May 21, 2009

Stephen Perkins, Director          Glenn Haas, Acting Assistant Commissioner
Office of Ecosystem Protection      Bureau of Resource Protection
U.S. Environmental Protection Agency Massachusetts Department of Environmental
Water Technical Unit “SEW”           Protection
P.O. BOX 8127                      One Winter Street, 2nd Floor
Boston, MA 02114                   Boston, MA 02108

RE: Massachusetts Water Resources Authority
    Permit Number MA 0103284
    MWRA Contingency Plan Threshold Exceedance: Red Tide 2009

Dear Mr. Perkins and Mr. Haas:

In its outfall ambient monitoring program, MWRA monitors levels of the red-tide alga
Alexandrium, the cause of paralytic shellfish poisoning (“PSP”). Reporting on per-sample
abundances of Alexandrium in the outfall nearfield is part of the Contingency Plan.¹ The
Contingency Plan also specifies that MWRA conduct additional targeted monitoring for
Alexandrium. Based on observations of shellfish PSP toxicity and Alexandrium cell counts in the
waters off the coast of Maine, New Hampshire and Massachusetts, MWRA initiates surveys for
Alexandrium ² in the outfall area if conditions are right for significant amounts of Alexandrium to
enter Massachusetts Bay, and/or Alexandrium is detected at levels above the Contingency Plan
threshold in the outfall nearfield.

On May 7, 2009, MWRA was notified that PSP toxicity in shellfish off the coast of New
Hampshire was increasing and approaching closure levels—a finding that has in the past
preceded the movement of Alexandrium into Massachusetts Bay. In addition, experimental
computer modeling³ done by the Woods Hole Oceanographic Institution and North Carolina State
University predicted the presence of Alexandrium in Massachusetts Bay (Figure 1). Therefore,
MWRA included testing for Alexandrium at 5 nearfield stations (Figure 2) during its regular


³ Ruoying He, Yizhen Li, Dennis McGillicuddy, Don Anderson, Bruce Keafer: Gulf of Maine
survey on May 12. On May 18, MWRA was notified that results\(^4\) from that survey showed that in one surface sample at station N18, the abundance of *Alexandrium* in the outfall nearfield was 150 cells/liter. The concentration of 150 cells/liter is higher than the Contingency Plan threshold of 100 cells/liter, and thus is a threshold exceedance requiring regulatory and public notification. This letter constitutes that notification.

\[\text{Figure 1 Results of experimental modeling for } \textit{Alexandrium} \text{ May 12, 2009.}\]

\[\text{Figure 2 Map of some of MWRA's outfall monitoring stations, including stations N01, N04, N18, N07, and N10 which were sampled for } \textit{Alexandrium} \text{ on May 12, 2009. } \textit{Alexandrium} \text{ was detected at all stations sampled, the } \textit{Alexandrium} \text{ exceedance was at station N18.}\]

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\(^4\) Analyses were carried out in the laboratories of the National Office for Marine Biotoxins and Harmful Algal Blooms at the Woods Hole Oceanographic Institution (WHOI).
As shown in Table 1, counts in the other 9 samples collected that day were lower than the threshold, and ranged from 6 to 62 cells/liter.

<table>
<thead>
<tr>
<th>Sample Date Time</th>
<th>Station</th>
<th>Depth (m)</th>
<th>A. fundyense cells/liter</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/12/09 7:50</td>
<td>N10</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>5/12/09 7:51</td>
<td>N10</td>
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<td>7</td>
</tr>
<tr>
<td>5/12/09 8:41</td>
<td>N01</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>5/12/09 8:42</td>
<td>N01</td>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>5/12/09 10:21</td>
<td>N07</td>
<td>13</td>
<td>39</td>
</tr>
<tr>
<td>5/12/09 10:22</td>
<td>N07</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>5/12/09 11:08</td>
<td>N04</td>
<td>13</td>
<td>62</td>
</tr>
<tr>
<td>5/12/09 11:09</td>
<td>N04</td>
<td>1</td>
<td>42</td>
</tr>
<tr>
<td>5/12/09 11:53</td>
<td>N18</td>
<td>12</td>
<td>32</td>
</tr>
<tr>
<td>5/12/09 11:55</td>
<td>N18</td>
<td>2</td>
<td>150</td>
</tr>
</tbody>
</table>

*Alexandrium* events typically occur in the spring, initiating along the coast of Maine and advecting south to New Hampshire. To date, the 2009 red tide bloom has progressed in the pattern typical in the Gulf of Maine: beginning off the Maine coastline and advecting south during May.

MWRA carried out an *Alexandrium* survey on May 20, 2009, and will report those data and data from future surveys when they become available. If you have questions or need additional information, please feel free to call me, at (617) 788-4359.

Sincerely,

Michael J. Hornbrook

Chief Operating Officer
Cc:

Environmental Protection Agency, Region I
Matthew Liebman
Todd Borci
Roger Janson

National Marine Fisheries Service
Chris Mantzaris
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