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10/15/2011

# Contingency Plan Report
Third Quarter 2011

## Ambient Monitoring

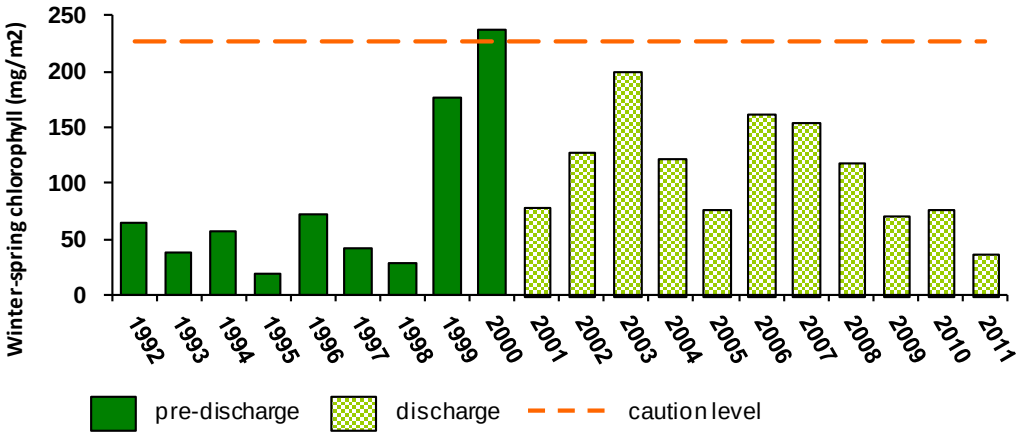
MWRA gathers data from the outfall location in Massachusetts Bay on various thresholds in its Deer Island outfall discharge permit. This Contingency Plan quarterly report shows relevant ambient monitoring results that became available in the July-September 2011 time period. Those results did not exceed any Contingency Plan thresholds.

### CHLOROPHYLL
### January - April 2011

There were no chlorophyll threshold exceedances in this period. The nearfield mean areal average chlorophyll in winter/spring 2011 (January-April) was 38 mg/m$^2$, well below the caution level threshold[1] for winter/spring of 226 mg/m$^2$ and in the lower end of the range typical of the pre-discharge period.

The figure compares chlorophyll data for winter/spring 2011 (January-April), which included three surveys, to the corresponding threshold. The graph includes data since the start of the monitoring program in 1992; however, the seasonal average values for 1992-2010 are calculated using a subset of all results reflecting the modified design that began in 2011, *i.e.* three winter/spring surveys. This enables us to better compare the threshold results across years. The previous reports are at http://www.mwra.state.ma.us/harbor/html/archive.htm#cpqamb .

***Winter/spring***



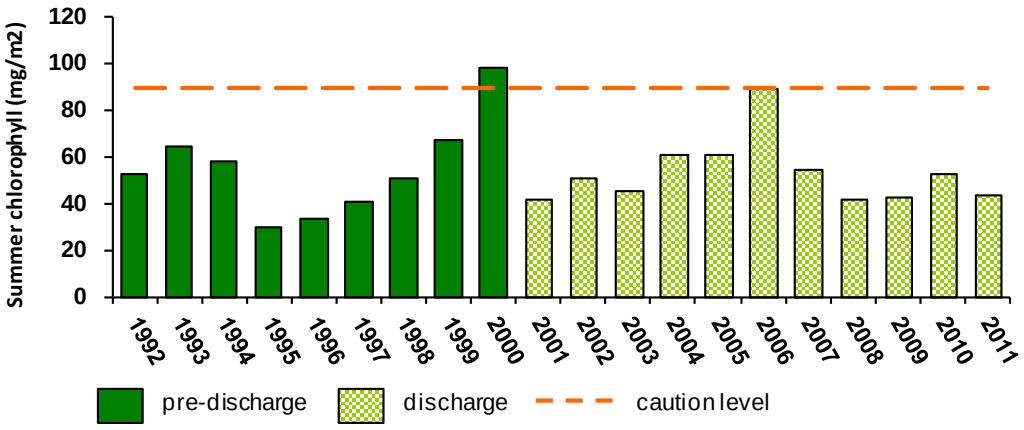

[1] Threshold recalculated for new survey schedule: in 2011, MWRA implemented a new outfall sampling design, which included dropping one spring survey. The baseline means and the thresholds (the 95th percentile of the baseline mean) were recalculated mathematically deleting baseline data corresponding to the dropped surveys. The recalculated winter/spring threshold for chlorophyll is slightly lower than the old threshold of 238 mg/m$^2$. On the graph, the results for all years are recalculated based on the new survey schedule, and thus the 1992-2010 values differ from the results which were reported previously.

**May-August 2011**

There were no chlorophyll threshold exceedances in this period. The nearfield mean areal average chlorophyll in summer 2011 (May-August) was 44 mg/m$^2$, well below the caution level threshold[2] for summer of 89 mg/m$^2$ and in the range typical of the pre-discharge period.

The figure compares chlorophyll data for summer 2011, which included four surveys, to the corresponding threshold. The graph includes data since the start of the monitoring program in 1992.

***Summer***

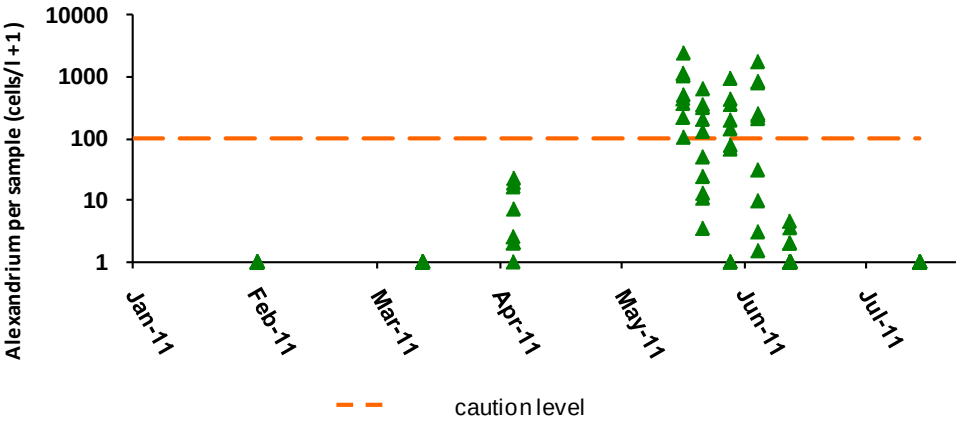



**NUISANCE ALGAE – July 2011**

***ALEXANDRIUM***

The nuisance algae *Alexandrium* ("red tide") can cause paralytic shellfish poisoning (PSP) in Massachusetts Bay. MWRA measures *Alexandrium* abundance in its monitoring program, and also checks state fisheries agency observations of shellfish PSP toxicity to keep track of the course of Gulf of Maine *Alexandrium* blooms.

As reported previously, in 2011 there was an *Alexandrium* bloom in the spring, which subsided during June.




| July-August results for *Alexandrium* per-sample abundance (cells/liter) | |
|---|---|
| Caution threshold | 100 |
| July 2011 | 0* |

* maximum of DNA probe samples collected in nearfield in July, 2011.

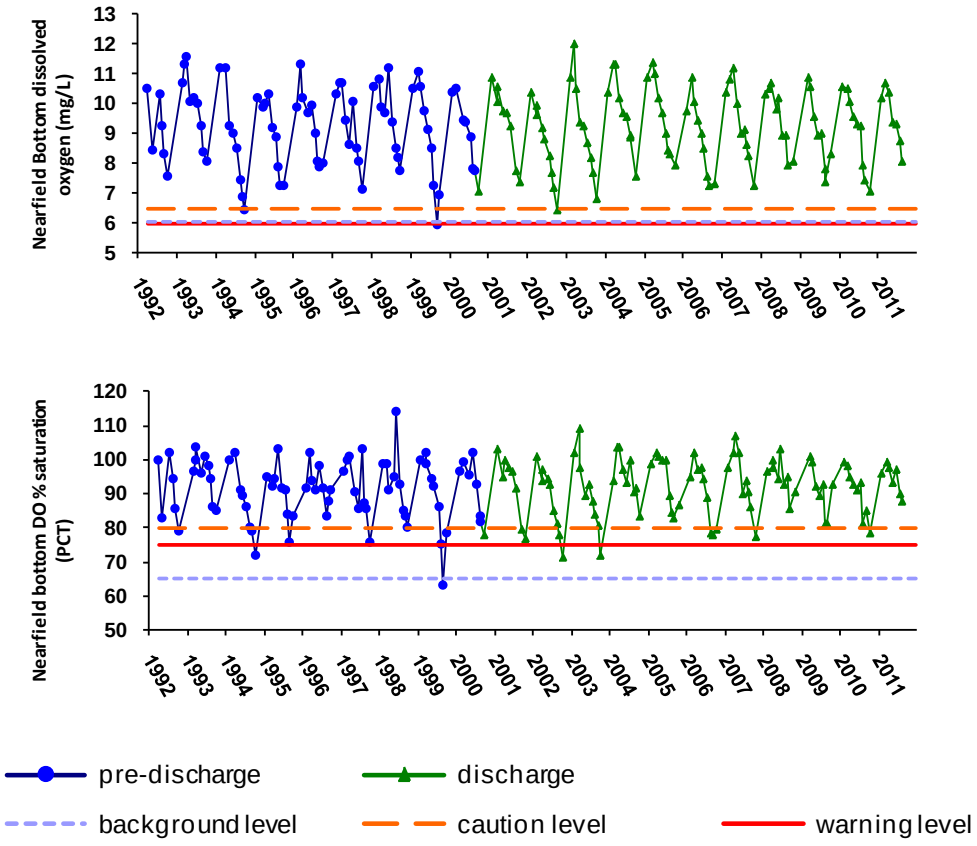
[2] There was no change in the summer survey schedule, but the threshold calculation now reflects corrections to baseline data. The threshold is very slightly lower than the old threshold of 93 mg/m$^2$.

**DISSOLVED OXYGEN – July - August 2011**

Measurements of dissolved oxygen (DO) concentration and percent saturation in late summer 2011 did not fall below background levels and thus did not exceed thresholds[3].

The current reporting period for dissolved oxygen thresholds is July-September 2011. During this period there were three surveys. Oxygen levels were similar to those seen in most baseline years. The graphs below show the natural annual fluctuation of DO and percent saturation, which is typically lowest in early autumn. The 1992-2010 data shown are a subset of all data reflecting the modified design that began in 2011, *i.e.* nine surveys per year, and one station rather than four in Stellwagen Basin. This enables us to better compare the threshold results across years. The previous reports are at http://www.mwra.state.ma.us/harbor/html/archive.htm#cpqamb .

***NEARFIELD***




[3] Threshold recalculated for new survey schedule and stations: in 2011, MWRA implemented a new outfall sampling design, which included dropping one (fall) nearfield survey during the period June-October used for threshold testing. The new study design also includes only one station in Stellwagen Basin rather than four, but this farfield station is now sampled nine times per year instead of six. The baseline means and the "background" value (the 5th percentile of the baseline means) were recalculated mathematically deleting baseline data corresponding to the dropped surveys and stations. The recalculated background values are slightly higher than the old background.

***STELLWAGEN BASIN***