

## Contingency Plan Report First Quarter 2009

### Ambient Monitoring

MWRA gathers data from the outfall location in Massachusetts Bay on various thresholds in its Deer Island outfall discharge permit. This report shows relevant ambient monitoring results that became available in the January-March 2009 time period. There were no exceedances of Contingency Plan thresholds.

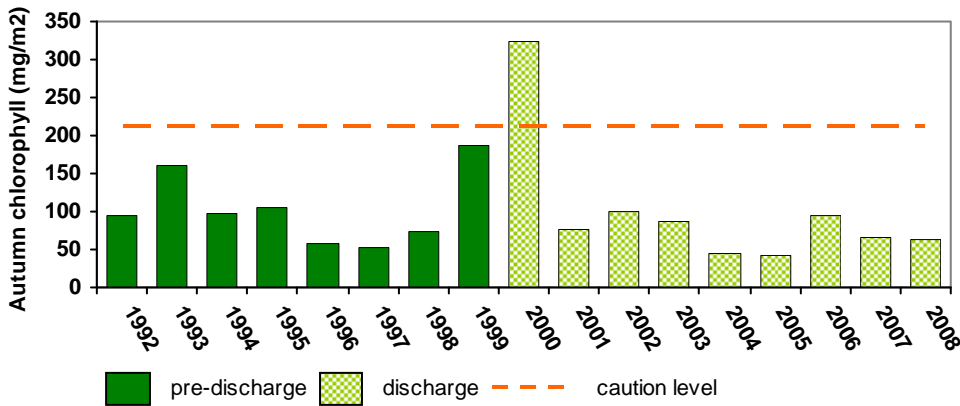
#### CHLOROPHYLL – AUTUMN, ANNUAL 2008

There were no exceedances of the fall chlorophyll threshold or of the annual chlorophyll threshold for 2008.

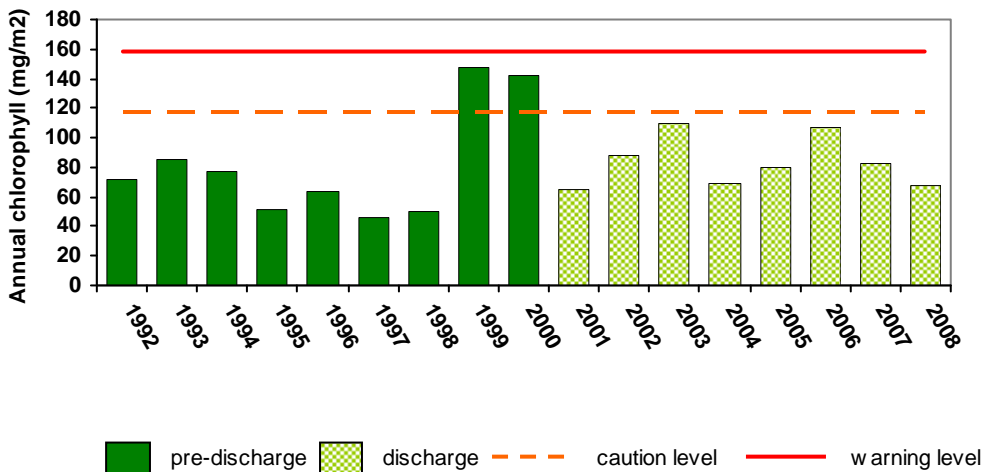
The nearfield mean areal average chlorophyll in autumn 2008 (September-November) was 64 mg/m<sup>2</sup>, well below the caution level threshold for autumn of 212 mg/m<sup>2</sup> and in the range typical of the pre-discharge period. The 2008 annual average was 67 mg/m<sup>2</sup>, among the lowest of recent years and below the caution and warning thresholds for annual average chlorophyll of 118 and 158 mg/m<sup>2</sup>, respectively.

The figures below compare chlorophyll data for autumn 2008, which included four surveys, and data for all of 2008, to the corresponding thresholds. The graph includes data since the start of the monitoring program in 1992.

#### AUTUMN CHLOROPHYLL



#### ANNUAL CHLOROPHYLL



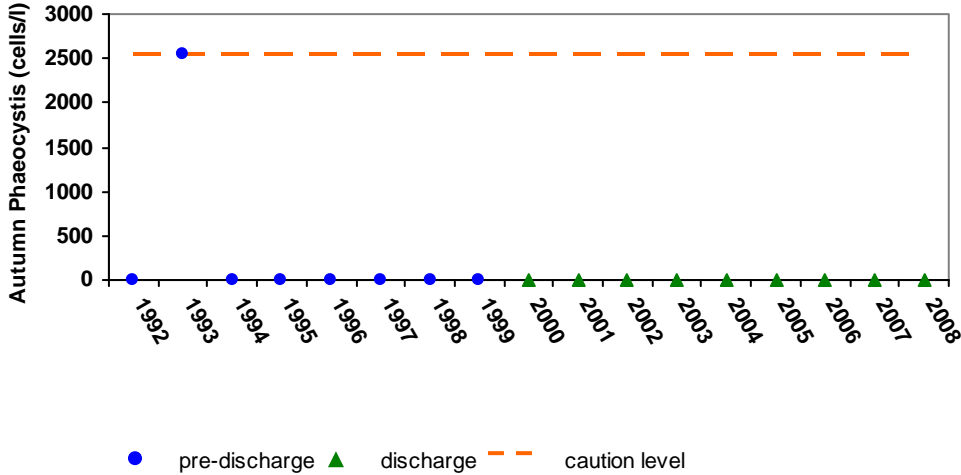
## NUISANCE ALGAE – Autumn 2008

In the figures below, we compare *Phaeocystis* and *Pseudonitzschia* data to the [nuisance algae thresholds](#) for autumn 2008 (September through November), which included four surveys. We also compare *Alexandrium* data to the threshold for each sample in September through November 2008.

There were no threshold exceedances for *Phaeocystis*, *Pseudonitzschia*, or *Alexandrium*.

### PHAEOCYSTIS

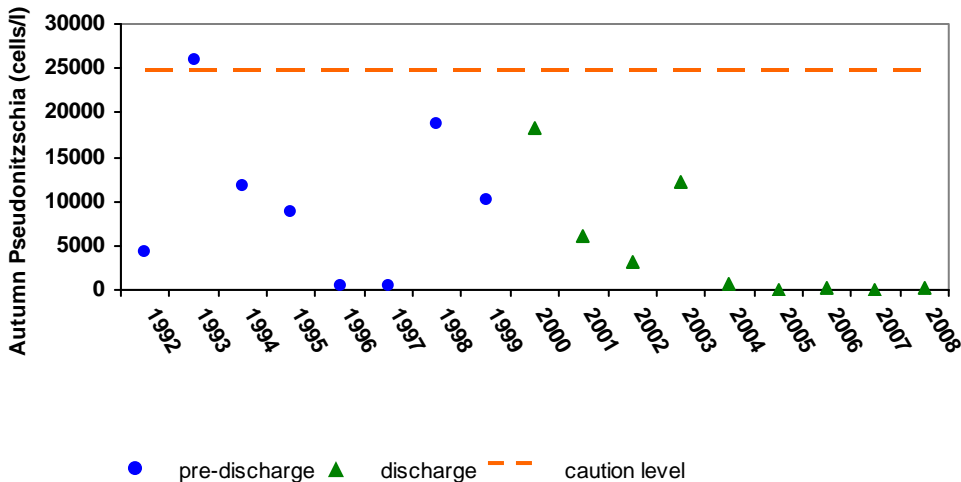
*Phaeocystis* was not observed in the nearfield in autumn 2008.



Autumn <i>Phaeocystis</i> mean abundance (cells/liter)	
Caution threshold	2,540
Autumn 2008	0

### PSEUDONITZSCHIA

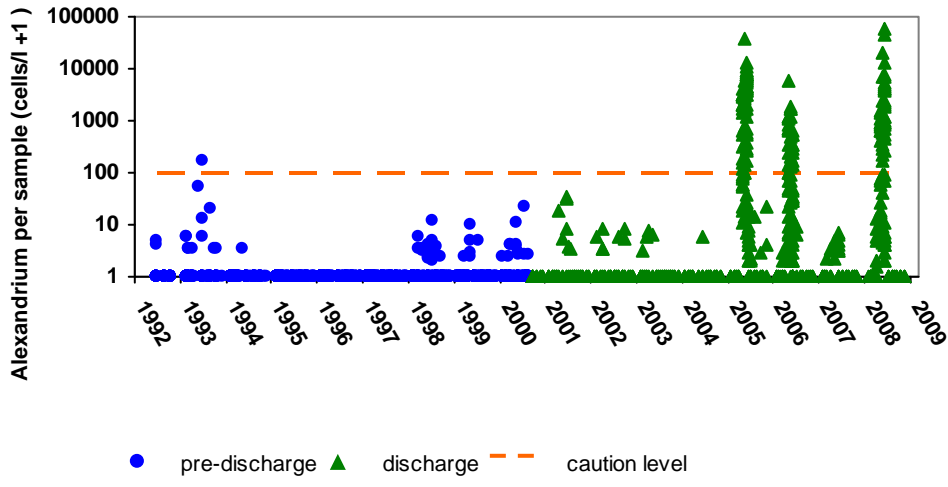
*Pseudonitzschia* was observed at very low levels in the nearfield in autumn 2008.



Autumn <i>Pseudonitzschia</i> mean abundance (cells/liter)	
Caution threshold	24,700
Autumn 2008	171

**ALEXANDRIUM**

*Alexandrium* was not observed in the nearfield in autumn 2008. Low abundances were observed in a small number of farfield samples in October 2008, but not in the nearfield.



<b>Autumn <i>Alexandrium</i> per-sample abundance (cells/liter)</b>	
Caution threshold	100
Autumn 2008	0*

\* maximum of all samples collected between September 1, 2008 and December 31, 2008

**SEDIMENT CONTAMINATION** (revised April 2009)

Sediment contamination levels at the outfall site in 2008 were well below the thresholds.

The sediment contamination thresholds would indicate any unexpected accumulation of toxic contaminants in soft sediments near the outfall. Contaminant levels are compared to sediment guidelines issued by the National Oceanic and Atmospheric Administration (NOAA). These NOAA "ER-M" levels indicate toxic contaminant concentrations above which adverse effects on marine life are often detected. Baseline sediment contamination levels are all well below the ER-M levels for all contaminants, with only low molecular weight polycyclic aromatic hydrocarbons (LMWPAH) reaching to more than half the threshold value.

2008 contaminant levels were within or below the baseline (pre-discharge) range, and also within or below the post-discharge range, except for total DDT (see note below).

	contaminant	baseline range	warning level threshold	2008 value
<u>PAHs (ng/g dry weight)</u>				
	acenaphthene	23-41.3	500	27.3
	acenaphthylene	38.3-58.4	640	35.6
	anthracene	114.1-171	1100	127.9
	benz(a)anthracene	221.4-302	1600	236.7
	benzo(a)pyrene	223.6-287	1600	272.0
	chrysene	217.3-288	2800	212.2
	dibenzo(a,h)anthracene	30.5-42	260	35.8
	fluoranthene	465-592	5100	470.
	fluorene	37.9-60.9	540	40.3
	naphthalene	53.5-83.2	2100	56.8
	phenanthrene	296.4-405	1500	287.8
	pyrene	440.3-540	2600	380.3
	sum HMWPAH	2986.4-3754	9600	3712.7
	sum LMWPAH	1420.1-2004	3160	1579.5
	total PAH	4482.5-5726	44792	5292.1
<u>Other organic contam. (ng/g)</u>				
	p,p'-DDE	0.28-1.25	27	0.39*
	total DDT	2.59-5.27	46.1	5.59*
	total PCB	10.4-28.6	180	7.5
<u>Metals (ug/g dry weight)</u>				
	cadmium	0.09-0.23	9.6	0.13
	chromium	61.9-86.8	370	71.9
	copper	19.2-27.6	270	14.7
	lead	42.9-47.2	218	40.2
	mercury	0.2-0.29	0.71	0.13
	nickel	15.5-18.5	51.6	14.9
	silver	0.47-0.71	3.7	0.32
	zinc	56.6-69.7	410	57.8

\*The originally-reported 2008 concentration of one constituent of total DDT, from one sample, was anomalously high. The sample was reanalyzed and the results were inconsistent with the original high value. All DDT congener results from that sample have been replaced by the the results from the reanalysis. This results in a revision downward of the 2008 total DDT value; the new p,p'-DDE value did not vary from that originally reported. Both DDT threshold values were, and remain, well below the thresholds.