MASSACHUSETTS WATER RESOURCES AUTHORITY
Charlestown Navy Yard
100 First Avenue
Boston, Massachusetts 02129

Telephone: (617) 242-6000
Facsimile: (617) 788-4899

Frederick A. Laskey
Executive Director

October 26, 2012

Mr. Stephen Perkins
U.S. Environmental Protection Agency
Water Enforcement
OES4-SMR
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Mr. David Ferris
Division of Wastewater Management
Department of Environmental Protection
1 Winter Street
Boston, MA 02108

Re: Massachusetts Water Resources Authority, Permit Number MA0103284
Notification Pursuant to Part I.8. Contingency Plan: *Phaeocystis*

Dear Mr. Perkins and Mr. Ferris:

One of the nuisance algae that the Massachusetts Water Resources Authority ("MWRA") monitors in its outfall ambient monitoring program is *Phaeocystis*. Reporting on seasonal abundances of *Phaeocystis* in the outfall nearfield area is part of the Contingency Plan.[1] MWRA has received *Phaeocystis* results from summer samples collected May, June, July, and August, 2012. One out of eight samples collected in the nearfield on May 15, 2012 contained moderate numbers of cells of *Phaeocystis,* apparently the "tail end" of the relatively small *Phaeocystis* bloom that occurred this spring. The calculated nearfield mean abundance of *Phaeocystis* in that survey was about 4,500 cells/L. No *Phaeocystis* cells were observed in samples collected during subsequent surveys in June, July, and August. The summer season average was 1,120 cells/L. This is above the Caution Level threshold of 357 cells/L, which triggers a notification under the Contingency Plan. This letter constitutes the notification for the threshold exceedance.

Average 2012 *Phaeocystis* data from winter/spring (February, March, April) and summer are summarized in the table below. (Note that the winter/spring data, from the peak bloom period, are well below the threshold.)

Parameter	Specific Parameter	Caution Level Threshold	Warning Level Threshold	2012 Results
Phaeocystis pouchetii	Winter/spring	2,860,000 cells/L	None	1,690,000 cells/L
	Summer	357 cells/L		1,120 cells /L Caution Level Exceedance

1 *Massachusetts Water Resources Authority Contingency Plan Revision 1.* 2001. Report ENQUAD ms-071. http://www.mwra.state.ma.us/harbor/enquad/trlist.html.

No adverse aesthetic or other impacts were observed from this year's spring *Phaeocystis* bloom. The temporal pattern of the bloom was typical, with the bloom first detected and peaking in mid-March, persisting through the mid-April survey, dropping to much lower levels by mid-May, and disappearing by mid-June.

Figure 1 shows winter-spring nearfield means, and Figure 2 shows summer nearfield means, with corresponding thresholds.

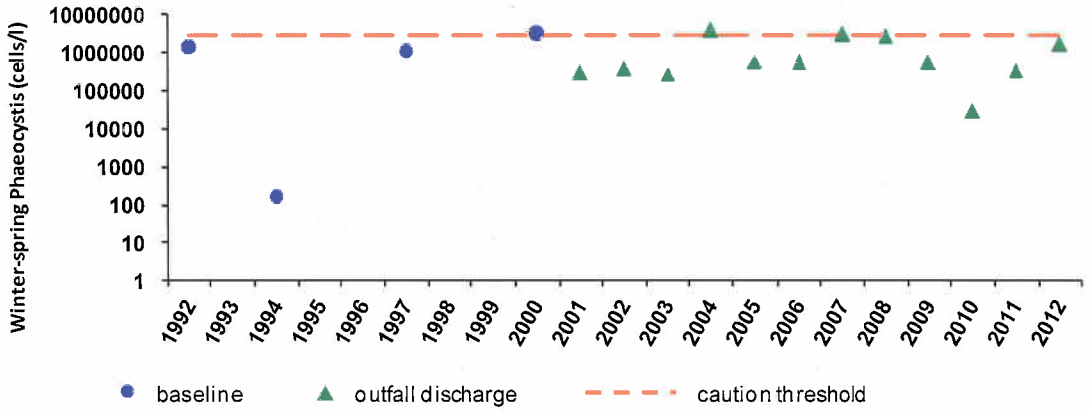

Figure 1. Winter-spring nearfield seasonal mean *Phaeocystis* counts 1992-2012. (Note logarithmic scale; years with no symbol indicate zero *Phaeocystis*)

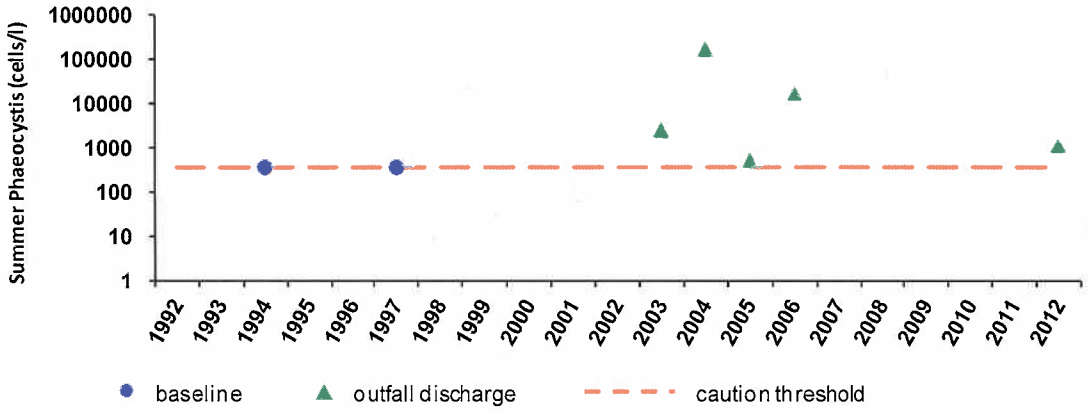

Figure 2. Summer nearfield seasonal mean *Phaeocystis* counts 1992-2012 (Note logarithmic scale; years with no symbol indicate zero *Phaeocystis*

There is no obvious association with MWRA's outfall, as the bloom appeared to be region-wide, with highest counts at stations off Cape Ann. The highest count observed during the 2012 winter-spring *Phaeocystis* bloom was 10.8 million cells/L, at F22, a farfield station over 15 km northeast of the outfall. In samples from the May 15 survey, *Phaeocystis* was observed in low abundances at two farfield stations (F10, F15) well south of the discharge.

Phaeocystis was only rarely observed after May 1 in baseline years, therefore the May-August threshold (357 cells/L) is extremely low. However, *Phaeocystis* blooms have occurred nearly every year since 1999, and cells were observed in May or June samples every year from 2002[2] through 2006, and again this year (2012).

MWRA previously evaluated possible causes for the apparent prolongation of *Phaeocystis* blooms (Libby *et al*. 2006[3]). The termination of *Phaeocystis* blooms appears to be related to how quickly the surface waters warm in spring. Scientists believe that *Phaeocystis* cannot grow when water temperatures are higher than 14ºC. If the water warms up relatively early, in late April or early May, few or no *Phaeocystis* cells are observed in MWRA's May or June surveys. When warming is delayed until late May or into June, and there is a winter/spring *Phaeocystis* bloom, appreciable numbers of *Phaeocystis* are often seen later than May 1. In 2012, the water again warmed relatively late, with the first recording of 14ºC water (by the NERACOOS A Buoy[4]) on May 23.

Please let me know if any of MWRA's staff can give you additional assistance regarding this notification.

Sincerely,

Michael J. Hornbrook
Chief Operating Officer

[2] *Phaeocystis* was observed during a survey on May 1, 2002 and resulted in a threshold exceedance that year, reported at http://www.mwra.state.ma.us/harbor/pdf/20021209amx.pdf. Since the survey during which it was observed was dropped from the Ambient Monitoring plan, its data no longer appear in threshold plots like Figure 2.

[3] See section 3.4.7 and Appendix D of Libby PS, Geyer WR, Keller AA, Mansfield AD, Turner JT, Borkman D, Oviatt CA. 2006. 2004.**Annual Water Column Monitoring Report**. Boston: Massachusetts Water Resources Authority. Report ENQUAD 2006-15. 177 p.

[4] NERACOOS A is in Massachusetts Bay south of Cape Ann. The National Buoy Data Center weather buoy 44013, which is east of the nearfield and normally measures surface water temperature, was out of commission in spring 2012.

Cc:

Environmental Protection Agency, Region I
Matthew Liebman
Todd Borci

National Marine Fisheries Service
Daniel Morris

Stellwagen Bank National Marine Sanctuary
Craig MacDonald

MA EOEEA
Kathy Baskin

MA Department of Environmental Protection
Cathy Vakalopoulos

Cape Cod Commission
Tom Cambareri

Outfall Monitoring Science Advisory Panel
Andrew Solow
Robert Beardsley
Norb Jaworski
Judy Pederson
Michael Shiaris
James Shine
Juanita Urban-Rich
Robert Kenney

Public Interest Advisory Committee
Patty Foley

Hyannis Library
Ann-Louise Harries

MWRA Library
Elizabeth Steele