

INFORMATION BRIEFING

TO: Outfall Monitoring Science Advisory Panel, Dr. Andrew Solow, Chair
FROM: Dr. Andrea Rex, MWRA
DATE: June 29, 2009
RE: Proposed Revisions to MWRA's Outfall Ambient Monitoring Plan

ACTION

1. For vote: "OMSAP recommends to DEP and EPA that they allow MWRA to modify the Ambient Monitoring Plan according to the changes proposed in **Massachusetts Water Resources Authority effluent outfall ambient monitoring plan Proposed Revision 2, 2009**. Boston: Massachusetts Water Resources Authority. Report 2009-06" which was transmitted to regulatory agencies and published for public review on April 15, 2009. The following specific changes are proposed: (Detailed list of proposed changes can be retrieved from: http://www.mwra.com/harbor/pdf/amp_prop_mod_apr09_att1.pdf.)

Effluent

1. Discontinue effluent floatables monitoring.
2. Change special study metals and organic chemicals sampling frequency from "weekly" to "4 times per month."

Water column

1. Reduce the total number of stations sampled from 34 to 10, focusing the monitoring on the geographic area now known to have the possibility of being affected by the discharge. Reference stations are included, but the furthest stations are removed. End water column sampling in Cape Cod Bay and Stellwagen NMS, where no effects of the discharge have been detected, and the possibility of impacts is remote. (MWRA proposes to continue a soft-bottom monitoring station at Stellwagen NMS, and to continue sampling at a water quality monitoring station, including bottom water dissolved oxygen in Stellwagen Basin just outside the western boundary of the Sanctuary.)
2. Change survey schedule from 12 nearfield and 6 farfield annually to 9 annual surveys of "expanded nearfield plus reference sites." This design will enable MWRA to sample all stations during every survey, and to measure all parameters at all stations. This will provide a synoptic picture of a broader area than was previously possible, facilitating data interpretation. While the nearfield stations will be sampled less often, reference stations will be visited more often than in the existing design.
3. Discontinue costly productivity measurements which have not found a substantial increase in outfall-related productivity. Algal growth can be monitored by measuring nutrient draw-down and biomass.
4. Discontinue some water chemistry tests which have been rarely used in interpretive reporting.
5. Discontinue net tows for floatables monitoring, as no floatables of concern have been detected in eight years of monitoring.
6. Discontinue whale observation reporting, as the surveys will no longer be occurring in the areas most frequented by whales. (MWRA will continue to follow guidelines to avoid collisions with whales during surveys.)
7. MWRA has augmented the Gulf of Maine Ocean Observing System mooring off Cape Ann with instrumentation for continuous chlorophyll measurements. In addition, water quality

instrumentation is added to the NOAA weather buoy southeast of the outfall. Thus, continuous water quality data will be available in real time on the internet.

Seafloor

1. Reduce the number of soft-bottom community monitoring stations sampled annually from 16 or 17 to 13, and change the present design of alternating sets of stations each year to a consistent group of stations sampled every year. Nearfield, reference, and Stellwagen locations are included in the soft-bottom community surveys. (Continue the cost-effective sediment profile imaging at the current 23 nearfield soft bottom stations.)
2. Reduce the sediment contaminant monitoring stations to the same 13 stations used for soft bottom community monitoring; continue the existing schedule of sampling every third year.
3. Discontinue the annual sediment contaminant sampling at two nearfield stations.
4. Modify the sampling frequency for the hard bottom study to every third year.
5. End the nutrient flux study which has fully answered its monitoring questions.

BACKGROUND

MWRA has completed nearly 9 years of ambient monitoring of the effects of its Deer Island Treatment Plant outfall. The 9 years of monitoring were preceded by 8 years of pre-discharge (baseline) monitoring. Based on the results of this monitoring, MWRA is proposing changes to its monitoring plan according to the process outlined in its discharge permit. MWRA submitted its proposal for changes to the monitoring on April 15. On April 24, 2009 EPA denied MWRA's request to use the interim process in the permit, but agreed to consider MWRA's request according to the full review process which includes regulatory, OMSAP, and public review. On June 3, 2009, EPA responded to MWRA's proposal with comments and requests for additional information, and requested OMSAP provide a review of the proposed changes. On June 23, MWRA responded to EPA's preliminary comments and has prepared additional materials that were requested by EPA.

Documents relevant to the review of these changes are listed below and available online at MWRA's website.

2. Report: **Massachusetts Water Resources Authority effluent outfall ambient monitoring plan Proposed Revision 2, 2009**. Boston: Massachusetts Water Resources Authority. Report 2009-06 www.mwra.com/harbor/enquad/pdf/2009-06.pdf
3. Cover letter, April 15, 2009 www.mwra.com/harbor/pdf/amp_prop_mod_apr09.pdf
4. List of proposed changes http://www.mwra.com/harbor/pdf/amp_prop_mod_apr09_att1.pdf
5. EPA response April 24, 2009 www.mwra.com/harbor/pdf/omsap/epa_response_20090424.pdf
6. EPA response and comments June 3, 2009 www.mwra.com/harbor/pdf/omsap/epa_response_20090603.pdf
7. MWRA response to EPA June 23, 2009 www.mwra.com/harbor/pdf/omsap/mwra_response_20090623.pdf

MWRA is providing the following additional information requested by EPA:

8. Maps showing the overall changes in sampling locations for water column and benthic stations for different phases of the monitoring including the ZID. (Because these maps are complex, MWRA will bring poster-sized maps to the OMSAP briefing.) http://www.mwra.state.ma.us/harbor/html/omsap_090629.htm

9. Graphs comparing Contingency Plan thresholds and threshold results for the present and proposed sets of stations.
http://www.mwra.state.ma.us/harbor/pdf/omsap/20090629_thresholds.pdf
10. Gradient map showing seafloor *Clostridium perfringens* concentrations.
http://www.mwra.state.ma.us/harbor/pdf/omsap/cperf_density.pdf
11. Graphs showing seafloor contaminant concentrations and how these change with respect to distance from the outfall.
http://www.mwra.state.ma.us/harbor/pdf/omsap/sediment_chem_plots.pdf

In addition, the following reports are especially relevant to the review of the monitoring:

Processes Influencing the Transport and Fate of Contaminated Sediments in the Coastal Ocean—
Boston Harbor and Massachusetts Bay By Michael H. Bothner and Bradford Butman, editors
<http://pubs.usgs.gov/circ/2007/1302/>

View Online pdf 54 KB	2009 2009-05	Addendum to contaminant monitoring of Deer Island Treatment Plant effluent 2000-2005: Effluent data for 2005-2008	Delaney MF. 2009. Addendum to contaminant monitoring of Deer Island Treatment Plant effluent 2000-2005: Effluent data for 2005-2008. Boston: Massachusetts Water Resources Authority. Report 2009-05. 4 p.
View Online pdf 3 MB	2009 2009-04	Water column monitoring in Massachusetts Bay 1992-2007: focus on 2007 results	Libby PS, Borkman DG, Geyer WR, Keller AA, Turner JT, Mickelson MJ, Oviatt CA. 2009. Water column monitoring in Massachusetts Bay 1992-2007: focus on 2007 results. Boston: Massachusetts Water Resources Authority. Report 2009-04. 162 p.
View Online pdf 10 MB	2008 2008-20	Outfall benthic monitoring interpretive report 1992-2007	Maciolek NJ, Doner SA, Diaz RJ, Dahlen DT, Hecker B, Williams IP, Hunt CD, Smith W. 2008. Outfall benthic monitoring interpretive report 1992-2007. Boston: Massachusetts Water Resources Authority. Report 2008-20. 149 p.
View Online pdf 2 MB	2008 2008-18	Outfall monitoring overview BACKGROUND	Werme C, Hunt CD. 2008. Outfall monitoring overview BACKGROUND. Boston: Massachusetts Water Resources Authority. Report 2008-18. 54p.
View Online pdf 3 MB	2008 2008-17	2007 outfall monitoring overview RESULTS	Werme C, Rex AC, Hall M, Hunt CD, Leo WS, Mickelson MJ, Rex AC. 2008. 2007 outfall monitoring overview RESULTS. Boston: Massachusetts Water Resources Authority. Report 2008-17. 70p.
View Online pdf 1 MB	2008 2008-14	2007 Annual benthic nutrient flux monitoring report	Tucker J, Kelsey S, Giblin AE, Hopkinson Jr CS. 2008. 2007 Annual benthic nutrient flux monitoring report. Boston: Massachusetts Water Resources Authority. Report 2008-14. 59 p.
View Online pdf 2 MB	2008 2008-08	Summary of floatables observations in Deer Island Treatment Plant effluent and at the Massachusetts Bay discharge site 2000-2007	Rex AC, Tyler C, Wu D, Liang SY. 2008. Summary of floatables observations in Deer Island Treatment Plant effluent and at the Massachusetts Bay discharge site 2000-2007. Boston: Massachusetts Water Resources Authority. Report 2008-08. 20 p.
View Online pdf 54 KB	2009 2009-05	Addendum to contaminant monitoring of Deer Island Treatment Plant effluent 2000-2005: Effluent data for 2005-2008	Delaney MF. 2009. Addendum to contaminant monitoring of Deer Island Treatment Plant effluent 2000-2005: Effluent data for 2005-2008. Boston: Massachusetts Water Resources Authority. Report 2009-05. 4 p.
View Online pdf 1 MB	2007 2007-02	Contaminant monitoring of Deer Island Treatment Plant effluent: 2000-2005	Delaney MF, Rex AC. 2007. Contaminant monitoring of Deer Island Treatment Plant effluent: 2000-2005. Boston: Massachusetts Water Resources Authority. Report 2007-02. 40 p.

At the June 29 OMSAP meeting, MWRA will review the results of its monitoring, and discuss the rationale for the proposed changes to the Ambient Monitoring Plan.