

**Approved
Minutes
June 2, 2017**

The Wastewater Advisory Committee to the MWRA met at MAPC, 60 Temple Pl., Boston, MA

Attendees/Contributors:

WAC: Taber Keally (chair), Mary Adelstein, Craig Allen, James Guiod, Stephen Greene, Karen Heinze (by phone), Karen Lachmayr, Martin Pillsbury, Zhanna Davidovitz

Guests: Wendy Leo, David Wu (MWRA), Philip Ashcroft (NEWIN), Rachel Borgatti (Friends of Fort Point Channel)

Staff: Andreae Downs

FUTURE MEETING DATES/TOPICS

NEXT: August 17 Advisory Board Field Trip (details TBD), September joint meeting with the Advisory Board and WSCAC (date TBD)

VOTES:

Notes from the May tour of Deer Island were reviewed, but WAC determined no vote was needed.

Authorized Taber Keally, as WAC Chair, to sign the WAC contract

Craig Allen voted chair for FY18, Karen Lachmayr vice chair for FY18. Idea is that chairmanship will rotate annually so that the leadership burden can be shared among all qualified WAC members.

WAC Annual Report approved for publication on the website

CHAIRMAN'S REPORT:

Taber talked about his encounter with the Milton Garden Club, which has a handful of volunteers who teach a unit in the 4th grade every year for decades in Milton. The cumulative effect is a better-educated populace, all the way to the parents and grandparents, about water issues. For

cumulative education, getting a regular and continuous presence in school classrooms could be helpful to the MWRA.

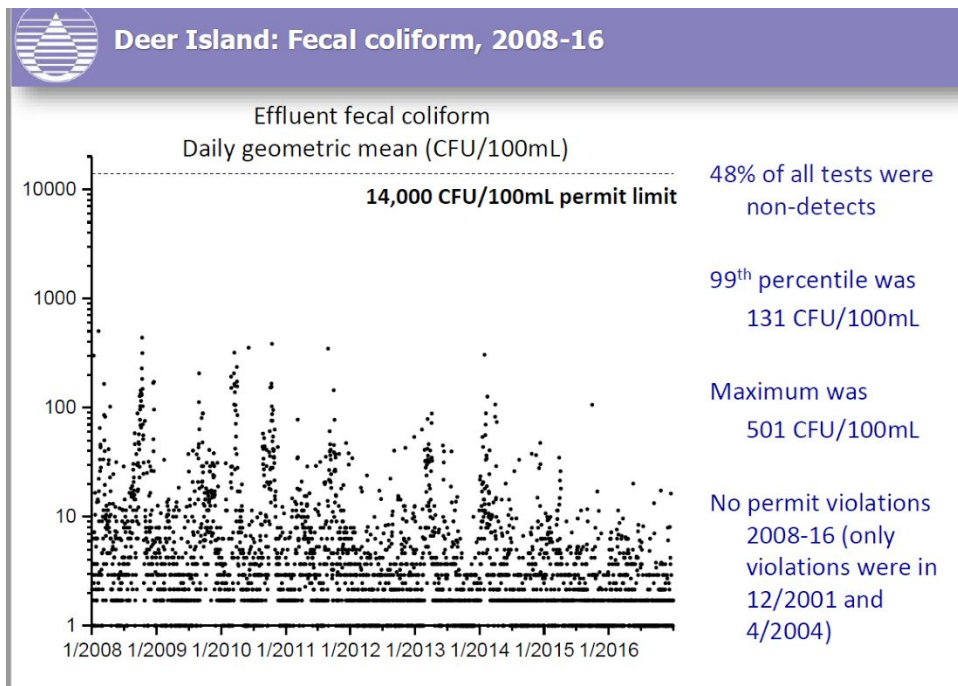
WAC members agreed that classroom educational outreach is an important part of the MWRA's mission. Other ways MWRA gets kudos is for the free water sample testing, and other services to the communities.

ADVISORY BOARD UPDATE: Budget recommendations are online--smallest rate increase in 8 years. On the policy side--*Enterococcus*, metro-tunnel redundancy, lighting.

MWRA PRESENTATION: *Enterococcus*

David Wu:

Data used in this presentation start from when the MWRA started using its current lab sampling method for *Enterococcus*. How did we get at the 14,000 figure (current limit for fecal coliform per 100ml)? The minimum dilution factor in the koutfall is 70, so you get 14,000 by multiplying the old water quality standards for fecal coliform (200) by 70. That's a minimum, as in some conditions the dilution factor is over 300.

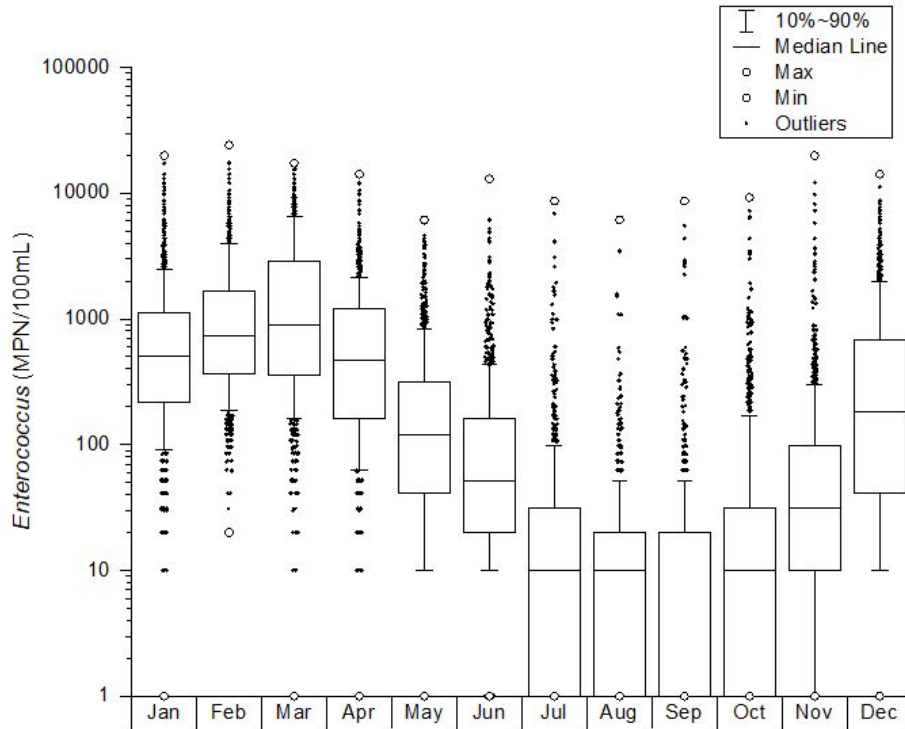


Samples are taken 3x/day. Samples are taken at the tail end of the disinfection basin, so after chlorine has been added and before it goes into the outfall.

Current *Enterococcus* standards for marine waters: geometric mean of 35, single sample of 104. You multiply by the dilution factor--this is written into the permit, and is not a given, but if the

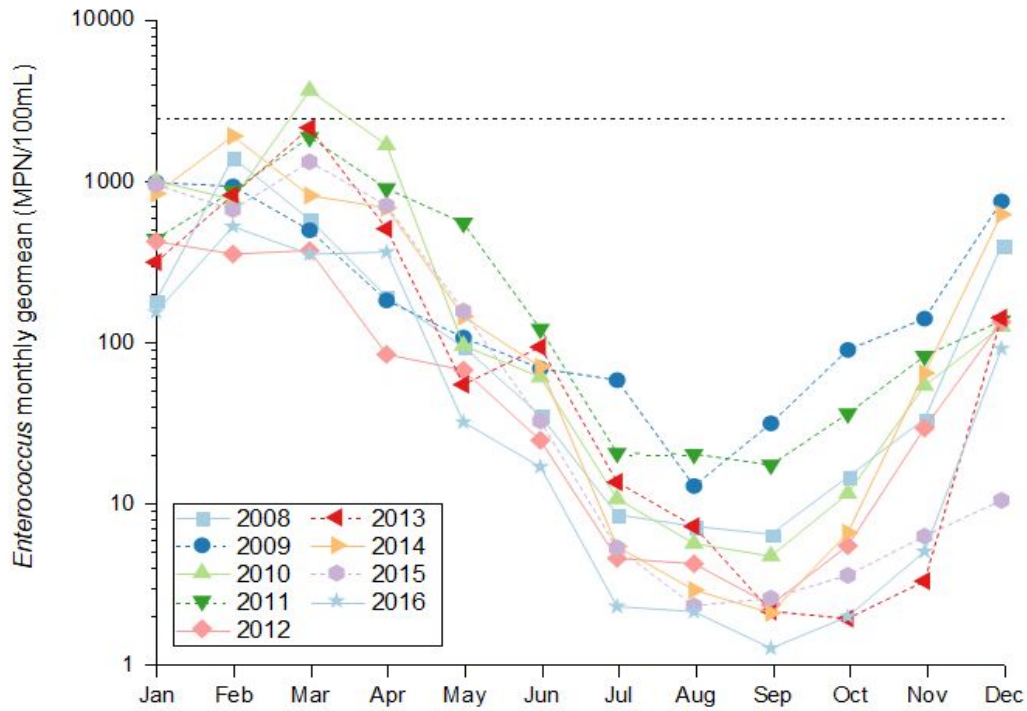
current dilution factor holds in the new permit, you get a geometric mean of 2,450, and a single sample limit of 7,280 per 100ml.

Graph of single sample *Enterococcus* results by month:



You'll see there is a very strong seasonal pattern, which we didn't expect. We would probably meet the projected (or hypothetical) limits June-August, but late winter early spring, there may be an issue.

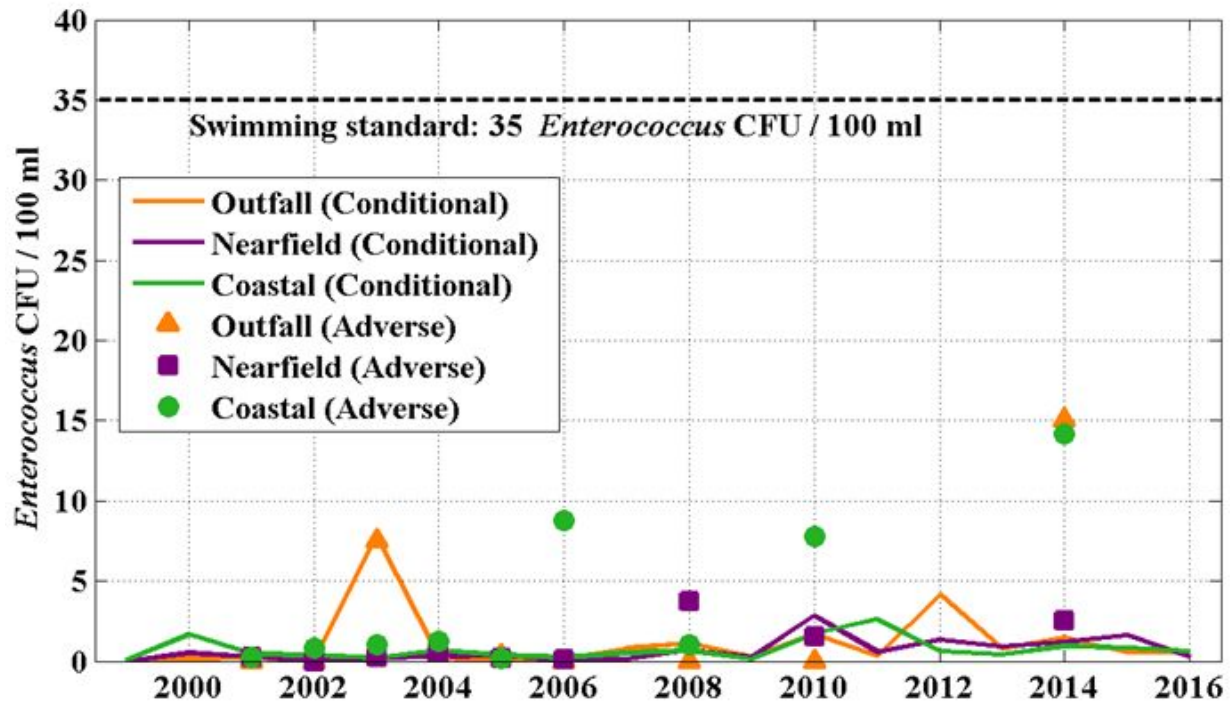
Graph of monthly geometric mean plot:



We would only exceed hypothetical the limit in March 2010, which if you remember was a very wet month, 14" of rain in 2 weeks.

Lot of high counts in late winter and early spring of the single sample counts--also when we tend to have have extended periods of blending ("adverse conditions").

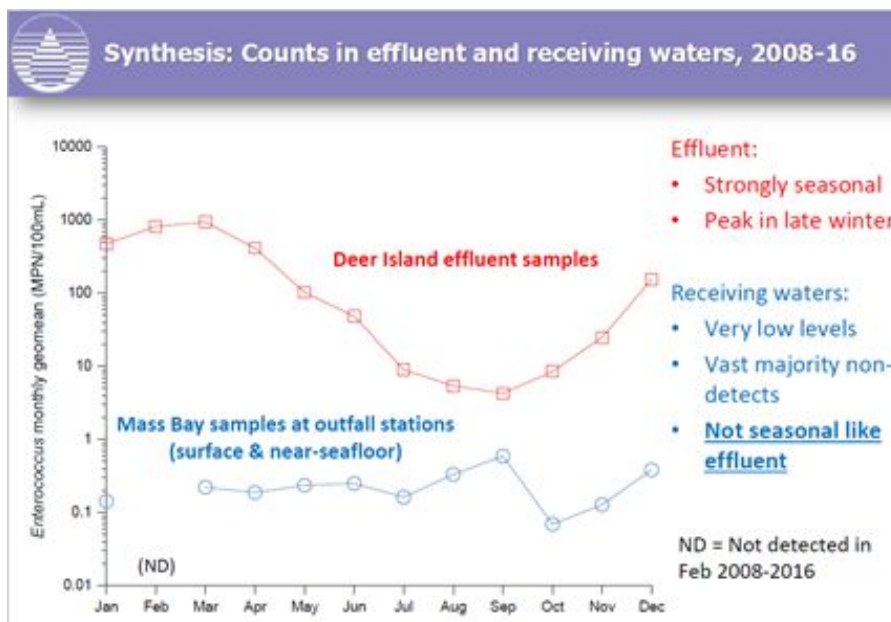
We do sample at the outfall, about 9.5 miles out into the bay, about once a month.



As you can see, the vast majority are non-detects (91%); the samples with detects are well below the swimming standard. Do people really swim out by the outfall?

Similar results for stations around the outfall, near field and coastal stations, even in adverse conditions. Fecal coliform standards are met all the time, including very stringent standards for shellfishing.

Don't really see a seasonal curve in MassBay samples for *Enterococcus*. Again, very low levels and vast majority are non-detects.



What are the implications? The disinfection basin is fixed length, contact time is dependent upon flow, there's no way to increase contact time. Operationally, you are left with increasing chlorination.

The regulatory agencies could impose a seasonal limit.

But for us, we are left with chlorination. It is certainly possible. Issues associated with this:

- Chlorine is toxic to fish and other organisms, chlorine by-products are also a possibility
- Increased chemical costs--worst case, up to \$1.2 million dollars more
- Third point, we are delivering chemicals by truck: more accidents, emissions, traffic congestion--sort of at the limit of truck traffic through town. Worst case, looking at an additional 200 trucks/year for both hypochlorite and sodium bisulfite

Q: Has MWRA considered on-site chlorine production? That would be safer than trucking it in.

A: Then the increased cost is in energy. Don't know what the impact is--safer, but still have same amount of truck traffic.

James: The issue we have is with Winthrop--MWRA has an agreement about how many trucks can go through the town.

Dave: There is a barge dock at the island, however, we have found no chemical suppliers that use barges anymore

Wendy: I don't know that the engineers have looked at on-site generation because of the truck issue. I can find out. There may also be an issue with finding space for on-site generation.

Q: what about ultra-violet (light) disinfection?

A: My understanding is that it has limited effectiveness outside of a certain distance from the lamp, and wastewater is a lot more turbid than drinking water.

Karen L: an additional consideration is that even with chlorination, the DNA is not destroyed, and it can be taken up by microbes in the ocean and be viable. For example, antibiotic resistant genes may still be transmitted

Dave: to be clear, we are only talking about permit compliance here.

Wendy: Is there any safer way to destroy the bacteria?

KL: UV would destroy the DNA, making it less viable, but I would agree that in large scale like this, it may not be feasible.

Q: But the end goal is clean water. *Enterococcus* is just an indicator that the goal isn't being met. There may be other bacteria of concern that we just aren't testing for.

KL: Yes, the treatment isn't just targeting the indicator.

Dave: Just to be clear, the effluent is dechlorinated before being released. But from a permit compliance perspective, new regulatory infrastructure isn't in place and won't be for a long time. So the concern is to meet permit, while minimizing chemical costs.

KL: Do we have any idea when a new permit might be online?

A: No, but after a long period of no activity, EPA is clearly starting to work on one again. The budget line (\$600,000) is just there in case a new permit comes on, so MWRA has the funding to cover chemicals that might be needed. Because *Enterococcus* limit will almost certainly be included.

Wendy: So the argument as I understand it, is we shouldn't have a limit for *Enterococcus* because nobody swims at the outfall, and we're doing just fine in terms of fecal coliform. There's no environmental benefit and an environmental cost.

James: exactly. And we are in a unique situation, with an outfall 9 miles off shore

Q: will the MWRA oppose the imposition of an *Enterococcus* limit?

Wendy: MWRA will certainly comment on it in the draft permit, and we have provided information for EPA to consider as they are making the decision on what to include. But they need a solid scientific reason to do so.

James: So the Advisory Board is being the bad cop here in providing the backbone of support from the communities to oppose the *Enterococcus* limit

Andreae: Which is why I thought WAC might want to pile on.

KL: not sure taking the money out of the budget is the way to do it. Since the permit may go into effect next year, MWRA should have the money to cover the chemicals to meet the permit.

MA: Is there any evidence of changes to the biome from the current chlorination/dechlorination process? I understand it is more salty.

WL: It's not the salt, it's the chlorination byproducts that may be a concern. So far, we have a well-established record of no effects.

A: I would not expect to see effects in the bay, just in our tests. But it's conjecture.

Q: Is there no other way to extend the contact time?

A: I think there's no space to make the disinfection basin longer or deeper. And we've tried, but it's difficult to test the levels of chlorine and bacteria at the end of the outfall if we don't dechlorinate.

Average flow contact time is 50 minutes. What we're talking about if we left chlorine in for contact time in the tunnel would be about 11 hours at average flow. 3 hours at maximum flow. 15 minutes in the disinfection basin.

Does WAC want to indicate support for MWRA contesting an *Enterococcus* standard?

KL: I think we have to wait until the comment time on the permit, when we know if EPA is going to apply this standard.

WL: they only give you 30-60 days to comment on the draft. In terms of how WAC operates, it might be worth having the discussion beforehand.

TK: I'm concerned that we are aiming at a permit we don't know and an agency we don't know either. Is MWRA looking to meet the permit or do what's right for the environment here?

WL: We hope that's the same thing.

DW: If you look at some of these results, there are high *Enterococcus* levels in the effluent. But when it's discharged into the bay, levels are not high. Dilution is another factor. If dilution factors are not applied, the permit will be harder to meet. We believe we have proof that there's a high level of dilution at the outfall.

Q: Why the seasonal difference?

A: it seems to be directly related to level of flow (higher flow in winter=less contact time=higher *Enterococcus* levels)

The permit could allow for seasonal variations, or seasonal chlorine dosage MWRA could use that argument.

TK: the cost here isn't just the dollars, it's in the number of trucks, and not necessarily seasonal, but perhaps more in the snow season when roads are narrower.

Is there anything else WAC would like to discuss in the draft letter supporting Advisory Board recommendations?

MA: don't see the point of increasing cost recovery for TRAC, since can be counterproductive.

James: we've seen that it hasn't been touched because if you touch it too much you get resistance.

Q: is there any cost-recovery in the system now?

A: No.

James; AB asks could more of the costs be recovered?

KL: seems like we don't want to comment on the main two items in the letter. What do we want to do in regards to the third item?

MA: agree that [decorative lighting] not a major concern. Gratuitous to send a letter.

TK: would like to know why MWRA hasn't put more LED lighting inside the plant.

→ **Consensus not to send a letter**

WAC Annual Report Draft

Takes other WAC materials and puts them together in one document for the Advisory Board meeting in September and to go on to the WAC website.

Ideas for Next Year's Meeting Topics

- Charles River Watershed's latest sewer ideas
- Greater Lawrence co-digestion pilot tour
- One meeting on I/I and any regulatory changes
- Delegation/primacy ideas
- CLF suit vs EPA on stormwater pollution
- CSO program assessment update
- Education
- Energy Efficiency