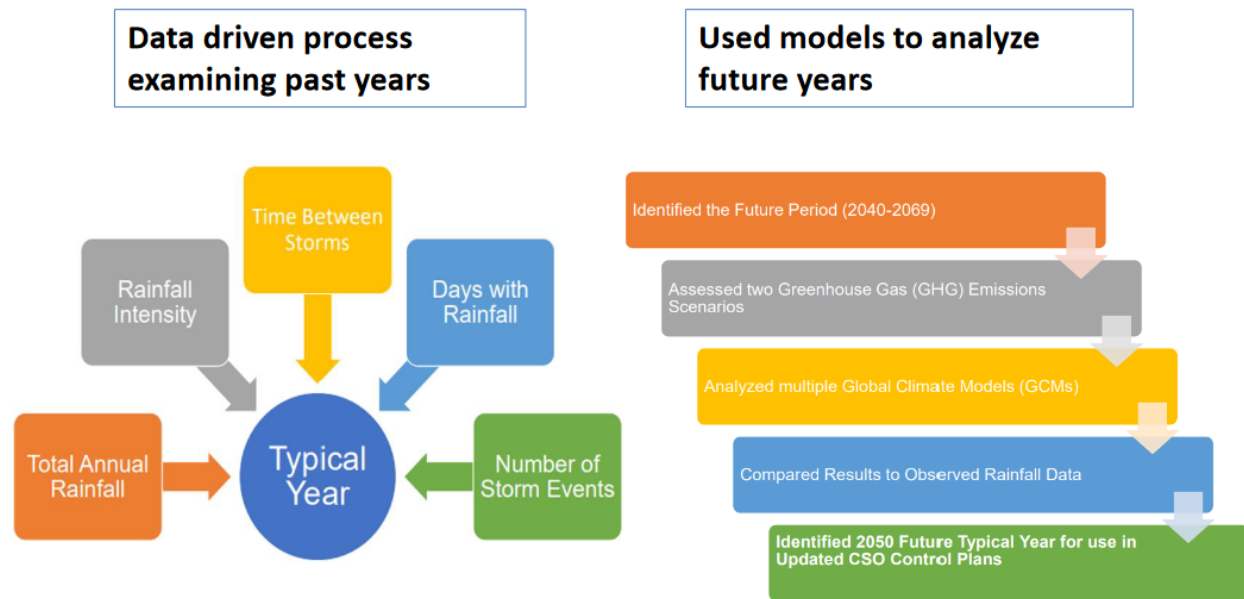
Climate Change is Altering Historical Precipitation Trends

- Historic levels of precipitation
- High intensity events – 1.5-2 in/hr
- Highly localized
- Difficult to predict storm paths





Developing a 2050 Typical Year



Cambridge's consultant and climate scientists from Cornell University looked at two different carbon emission scenarios, climate models, to determine a future typical year. More materials on this, all public, are available for those who want details.

The findings of this work are a predicted increase in the number of intense storms and heavier rainfall. The 2050 Typical Year used in the CSO control plan means MWRA will have to build controls to that level to prevent CSOs.

Another way to make the system more resilient is to reduce flow to Deer Island through Infiltration and Inflow reduction. Latest report [here](#).



Infiltration and Inflow Funding for Communities

- \$560 million in grants and loans disbursed for 685 projects with over \$1 billion funded
- 363 miles of Cured-In-Place Pipe liner installed
- 84 miles of sewer replaced
- 24,994 manholes rehabilitated/sealed
- 551 sump pumps redirected



Finally, the water supply system is redundant and well prepared for climate change.



Water System Assets Well Prepared for Climate Change

- All MWRA dams, dikes, spillways are in good condition
- Quabbin and Wachusett spillways have been improved to be able to discharge the probable maximum flood (1 in 1000 years)
- Evaluating water facilities' – pump stations, storage tanks, etc. – vulnerability to intense precipitation

New Wachusett Crest Gate



Quabbin Spillway



Because of the size of the Quabbin, MWRA is resistant to drought. Enables MWRA to help communities not currently on the supply. Working on the implications of higher temperatures on water quality.

Questions:

Does MWRA track trainings on how to deploy temporary protections like stop logs ahead of storms? Yes.

MWRA uses its maintenance management system—Maximo—training deployments are entered as a maintenance effort. They schedule and track and the effort stays active until it's done, so it doesn't get forgotten.

Has MWRA looked at inland flash flooding risks to water supply facilities?

Yes

MWRA has identified those we care about. There's nothing that looks as vulnerable as some of the facilities in Spain or North Carolina, but we are looking now at 500-year events (plus a foot).

MWRA is also looking at communities' Municipal Vulnerability Plans (optional state grant program for climate planning). For a lot of things, the municipality's own work will protect our facilities also.

Martin Pillsbury (MAPC): FEMA has more detailed and technical plans—the natural hazard mitigation plans—renewed every five years. It's worth looking at those.

Another benefit on the water supply side is that MWA has redundancy in two different locations for most of its functions. Wastewater by definition has less of that.

Next Meeting: January—per member availability;

Feb. 7, 10:30, Virtual. Topic is TRAC, industrial discharges, testing for PFAS...