

Wastewater Advisory Committee
Minutes
Dec. 6, 2019, 10:30 am
MAPC, 60 Temple Pl., Boston

MWRA: Dave Kubiak, Brian Kubaska, Wendy Leo, David Wu, Sean Navin

WAC: Kannan Vembu, Taber Keally, Stephen Greene, James Guidod (Advisory Board), Zhanna Davidovitz, Martin Pillsbury. On phone: Karen Lachmayr, Belinda Stansbury, Dan Winograd, Craig Allen,

Guests: Julie Wood (CRWA), Cathy Vakalopoulos, Susy King, Laura Shifman (DEP)

Chair's report: great presentation on communicating data to the public. Importance of labeling axis on graphs—calling out. Glad to hear Mary's hip surgery went well.

MWRA: Nut Island headworks odor control reconstruction will start in spring. Contract award next week before board. EPA NPDES training in northeast included a mock inspection of Prison Point CSO treatment facility.

AB: Completing retail rate survey—preview in November. Also presentation on water affordability. End of December electronic report on rates.

PFAS coverage—AB being vocal on need for science. NEBRA letter links to studies that look at from a wider scope.

Dave Kubiak, Brian Kubaska, Wendy Leo—CSO post-construction monitoring and performance assessment.

Third year presenting to WAC. Is a multi-year performance assessment.

Comparing metered discharges to model predictions for same storms. NOW have calibrated model. In the process of running that model.

Why is this important? Need to have confidence in the accuracy of the model, which is the tool for measuring Typical Year performance and attainment of court-ordered levels of control.

Lot of progress in site-specific (CSO outfall/regulator) performance assessments, in close coordination with the CSO communities (BWSC, Cambridge, Chelsea and Somerville).

Some changes in scope and schedule since last year's presentation:

Water quality assessments no longer statistical analysis of receiving water quality data, now doing receiving water quality modeling and updated CSO and stormwater sampling.

July 19, 2019—one year extension to the court milestone for final assessment report. Was Dec. 2020, now Dec. 2021, to accommodate receiving water quality modeling and sampling.

DEP issued new variances for the Lower Charles and for Alewife/Upper Mystic, usually 3 yr, now 5 yr., to August 31, 2024.

Still collecting data from 20 rainfall gauges. Comparing actual storms with storms in the EPA/DEP-approved Typical Year. Supports evaluations of whether CSO discharges are within the court-ordered level of control.

2018 very wet year - lots of storms, lots of storms with high peak intensity. At most CSO outfalls, it's intensity that drives CSO activations.

2019 more like the Typical Year. Most of these were smaller storms, lower intensity than 2018.

Had temporary meters at CSO regulators—57—all of the active ones—4/18 through 2/19. Meters removed at 21 locations on 3/1/19 because we had adequate data for model calibration and verification. Still a lot of temporary meters in place through 6/20 (36 regulators). Many outfalls with permanent metering (community). Also using data from flow meters in MWRA interceptors and treatment facilities.

Data includes flow, level vs. weir. Even tide gate inclinometers to know whether tide is affecting the CSO and the actual duration of discharge to the receiving water.

Direct measurement of CSO discharge is at treatment and storage facilities. At untreated locations, measurement is not direct. Flow, levels, etc. data collected at regulators is used to estimate discharges. Affected by tide, additional stormwater, etc. Always an estimate. Objective is to bring the “measured” discharges and the model-predicted discharges closer together to get a better idea of actual discharge and to gain greater confidence in the model predictions.

Recently calibrated the model using a lot of data. Even sediment levels in pipes included in updated model. Slide showed number of sources of data, which multiply by the number of storms. Huge amount of data.

Now running that model with the actual storms and the Typical Year. Significant improvements recently made at certain outfalls also added to model. Upgraded operations at Alewife Brook Pumping Station (rehab project completed in early 2019) have been incorporated. We will be reassessing Alewife Brook PS controls to see if further refinements to wet well levels can reduce upstream CSO discharges.

Why run the model now—in April submitted a report on 2018 discharges. Mostly on meter results. Committed to supplement the report with model results once calibrated. We will also be running the Typical Year and comparing to court ordered long term control plan.

Typical Year—established early in the process and approved by EPA and DEP (1993). Primarily the 1992 year rainfall, but looked at previous 40 year rainfall record, with some additional storms. Multiple reviews. The approved Typical Year is the performance measure.

Long-term control plan addressed 84 CSO outfalls. 35 confirmed closed. Checked all regulators tributary to closed outfalls are in fact closed. Eliminated discharges. Includes several outfalls closed by communities beyond those required to be closed by the court order.

Evaluated all the data from South Boston tunnel. Can meet level of CSO control for a 25-year storm. Haven't had a CSO discharge to the beaches since May 2011 when tunnel came on line. Also provides a 5-year storm level of control for both CSO and stormwater.

3 storms since May 2011 that have discharged stormwater (one of them was Hurricane Irene), but no CSO discharge. Sediment in tunnel seems light, but will be investigated by MWRA field ops.

Half of the remaining 44 outfalls MWRA is investigating with CSO communities. Particular focus on where CSO levels are higher than expected. Are there restrictions on the way to DI, tidal inflow? Also making sure MWRA and community models are correlated.

Chelsea outfalls along Chelsea Creek overflow more often than expected. Evaluating restrictions between the community and MWRA systems that may limit getting flow to DI.

Outfall Somerville 01A to Alewife Brook— major storm drain from Somerville. MWRA investigating dry weather and wet weather flow. Higher than estimated. Somerville investigating upstream sources and whether can be adjusted.

Had planned 5 semi-annual reports. Now 7 with the 1-year extension. Annual public meetings in May. Get public comments, particularly from the watershed associations.

Variances—5 years through Aug 2024. Issued to CSO permittees to the Charles (MWRA and Cambridge) and Alewife/Upper Mystic (MWRA, Cambridge and Somerville). Most of the conditions apply to all individually.

Many of the variance conditions have been in permits since 1999.

Added conditions: receiving water quality modeling and CSO/stormwater sampling; specific projects to minimize CSO discharges—evaluate & make recommendations based on those:

- Alewife Brook pumping optimization: Is there a relationship between facility operations and upstream CSO discharges?
- Somerville Marginal CSO facility optimization and whether can reduce activations of the treatment facility—can we redirect stormwater flows around the facility?
- System optimization— getting low hanging fruit 1993: 100 fixes, a little over \$4m, reduced CSO discharges 20-25%. Now have a different system, so will reexamine optimization measures and benefits.

Legislature may require notifications of CSO discharges to protect the public that may be using the water. In advance of any bill passing, MWRA, Cambridge, and Somerville have new variance requirements for notification. Will require metering at every regulator tributary to variance waters, data goes to alert system and has to be reported within 4 hours. More information must be reported within 5 days including volume.

Will be an email system. Get email signups to Ria. MWRA website allows people to do themselves. Has to be online by Dec. 2020.

Updated plans need to be submitted by April 2022. What are the remaining CSO discharges and impacts to the waters? What additional controls and costs for doing so, what water quality improvements will be gained?

Wendy:

A new requirement under the variances changed direction on water quality assessment. Since 1989 measuring water quality, and understand response to various storms.

Agreed with DEP and EPA on a numerical bacterial model for water quality. Measuring *E. coli* and *Enterococcus*. Calibrated model of sewer system as an input along with upstream and stormwater inputs.

Continuing long-term monitoring program, with shift in emphasis. Also shift in post-storm monitoring several days after a storm to measure recovery.

Past models mostly fecal coliform.

Modeling will take time, so deadline for final CSO assessment report and associated water quality report pushed out a year.

Locations of stormwater collection sites:

Working with Cambridge, Somerville and also Arlington and Medford for stormwater in tributaries. Also collecting untreated combined sewage to better characterize bacterial loads from combined sewage.

Wood: examining anything besides bacteria?
pH, temperature.

To gather bacterial samples is time intensive? Yes. Cambridge and Somerville also collecting. Team effort. Getting CSO samples are the hardest. Need short intense storms to activate.

AECOM consultant contract is \$3.1m, half of which is for metering and meter data analyses.

More intense storms and climate? MWRA understands that the Typical Year isn't necessarily typical in the future. Climate changes may affect CSO discharges, stormwater discharges and land flooding.