NPDES compliance summary report, fiscal year 2004

Massachusetts Water Resources Authority

Environmental Quality Department
Report ENQUAD 2005-07

NPDES COMPLIANCE SUMMARY REPORT
Fiscal Year 2004

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Executive Summary

Overview

This report presents and summarizes monitoring and compliance data collected and analyzed by the Massachusetts Water Resources Authority's (MWRA) Environmental Quality Department (ENQUAD) from July 1, 2003 to June 30, 2004. This report, while not a regulatory requirement, provides a useful documentation of influent and effluent quality trends over the course of a fiscal year for the MWRA's Deer Island Treatment Plant (DITP) and Combined Sewer Overflow (CSO) facilities.

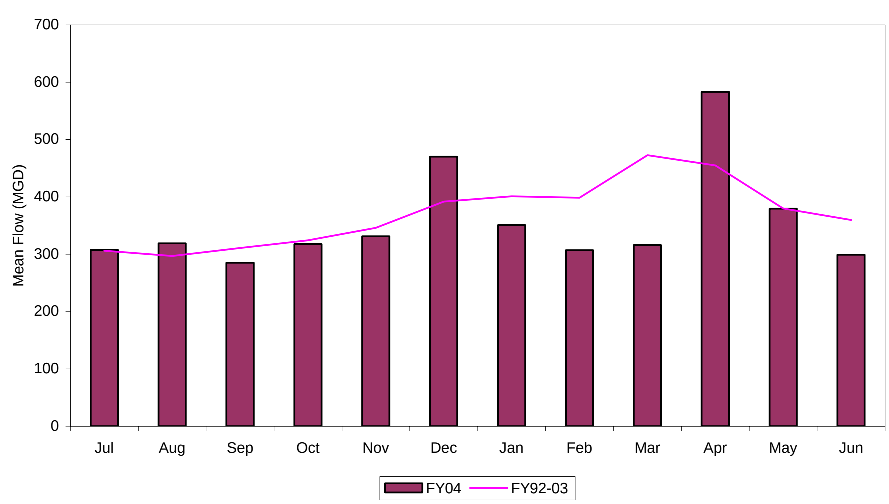
Deer Island Treatment Plant

The MWRA's NPDES permit requires the Authority to monitor its wastewater treatment plant at Deer Island for specific parameters. The MWRA currently operates under a permit issued in July 10, 2000 and effective August 9, 2000. The permit calls for secondary treatment of wastewater and monitoring of the effects of the new outfall in the Massachusetts Bay. Secondary treatment began at DITP in August 1997 with the start-up of the first battery of secondary treatment (Battery A). In March 1998, Battery B was brought on-line. The final battery, Battery C, became operational in March 2001.

In addition to the completion of secondary treatment facilities, the MWRA opened on September 6, 2000 a new 9.5-mile outfall tunnel that carries treated wastewater from DITP to Massachusetts Bay. The permit requires extensive monitoring of Massachusetts Bay to determine the effects of the outfall, if any exist.

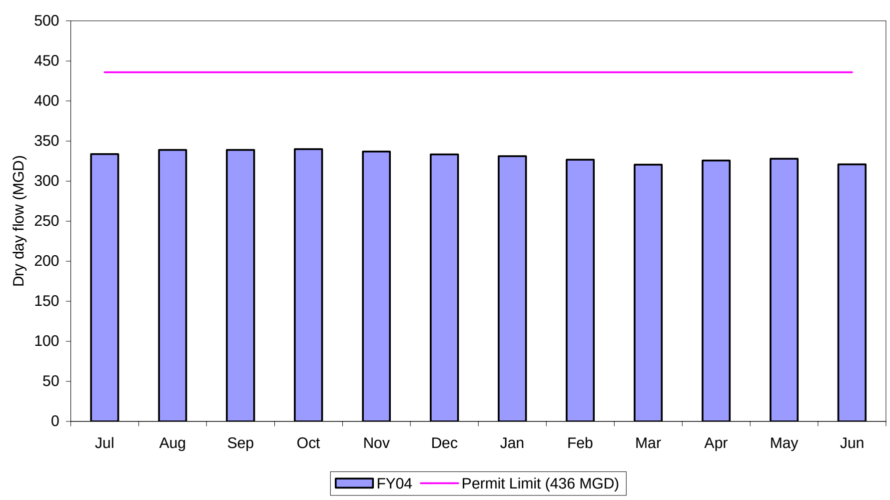
Figure 1 shows the Deer Island flow during each month of FY04, comparing the flow with the monthly averages of the previous twelve years – FY92 to FY03. From FY99 to FY02 all flows were treated at Deer Island, while from FY92 to FY98 flows were treated at DITP and the former Nut Island Treatment Plant, now the headworks for South System influent to DITP.

Figure 1. MWRA Flows, FY92-04



Restrictions on dry day flow are also part of the permit. These restrictions act to control new connections, ensuring that the collection system and the new treatment plant retain adequate capacity. Monthly dry day flows are calculated by averaging the flows on dry days over the previous year. A dry day is defined as a day with 0.09 inches of precipitation or less and no snow melt with the following restrictions: the precipitation on the previous day is less than 0.3 inches, the precipitation two days prior is less than 1.0 inch, and the precipitation three days prior is less than 2.0 inches. A day with snowmelt is defined as a day when there is snow on the ground and the air temperature is above 32°F. Figure 2 shows the dry day flow for Deer Island during each month of FY04. The solid line represents the dry day flow limit of 436 mgd for the permit. In FY04, no violations of the dry day flow limit occurred.

Figure 2. DITP Dry Day Flows, FY04



Since the new primary treatment plant came on-line on January 21, 1995, appreciable improvements have been seen in effluent quality. The removal rates for both TSS and BOD or cBOD (cBOD has replaced BOD in the current permit as the measure of oxygen demand) have improved significantly (see Figures 3 and 4, respectively on the following page). In FY96 and FY97, removal efficiencies compared favorably to theoretical removal efficiencies for primary treatment. In FY98, efficiencies continued to improve, especially for BOD, with a removal rate well above the theoretical range.[1] This coincided with the start-up of Batteries A and B of secondary treatment. Since FY00, removal rates for both TSS and cBOD have leveled off as DITP has reached its optimal efficiency level.

[1] Metcalf & Eddy, Inc. 1972. *Wastewater Engineering: Collection, Treatment, Disposal*. New York: McGraw-Hill Book Company. p. 446.

Figure 3. DITP Effluent TSS Removal Rate

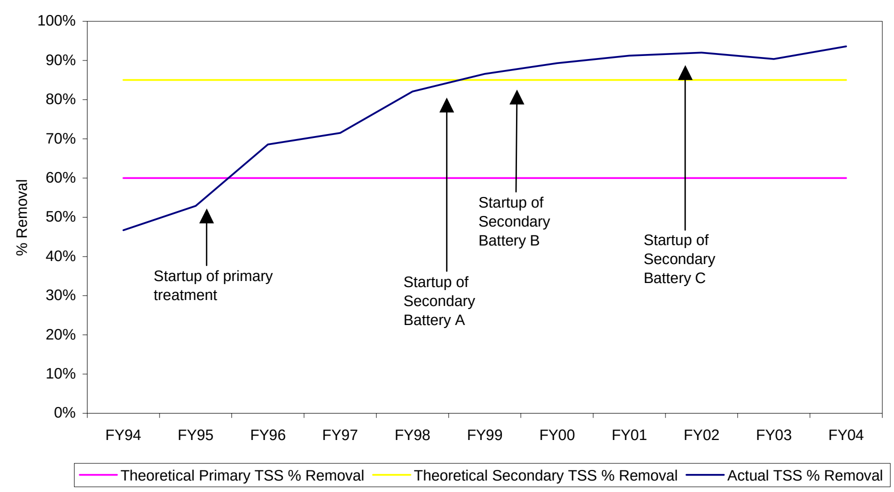
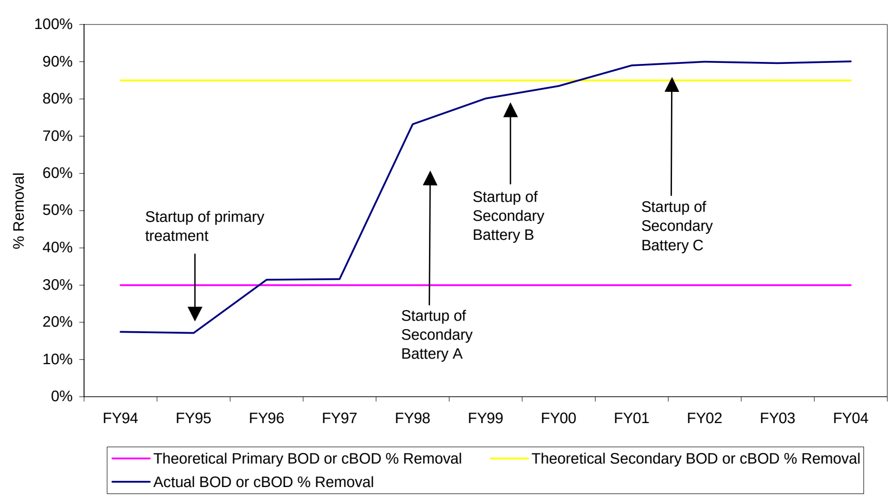
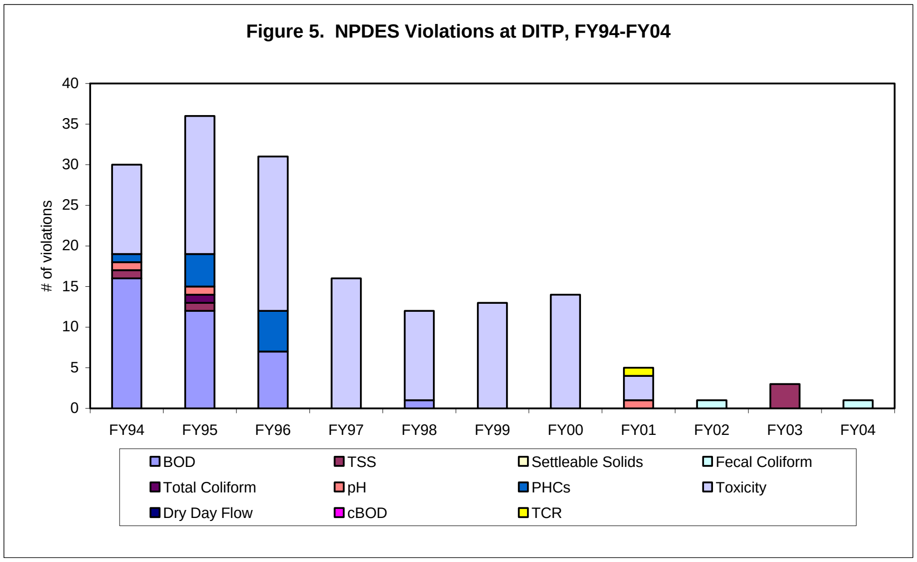


Figure 4. DITP Effluent BOD or cBOD Removal Rate



Annual numbers of NPDES violations have decreased dramatically due to improved treatment at DITP. Figure 5 (next page) compares the number of NPDES permit violations at Deer Island in FY04 to previous years. No non-toxicity NPDES violations occurred in FY00, FY99, or FY97. One non-toxicity violation occurred in FY02 and FY98, three in FY03, and four in FY01, compared to 12 in FY96 and 19 in both FY95 and FY94. In FY04, one violation of the fecal coliform limit occurred at DITP. Details of that violation can be found in Chapter 2, Section II.B.

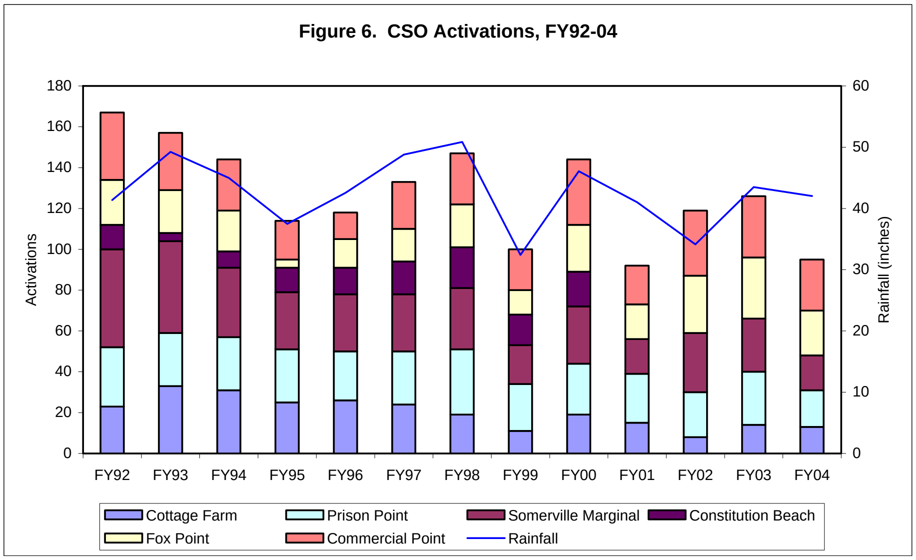


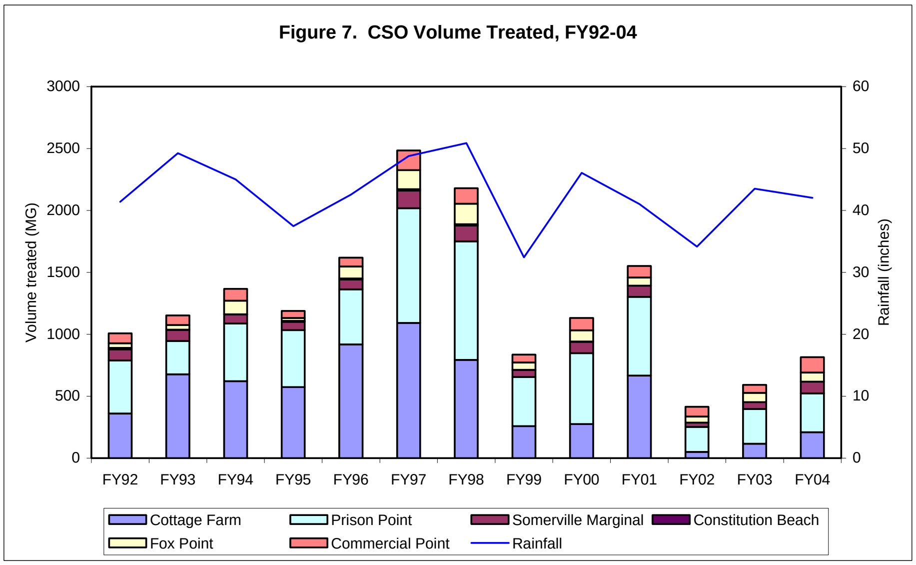
Since the opening of the new plant, Deer Island has seen significant reductions in loadings of metals and organic compounds in the effluent – see Chapter 2 for more details. These improvements are probably due to two factors: first, corrosion control activities and source reduction programs have helped to lower these pollutants in the incoming influent. Second, the new plant is able to better capture both metals and organics in the treatment process.

Combined Sewer Overflow Facilities

MWRA monitors five CSO facilities – Cottage Farm, Prison Point, Somerville Marginal, Fox Point, and Commercial Point – under the permit. The Constitution Beach facility is also included under the permit. However, MWRA decommissioned the Constitution Beach facility in September 2000 following the completion of a sewer separation project in East Boston.

Figures 6 and 7 on the next page show the number of activations and the total volume treated, respectively, at the six CSO facilities since FY92. The correlation between rainfall and CSO activation can be seen in both figures. Note that although total rainfall is correlated to CSO activations, the intensity of the rainfall and frequency of storms will have an important effect. These characteristics influence the degree of ground saturation, affecting the volume treated at the CSO facilities during a storm.



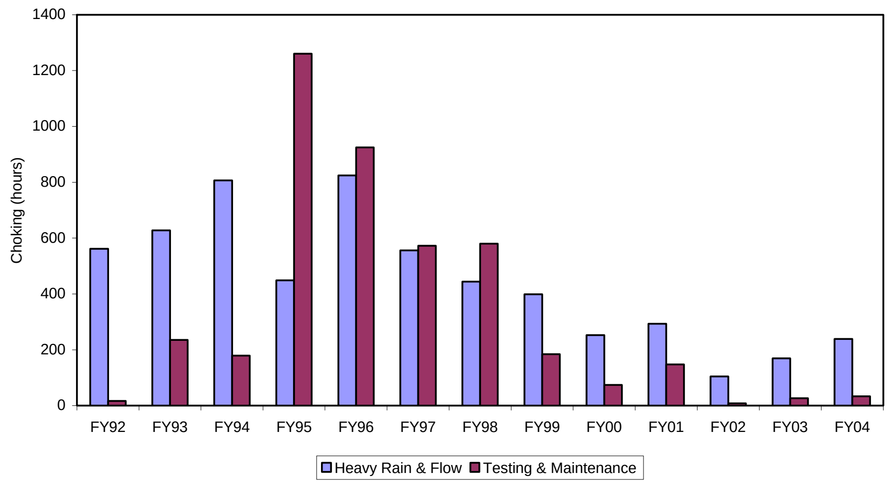


Collection and Transport System

The MWRA monitors the capacity of the wastewater collection and transport system. One of the system capacity parameters in the North System is choking, which occurs at the remote headworks. Choking is a reduction or stopping of flow to Deer Island at the remote headworks, either when heavy flow exceeds the capacity of the treatment plant or when maintenance or construction is performed at the plant.

As Figure 8 on the following page shows, the number of hours of choking has fallen to very low levels since FY01, mainly due to the completion of the Deer Island plant. To minimize choking related to testing and maintenance, MWRA performs maintenance and testing at off-peak times so not to cause any backups in the system upstream of the headworks.

Figure 8. Headworks Choking, FY92-04



The MWRA also monitors the occurrence of Sanitary Sewer Overflows, or SSOs, associated with MWRA-owned sewer lines. These overflows occur in areas where the collection system becomes overloaded by heavy flows. In FY95, the MWRA's Transport Department started to locate and visually monitor these SSOs in the North and South Systems. Table 1 lists the SSOs observed by MWRA personnel in FY04.

Table 1. Sanitary Sewer Overflows, FY04

Location	Number of Overflows
North System	
Section B Cambridge (near MBTA garage)	1
Cottage Farm CSO	1
Section 95A-40 Malden	1
Section C Medford (Auburn St./Rt. 16)	1
Section 91B Medford (headhouse)	1
Section 91B Medford (manhole)	1
Section 107 Medford (Rt. 16)	1
Section 51 Melrose (Brunswick Park)	1
Section 113 Winchester (Ginn Field)	1
South System	
Section 570 Boston (Archdale St.)	1
Section 626 Braintree/Weymouth (Smelt Brook)	8

Future Outlook

The startup of the new primary treatment plant at Deer Island in FY95 was just the first of several changes and improvements in the MWRA's facilities, including full secondary treatment, the Inter-Island Tunnel linking the South System to DITP, and the new outfall tunnel to Massachusetts Bay. The MWRA no longer discharges effluent into Boston Harbor and the Authority is currently monitoring the effects of these changes on water quality in the Harbor and Massachusetts Bay, as required by the NPDES permit issued in July 2000. In addition, a contingency plan ensures that the discharge does not adversely impact Massachusetts Bay.

Major upgrades are finished at the five CSO facilities, although construction of a sixth facility, Union Park, will be completed in early 2006. Several upgrades were also finished at the Quincy and Squantum pump stations in 2002 and 2003, respectively. Finally, the Braintree-Weymouth Intermediate Pump Station was brought on-line in 2004, increasing pumping capacity to DITP. This increased capacity should reduce sanitary sewer overflows to Smelt Brook. Taken as a whole, these upgrades have modernized MWRA facilities and reduced pollutants discharged to receiving waters.

I: Introduction

Overview

This report presents and summarizes the NPDES monitoring and compliance data compiled and analyzed by the MWRA Environmental Quality Department during the period of July 2003 to June 2004. MWRA's DITP and CSO facilities serve large communities' needs for sewer systems while maintaining healthy water environments for recreation and wildlife.

Chapter II presents and discusses the monitoring results for DITP, along with Contingency Plan and Ambient Monitoring Plan requirements. Chapter III describes the results for the five CSO facilities. Chapter IV discusses sludge processing operations at DITP and the MWRA's Fore River pelletizing facility. Chapter V discusses transport and sewer system capacity issues. Finally, Chapter VI covers an array of miscellaneous topics introduced by the new permit. Appendices A-F provide detailed monthly data for the Deer Island plants and for the five CSO facilities. Appendix G provides background information about MWRA's regulatory requirements, and Appendix H describes the MWRA sewer system and facilities. Appendix I defines the types of detection limits encountered in chemical analyses. Appendix J lists pollutants of concern. Finally, Appendix K is a glossary of the terms and phrases used throughout this report.

II: Deer Island Treatment Plant

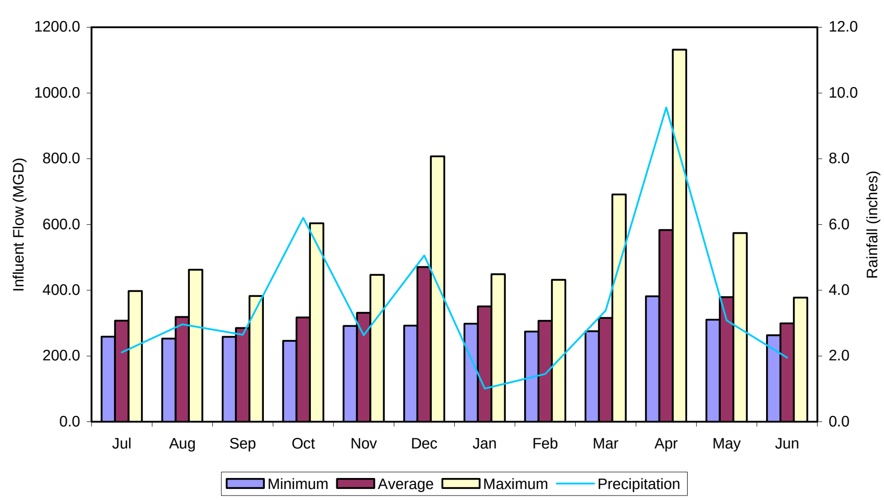
Overview

This chapter presents and discusses monitoring information for DITP. The characteristics examined include flow, conventional parameters, nutrients, priority pollutants (metals, cyanide, pesticides/PCBs, and organic compounds), fecal coliform bacteria, and whole effluent toxicity. Since a number of limits in the Contingency Plan set forth by the new NPDES permit deal with effluent quality, this section finishes up with a description of the Contingency Plan and the closely related Ambient Monitoring Plan.

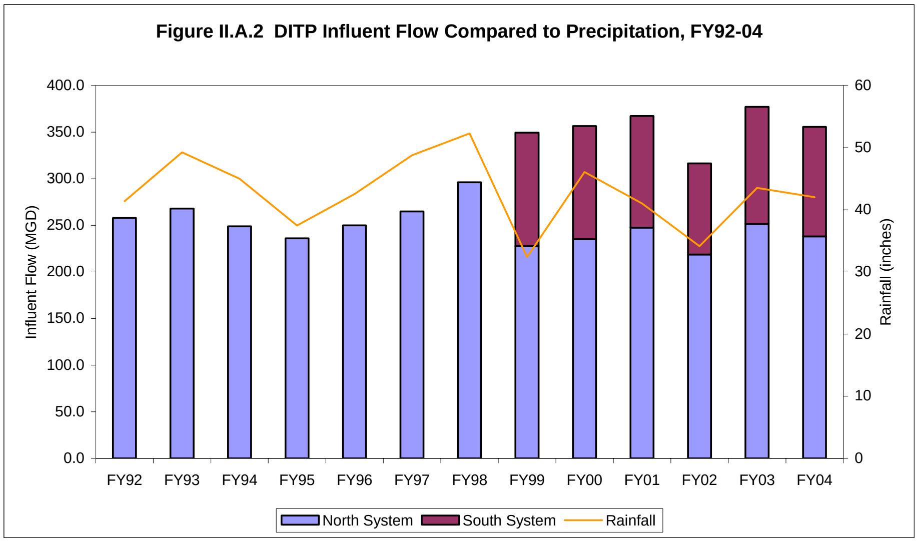
II.A.1 Influent Flow

The average flow to DITP in FY04 was 355.6 million gallons per day (mgd). Figure II.A.1 shows that flow generally rises and falls with the amount of precipitation. This occurs because several of the larger communities in the North System (Boston, Cambridge, Somerville, and Chelsea) have combined sewers.

Figure II.A.1. DITP Influent Flow Compared to Precipitation, FY04



The impact of rainfall on flows can also be seen in Figure II.A.2 on the following page, which tracks average flow and precipitation over the past twelve fiscal years. The completion of the Inter-Island Tunnel from Nut Island to Deer Island in early FY99 resulted in increased flow to DITP, as DITP treated South System sewage previously treated at the Nut Island Treatment Plant. A slight drop in rain in FY04 (42.04 inches versus 43.51 inches in FY03) may have lead to the slightly lower average flows to DITP in the past fiscal year.



II.A.2 Influent Conventional Parameters and Nutrients

As Table II.A.1 indicates, Deer Island influent in FY04 can be classified as weak/medium.[1]

Table II.A.1. Classification of DITP Influent, FY04

Parameter	Value	Weak	Medium	Strong
TSS (mg/L)	234	100	200	350
TKN (mg/L)	31.0	20	40	85
Ammonia (mg/L)	19.0	12	25	50

A summary of Deer Island influent characteristics from FY94-FY03 is provided in Table II.A.2 on page 11. Note that cBOD only became a measured parameter with the debut of the new NPDES permit in August 2000, so no historical data is available.

[1]Metcalf & Eddy, Inc. 1972. *Wastewater Engineering: Collection, Treatment, Disposal*. New York: McGraw-Hill Book Company, p. 231.

Table II.A.2. Deer Island Influent Characterization, FY94-FY04											
Parameter	FY94*	FY95*	FY96*	FY97*	FY98*	FY99	FY00	FY01	FY02	FY03	**FY04**
Flow (mgd)											
Minimum	171	167	147	167	159	233	219	260	222.7	237.6	247
Average	249	236	250	265	296	350	356	367	316.6	378	356
Maximum	528	565	526	649	917	824	901	1136	773	897.4	1132
Total Suspended Solids (TSS)											
Min Conc (mg/L)	93	102	56	50	32	43	86	63	157	140	129
Avg Conc (mg/L)	137	138	140	144	141	160	167	176	200	188	234
Max Conc (mg/L)	175	160	432	284	382	564	379	336	255	230	281
Average Loading (tons/d)	98	96	86	100	94	234	248	269	264	296	347
Carbonaceous Biochemical Oxygen Demand (cBOD)											
Min Conc (mg/L)	**	**	**	**	**	**	**	29	93	80	75
Avg Conc (mg/L)	**	**	**	**	**	**	**	111	124	106	126
Max Conc (mg/L)	**	**	**	**	**	**	**	242	162	131	146
Average Loading (tons/d)	**	**	**	**	**	**	**	170	164	167	187
Settleable Solids											
Min Conc (mL/L)	1.9	3.5	0.1	1.5	0.1	0.1	0.7	0.3	4.5	4.7	3.6
Avg Conc (mL/L)	3.9	5.6	7.0	6.9	6.3	5.9	5.3	5.8	6.5	7.4	9.2
Max Conc (mL/L)	5.6	7.3	18.0	17.0	20.0	34.2	24.6	15.5	9.5	11.1	14.0
Average Loading (tons/d)	2.8	3.9	4.3	4.8	4.2	8.6	7.9	8.9	8.6	11.7	13.7
Total Kjeldahl Nitrogen											
Min Conc (mg/L)	11.2	14.0	11.6	8.7	13.6	14.6	13.2	16.3	26.0	23.3	18.7
Avg Conc (mg/L)	21.9	21.9	26.3	24.2	26.4	29.2	27.7	30.1	35.2	29.3	31.0
Max Conc (mg/L)	29.3	29.1	56.3	48.1	37.7	45.6	46.5	46.5	44.5	38.1	37.0
Average Loading (tons/d)	15.6	15.2	16.1	16.9	17.4	42.7	41.1	46.1	46.5	46.2	46.0
Ammonia-Nitrogen											
Min Conc (mg/L)	5.6	7.3	6.8	2.5	4.8	6.0	6.1	6.8	14.2	12.4	10.8
Avg Conc (mg/L)	12.3	13.7	15.0	13.3	14.5	16.6	16.3	17.8	20.5	17.0	19.0
Max Conc (mg/L)	17.9	18.0	24.0	18.6	23.1	30.8	25.0	24.2	28.6	23.7	22.7
Average Loading (tons/d)	8.8	9.6	9.2	9.2	9.6	24.2	24.2	27.2	27.1	26.8	28.2
Nitrates											
Min Conc (mg/L)	0.10	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01
Avg Conc (mg/L)	0.80	0.15	0.14	0.22	0.36	0.06	0.13	0.17	0.05	0.10	0.13
Max Conc (mg/L)	2.70	0.59	1.42	2.31	1.95	1.21	1.56	1.53	0.26	0.37	0.81
Average Loading (tons/d)	0.57	0.10	0.09	0.15	0.24	0.09	0.19	0.26	0.07	0.16	0.19
Nitrites											
Min Conc (mg/L)	0.00	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.07	0.01
Avg Conc (mg/L)	0.10	0.06	0.07	0.09	0.08	0.05	0.14	0.15	0.11	0.22	0.13
Max Conc (mg/L)	0.20	0.19	1.66	0.35	0.46	0.45	0.72	0.47	0.35	0.55	0.41
Average Loading (tons/d)	0.07	0.04	0.04	0.07	0.05	0.07	0.21	0.23	0.15	0.35	0.19

* North System only. FY99 and later include South System data. ** Samples not collected.

II.A.3 Influent Priority Pollutants

The results of a complete priority pollutant scan of Deer Island influent can be found in Tables A-2 and A-3 of Appendix A. For levels below detection limits, one half of the method detection limit for inorganic compounds or one tenth of the quantitation limit for organic compounds was substituted to calculate concentrations and loadings. Appendix I provides a detailed discussion of detection and quantitation limits.

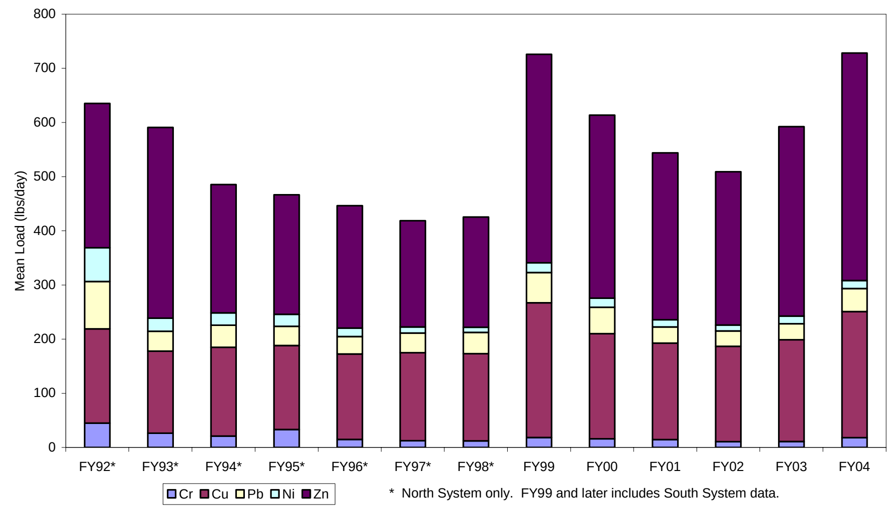
A pollutant is included whether it was detected just once or 37 times over the course of a year. Figures II.A.3 and II.A.4 below show annual averages of the daily loads; however, they do not truly reflect how often the pollutant was detected during the year. Therefore, if a below detection limit concentration is converted to a loading, it is recorded as a non-zero value, even though the constituent may not have been present in the sample. Note that these caveats apply to both metals and organics loadings. However, since metals are commonly detected in almost every sample, the notes raised above are less of an issue.

Figure II.A.3 compares FY04 average influent loadings for several key metals to historical values. The MWRA samples for these pollutants a few times a month. Using the measured concentration and the flow on the day on which the sample was taken, daily loads can be calculated. Data from FY98 and earlier is from the North System only.

Before 1999, metals loadings in the North System decreased steadily, as MWRA made strides in toxic and corrosion control efforts involving both water supply and wastewater transport.

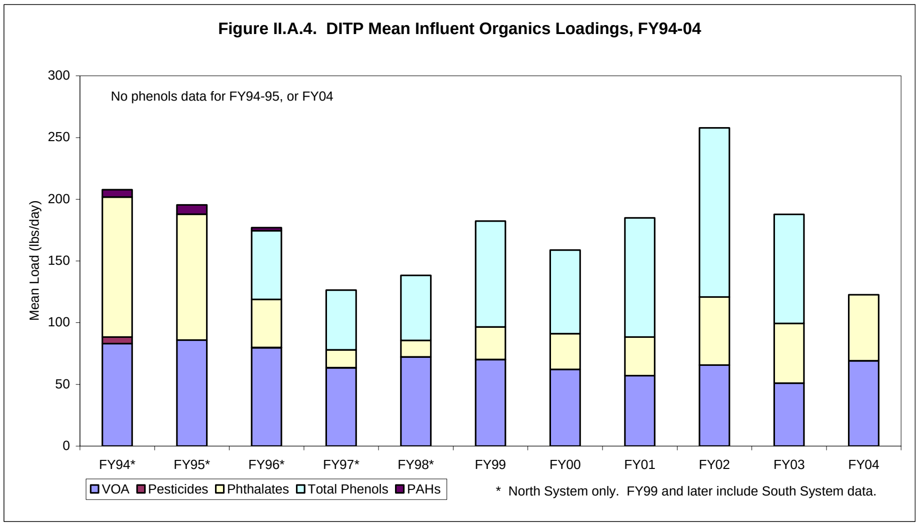
Since the South System flow was transferred from Nut Island to Deer Island at the start of FY99, the data after FY99 includes the South System flow. This larger, combined flow explains the increase in metals loadings from FY92-98 to FY99-04. Since loadings are calculated using flow, which in turn is affected by rainfall, loadings can rise and fall with rainfall amounts.

Figure II.A.3. DITP Mean Influent Metals Loadings, FY92-04



* North System only. FY99 and later includes South System data.

Figure II.A.4 on the following page compares influent loadings of certain representative organic priority pollutants to the loadings in previous years (see Appendix A, Table A-3). The opening of the Inter-Island Tunnel in FY99 had an identical effect on organics loadings at Deer Island as it did on metals loadings; they increased due to the added flow from the South System.



II.A.4 Effluent Conventional Parameters and Nutrients

Table II.A.3 compares DITP's removal efficiencies for TSS and cBOD with theoretical removal efficiencies.[2] The removal efficiencies are determined from the average effluent and influent concentrations for TSS and cBOD as reported in Table A-1 of Appendix A.

Table II.A.3. Deer Island Removal Efficiency, FY04

Parameter	DITP % Removal*	Theoretical % Removal for Secondary Treatment
TSS	93%	85%
cBOD	90%	85%

* Removal efficiencies were determined using the average influent and effluent concentration values as reported in Table A-1, Appendix A. Note that only a portion of the total flow each month went through secondary treatment. See Table II.A.4 for more information.

Table II.A.4, on the next page, shows how degree of secondary treatment can affect TSS and cBOD removal efficiencies. The table lists TSS and cBOD removal efficiencies and the percentage of flow that received secondary treatment on a monthly basis. The degree of secondary treatment is the average flow through secondary treatment (mgd) during the month divided by the average plant flow (mgd) for that month.

For the fiscal year, 92% of DITP flow went through secondary treatment and removal efficiency for TSS was 93%. For cBOD, the plant achieved 90% removal efficiency.

[2]Metcalf & Eddy, Inc. 1972. *Wastewater Engineering Collection, Treatment, Disposal*. New York. McGraw-Hill Book Company, p. 446.

Table II.A.4. Removal Efficiency vs. Degree of Secondary Treatment, FY04			
	TSS Removal Efficiency	cBOD Removal Efficiency	% of Flow Treated at Secondary Levels
July	95%	94%	96.4%
August	94%	94%	97.9%
September	94%	95%	95.7%
October	93%	92%	92.0%
November	95%	92%	98.5%
December	92%	84%	77.2%
January	93%	91%	96.3%
February	92%	89%	97.0%
March	92%	89%	96.1%
April	83%	79%	70.6%
May	92%	90%	93.2%
June	95%	92%	91.9%
Average	93%	90%	91.9%

Table II.A.5 (next page) summarizes the conventional parameters and nutrients in Deer Island effluent over the past nine years. The significant drop in several parameters that occurred between FY95 and FY96 is due to the improved removal efficiency of the primary treatment plant. The implementation of secondary treatment in FY98 can explain the drop in TSS and BOD concentrations since FY97. Secondary treatment is also responsible for the increase in ammonia concentrations over the same period.

Table II.A.5. Deer Island Effluent Characterization, FY94-FY04

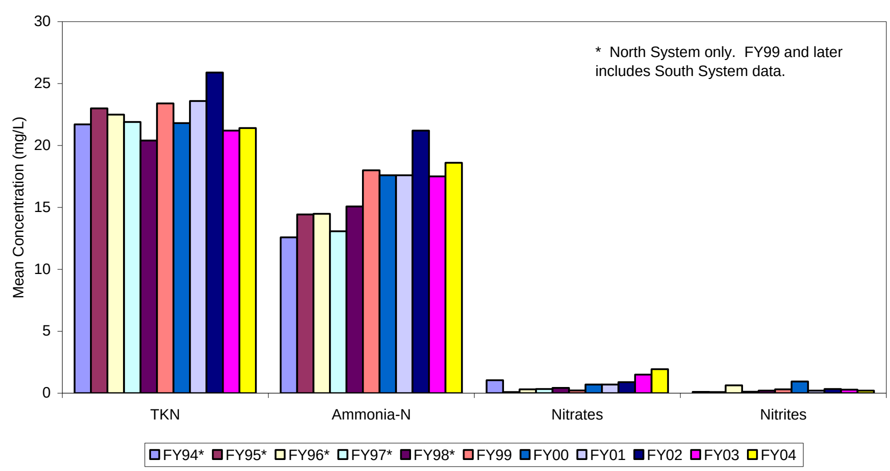
Parameter	FY94*	FY95*	FY96*	FY97*	FY98*	FY99	FY00	FY01	FY02	FY03	**FY04**
Flow (mgd)											
Minimum	171	167	147	167	159	237	219	260	222.4	237.8	246
Average	249	236	250	265	296	350	356	367	316.6	377.2	356
Maximum	528	565	526	649	917	757	900	1136	772.9	897.7	1132
Total Suspended Solids (TSS)											
Min Conc (mg/L)	65	52	17	16	4	3	5	4	3	5	5
Avg Conc (mg/L)	73	65	44	41	25	22	18	15	16	18	17
Max Conc (mg/L)	86	90	136	100	140	69	62	47	43	132	78
Average Loading (tons/d)	52	45	27	29	17	14	26	24	21	28	25
Carbonaceous Biochemical Oxygen Demand (cBOD)											
Min Conc (mg/L)	**	**	**	**	**	**	**	4	3	3	3
Avg Conc (mg/L)	**	**	**	**	**	**	**	12	13	11	12
Max Conc (mg/L)	**	**	**	**	**	**	**	36	40	40	50
Average Loading (tons/d)	**	**	**	**	**	**	**	19	17	17	18
Settleable Solids											
Min Conc (mL/L)	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
Avg Conc (mL/L)	0.5	0.4	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Max Conc (mL/L)	0.9	0.7	2.0	1.6	7.0	3.0	3.1	1.9	3.0	3.0	6.0
Average Loading (tons/d)	0.4	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1
Total Kjeldahl Nitrogen											
Min Conc (mg/L)	12.8	13.7	10.6	10.9	9.1	11.2	8.2	12.2	15.1	9.7	11.0
Avg Conc (mg/L)	21.7	23.0	22.5	21.9	20.4	23.4	21.8	23.6	25.9	21.2	21.4
Max Conc (mg/L)	32.8	28.6	32.5	27.6	32.4	34.3	32.4	33.3	35.0	32.3	33.3
Average Loading (tons/d)	22.5	22.6	23.4	24.3	25.2	34.2	32.4	36.1	34.2	33.3	31.8
Ammonia-Nitrogen											
Min Conc (mg/L)	6.08	7.28	5.55	4.43	3.48	5.42	5.00	5.1	9.4	7.0	7.5
Avg Conc (mg/L)	12.58	14.43	14.48	13.07	15.08	17.99	17.60	17.6	21.2	17.5	18.6
Max Conc (mg/L)	18.51	19.60	21.90	18.00	22.70	26.40	25.20	24.9	32.0	28.0	28.0
Average Loading (tons/d)	8.97	10.05	8.88	9.12	9.97	11.90	26.16	27.0	28.0	27.5	27.6
Nitrates											
Min Conc (mg/L)	0.13	0.03	0.01	0.01	0.01	0.01	0.00	0.0	0.01	0.01	0.01
Avg Conc (mg/L)	1.04	0.08	0.30	0.34	0.42	0.22	0.69	0.7	0.89	1.50	1.93
Max Conc (mg/L)	5.98	0.28	1.95	2.58	1.49	1.93	2.96	4.2	2.86	5.07	3.88
Average Loading (tons/d)	0.74	0.06	0.18	0.23	0.28	0.15	1.03	1.1	1.2	2.4	2.9
Nitrites											
Min Conc (mg/L)	0.01	0.02	0.01	0.01	0.01	0.01	0.04	0.0	0.01	0.01	0.01
Avg Conc (mg/L)	0.10	0.08	0.63	0.11	0.20	0.30	0.95	0.2	0.34	0.28	0.21
Max Conc (mg/L)	0.26	0.22	1.90	0.62	1.15	1.99	3.06	1.1	1.26	0.91	0.69
Average Loading (tons/d)	0.07	0.06	0.39	0.08	0.13	0.20	1.41	0.3	0.4	0.4	0.3

* North System only. FY99 and later include South System data. ** Samples not collected.

A summary of nutrient concentrations in Deer Island effluent from FY94-FY04 is provided in Figure II.A.5 on the following page. The introduction of the new primary treatment plant in FY95 did not affect nutrient concentrations, as primary treatment has no effect on nutrients.

However, the activated sludge process used in DITP's secondary treatment does change nutrient concentrations. The activated sludge process uses bacteria to promote efficient and rapid breakdown of wastes. This bacterial breakdown results in changes in the proportions of nitrogen species. For example, total Kjeldahl nitrogen (TKN) consists of NH_3-N plus organic nitrogen. Effluent NH_3-N concentrations have risen while total Kjeldahl nitrogen (TKN) concentrations have remained relatively stable. Therefore, the proportion of NH_3-N as a TKN component has increased. Elevated levels of NH_3-N are characteristic of the activated sludge process.

Figure II.A.5. DITP Mean Effluent Nutrients Concentrations, FY94-04



II.A.5 Effluent Priority Pollutants

Appendix A, Tables A-8 and A-9 provide a summary of priority pollutant concentrations and loadings in DITP effluent for FY04. For a discussion of the importance of detection limits in loading calculations, see Section II.A.3 and Appendix I. Metals loadings over the past fifteen years are summarized in Figure II.A.6, while Figure II.A.7 on page 17 graphs organic pollutants from FY94-FY04. Two factors may explain the long-term decrease in loadings. First, the MWRA has instituted a more aggressive industrial pre-treatment program coupled with stricter enforcement of local limits. Second, the decrease may also be attributed to better capture of metals and organics at the plant.

Figure II.A.6. DITP Mean Effluent Metals Loadings, FY89-04

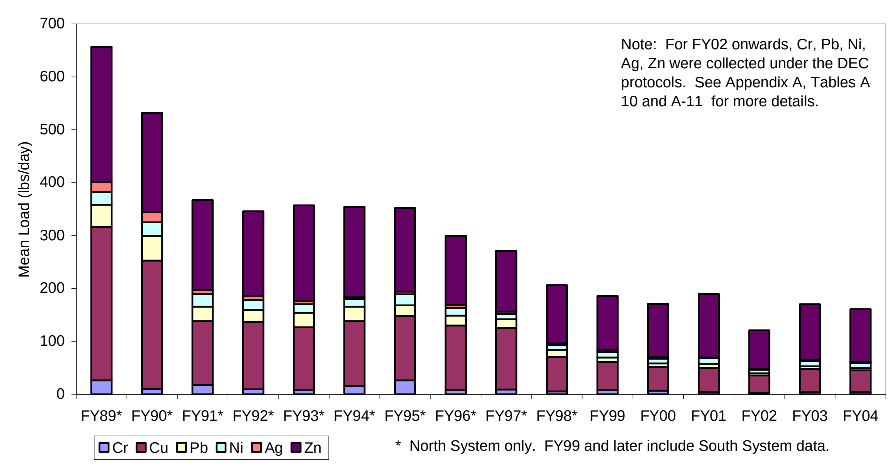
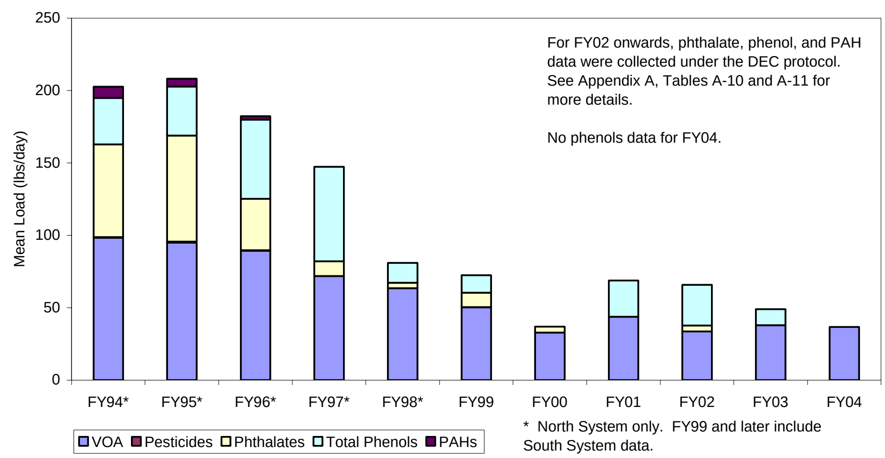


Figure II.A.7. DITP Mean Effluent Organics Loadings, FY94-04



II.A.6 Whole Effluent Toxicity

The MWRA tests effluent toxicity every month at DITP. Effluent toxicity provides an overall view of effluent quality, ensuring that the effluent does not adversely affect the environment. In 1989, the EPA found that surfactants were the probable cause of most acute toxicity in DITP's effluent. Surfactants are most commonly used in household detergents to improve cleansing power. No acute toxicity could be attributed to metals or pesticides.

The MWRA permit requires four tests for effluent toxicity testing. 48-hr acute static toxicity tests using the mysid shrimp *(Americamysis bahia)* and the silversides fish (*Menidia beryllina*) measure the short-term lethal effects caused by the effluent. A chronic survival and growth test using *Menidia* and a chronic fertilization test using the sea urchin (*Arbacia punctulata*) both measure subtle toxic impacts over a longer period of time. The results of these tests for FY03 can be found in Table II.A.6 on the following page.

The LC_{50} (Lethal Concentration 50%) is the concentration of effluent in a sample that causes mortality to 50% of the test population during the duration of the test. The two acute tests use LC_{50}.

The NOEC (No Observed Effect Concentration) used in the chronic tests is the concentration of effluent in a sample to which organisms are exposed in a life cycle or partial life cycle test that has no adverse effects. An NOEC limit of 1.5% means that 1.5% of the sample is effluent, and the remainder dilution water. Any acute LC_{50} below 50% or chronic NOEC below 1.5% would violate the NPDES limit.

Deer Island Effluent, Results of Toxicity Testing, FY04				
	Mysid acute LC50	*Menidia* acute LC50	*Arbacia* chronic NOEC	*Menidia* chronic NOEC
Limits (%)	50	50	1.5	1.5
July	> 100	> 100	100	50
August	> 100	71.8	100	25
September	78.8	66	100	25
October	92.8	65.7	50	25
November	92.7	70.7	100	50
December	> 100	> 100	100	50
January	> 100	> 100	100	50
February	> 100	66.4	100	50
March	> 100	70.4	50	50
April	> 100	> 100	25	12.5
May	> 100	> 100	50	100
June	> 100	> 100	50	50
# of Violations	0	0	0	0

Results in **bold** indicate a violation of the regulatory limits.

II.B.1 Compliance with Regulatory Limits

Plant performance at Deer Island is compared to permit limits in Table II.B.1 and Figures II.B.1 through II.B.9 on the following pages. The only violation of the regulatory limits in FY04 was for fecal coliform, which took place in April 2004.

On April 2, 2004, the geometric mean of the three samples collected that day was 15,223 colonies/100mL, exceeding the permit limit of 14,000 colonies/100mL. Operations staff theorized that chlorine dose was not high enough to meet the high chlorine demand from the high flows on April 1 and 2 (on April 2nd, the average flow was 1,137 mgd). With a lower than needed dose, the required levels of bacterial kill were not achieved, hence the fecal coliform exceedance.

Total chlorine residual levels on April 2 and the preceding and following days were essentially normal, and TSS levels were also unremarkable. Fecal coliform counts for April 1 and 3 were 2,525 and 153 colonies/100mL, respectively – both well below the permit limit.

Table II.B.1. Deer Island Effluent Quality Compared to Permit Limits, FY04				
Parameter		Permit Limits	Range of Values Exceeding Limits	Number of Violations
Carbonaceous Biochemical Oxygen Demand (mg/L)				
	Monthly Avg	25	n/a	0
	Weekly Avg	40	n/a	0
Total Suspended Solids (mg/L)				
	Monthly Avg	30	n/a	0
	Weekly Avg	45	n/a	0
Total Chlorine Residual (ug/L)				
	Monthly Avg	456	n/a	0
	Daily Maximum	631	n/a	0
Fecal Coliform				
	Daily Geometric Mean (col/100mL)	14,000	15,223	1
	% of Samples > 14000	10	n/a	0
	Consecutive Samples > 14000	3	n/a	0
pH (SU)		6.0-9.0	n/a	0
PCB, Aroclors (ug/L)		0.000045	n/a	0
Acute Toxicity				
	Mysid Shrimp (%)	>=50	n/a	0
	Inland Silverside (%)	>=50	n/a	0
Chronic Toxicity				
	Inland Silverside (%)	>=1.5	n/a	0
	Sea Urchin (%)	>=1.5	n/a	0
Dry Day Flow (MGD)		436	n/a	0
Total Number of Violations				**1**

Table II.B.2 compares the number of NPDES violations in FY04 to previous years.

Table II.B.2. NPDES Violations at Deer Island, FY94-FY04											
	FY94	**FY95**	**FY96**	**FY97**	**FY98**	**FY99**	**FY00**	**FY01**	**FY02**	**FY03**	**FY04**
Dry Day Flow	*	*	*	*	*	*	*	0	0	0	0
BOD	16	12	7	0	1	0	0	*	*	*	*
cBOD	*	*	*	*	*	*	*	0	0	0	0
TSS	1	1	0	0	0	0	0	0	0	3	0
TCR	*	*	*	*	*	*	*	1	0	0	0
Settleable Solids	0	0	0	0	0	0	0	*	*	*	*
Fecal Coliform	0	0	0	0	0	0	0	0	1	0	1
Total Coliform	0	1	0	0	0	0	0	*	*	*	*
pH	1	1	0	0	0	0	0	1	0	0	0
PHCs	1	4	5	0	0	0	0	*	*	*	*
Toxicity	11	17	19	16	11	13	14	3	0	0	0
Non-Toxicity Violations	19	19	12	0	1	0	0	2	1	3	1
Total Violations	30	36	31	16	12	13	14	5	1	3	1
* Not a permit limit at that particular time											

The following pages track trends in effluent over FY04. With the exception of the April fecal coliform violation, most of the effluent parameters were well under permit limits.

For carbonaceous biochemical oxygen demand (cBOD) and total suspended solids (TSS), the permit limits monthly and weekly average concentrations. Figures II.B.1 shows that the monthly averages for cBOD never exceeded the regulatory discharge limit of 25 mg/L, and are well below the 5-year historical average.

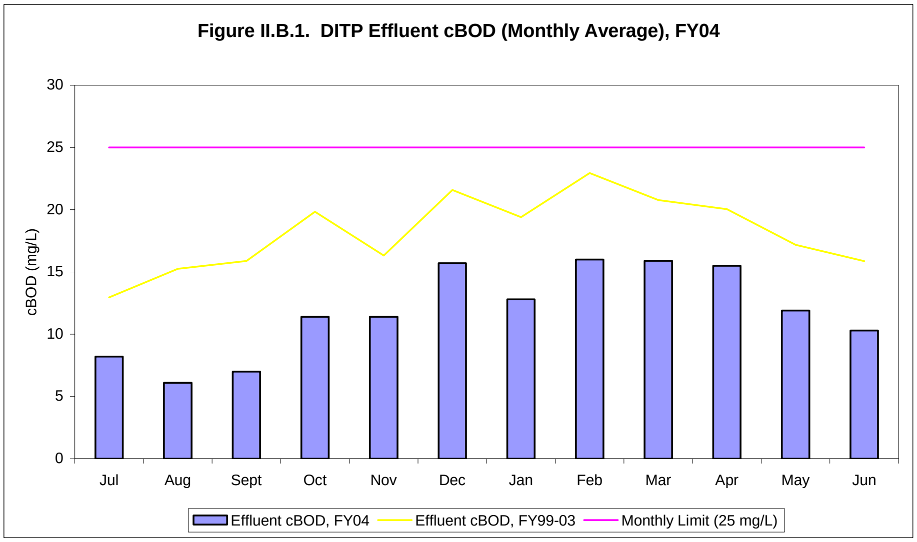
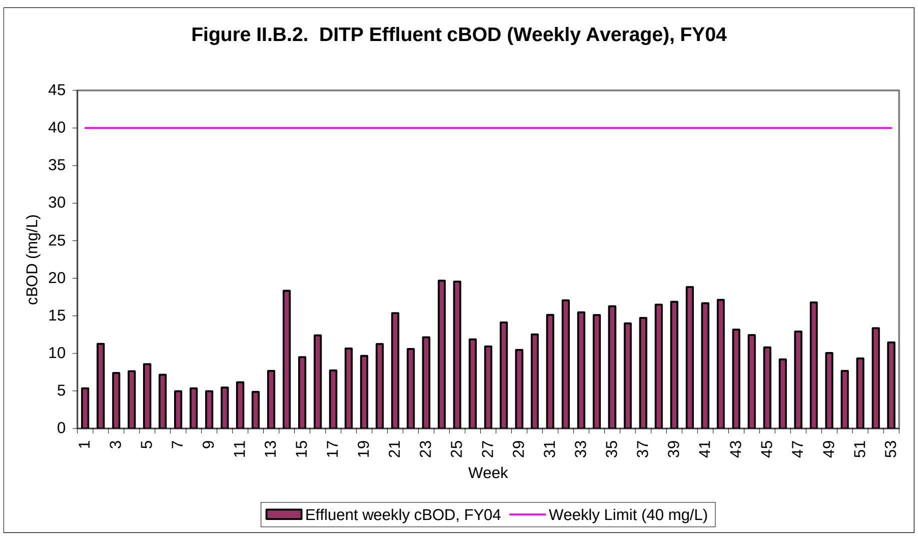


Figure II.B.2 shows there were no violations of the cBOD weekly limit (40 mg/L).



Figures II.B.3 shows FY04 monthly averages for TSS never exceeded the regulatory discharge limit of 30 mg/L. For the majority of the year, effluent TSS was also below the 5-year historical average.

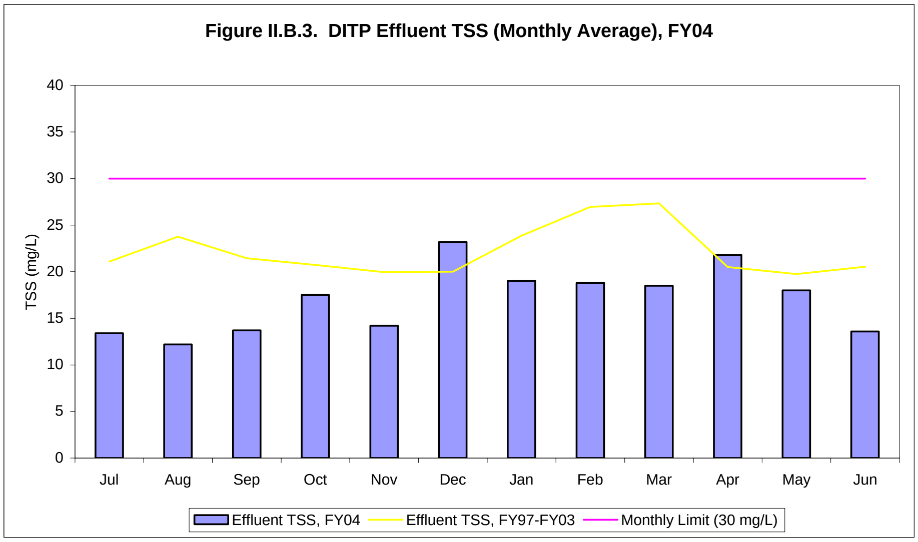
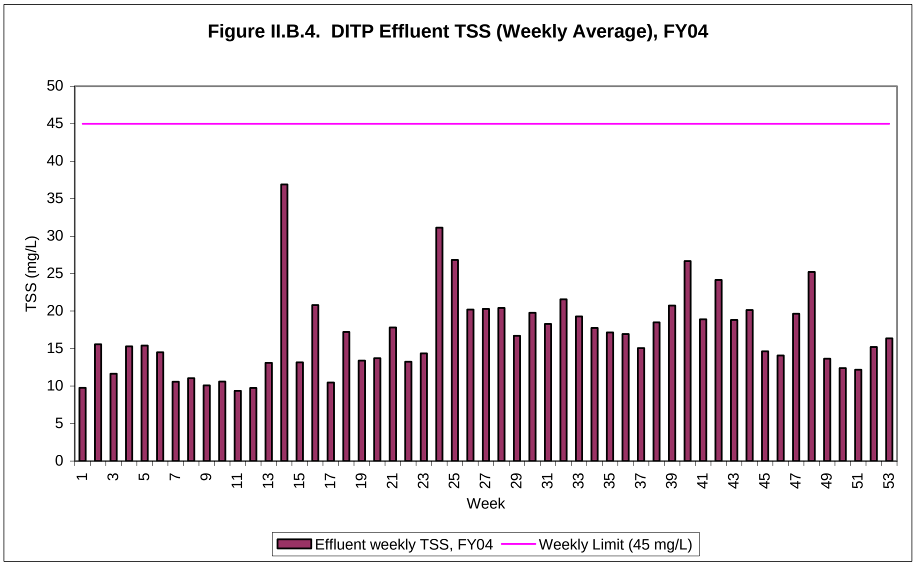
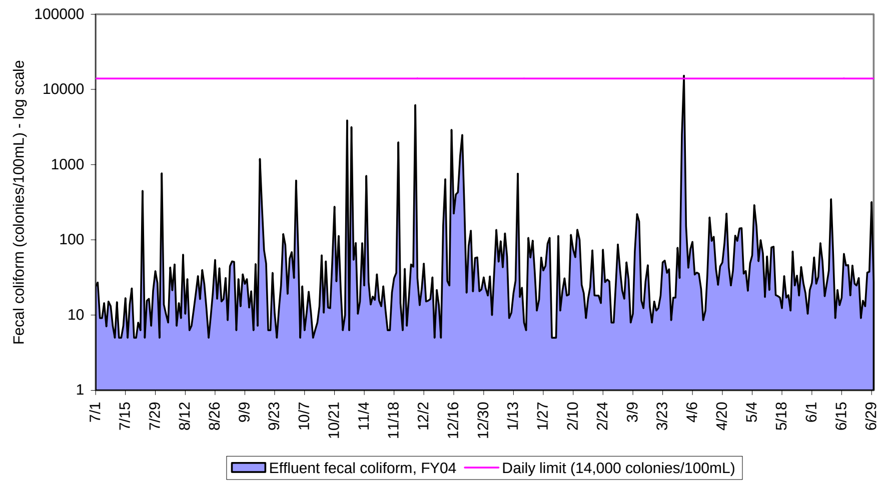


Figure II.B.4 graphs the weekly averages for effluent TSS in FY04. The regulatory limit for weekly TSS averages is 45 mg/L. In FY04 this limit was not approached.



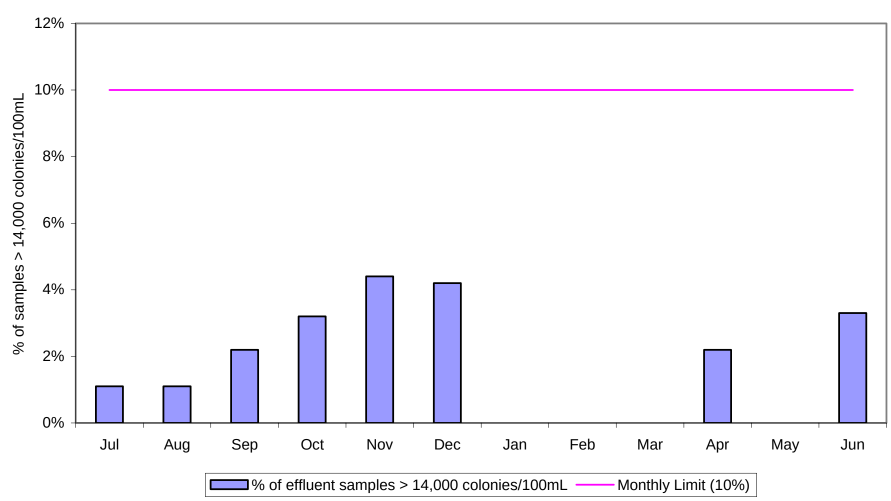
Fecal coliform has a daily discharge limit of 14,000 colonies/100mL, as calculated by the daily geometric mean of three samples per day. In FY04, there was one violation of the daily fecal coliform limit, as detailed above. Figure II.B.5 shows the daily effluent trends of fecal coliform in FY04. Note that 5 colonies/100mL is the detection limit for the fecal coliform test so there will not be results below that number.

Figure II.B.5. DITP Effluent Fecal Coliform (Daily Geometric Mean), FY04



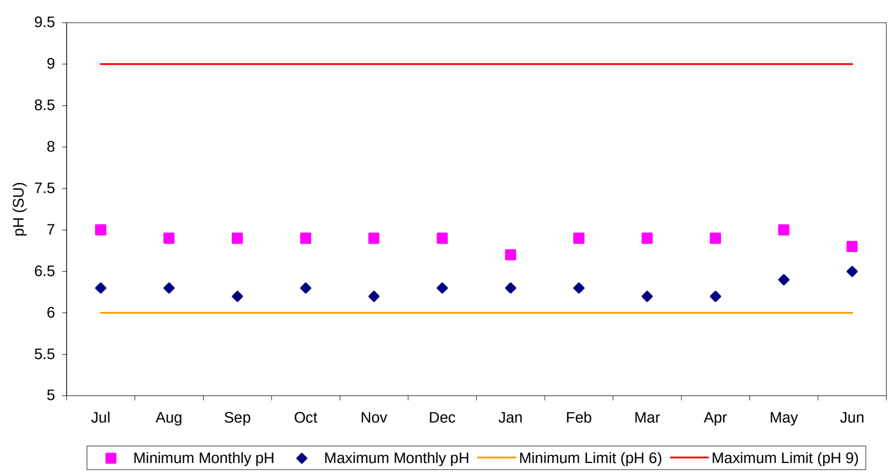
Additional limits for fecal coliform include: not more than three consecutive samples measuring over 14,000 colonies/100mL, and no more than 10% of the samples in a month measuring over 14,000 colonies/100 mL. These latter two limits were not approached. Figure II.B.6 shows the percentage of high sample counts (>14,000 colonies/100mL) by month – there were no violations of this limit either.

Figure II.B.6. DITP Effluent Fecal Coliform (High Sample Counts), FY04



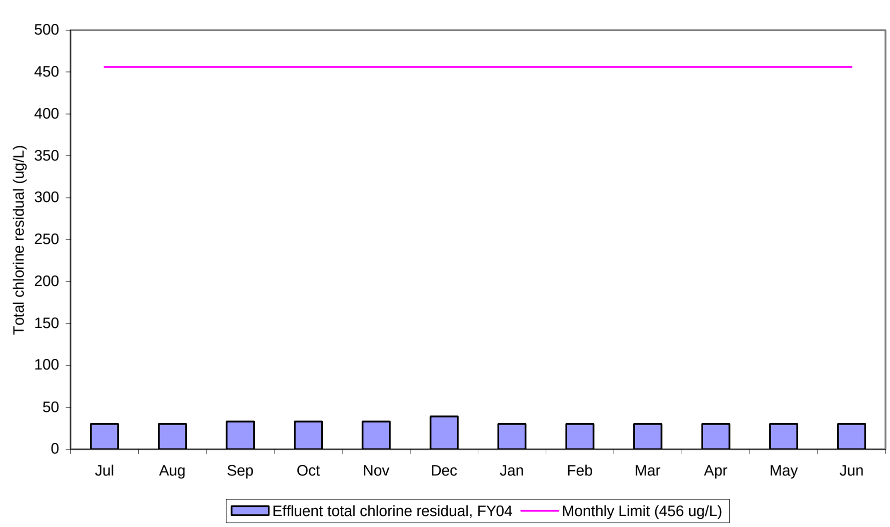
The limits for pH are based on the maximum and minimum values for each month, with pH required to fall between 6.0 and 9.0. In FY04, the pH of the effluent was always below the maximum of 9.0 and above the minimum of 6.0. Figure II.B.7 shows the monthly minimums and maximums throughout FY04.

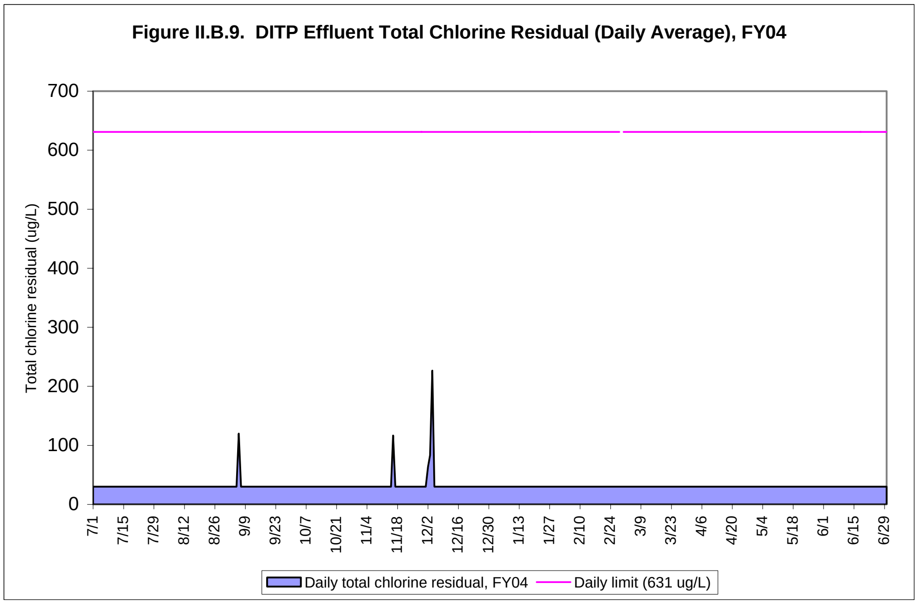
Figure II.B.7. DITP Effluent pH (Monthly Min and Max), FY04



The permit regulates total chlorine residual through two limits: a monthly average of 456 μg/L and a daily maximum of 631 μg/L. Figure II.B.8 shows monthly average chlorine residual results versus the regulatory limit. The following figure, II.B.9, shows the daily results against the permit limit. Neither limit was violated, or even approached, in FY04.

Figure II.B.8. DITP Effluent Total Chlorine Residual (Monthly Average), FY04





There are two other effluent limits. Arochlors 1016, 1221, 1232, 1242, 1248, 1254, and 1260 have a 0.000045 µg/L limit. None of these compounds were detected in the effluent in FY04. The dry day flow limit was covered in the Executive Summary, and the Executive Summary's Figure 2 on page 2.

MWRA must also report a number of other effluent components, although they have no discharge limit. These are listed in Appendix G, Table G-1.

II.B.2 Effluent Quality Compared to Water Quality Standards

Table II.B.3 compares concentrations of priority pollutants in DITP effluent to water quality criteria, both acute and chronic. Even before the dilution provided by the outfall, all the pollutants except for copper were below both the acute and chronic criteria.

Table II.B.3. Comparison of DITP Effluent with Water Quality Criteria, FY04

Acute	FY04 Effluent Maximum (ug/L)	Dilution†	Concentration at ZID (ug/L)‡	Acute Dissolved Criteria (ug/L)*	Acute Recoverable Criteria (ug/L)**	Times Detected
Arsenic	1.24	50	0.025	69.0	69.0	2 of 24
Copper	70.00	50	1.400	4.8	5.8	101 of 130
Lead	2.24	50	0.045	210.0	220.8	11 of 12
Mercury	0.16	50	0.003	1.8	2.1	89 of 98
Nickel	7.28	50	0.146	74.0	74.7	88 of 88
Silver	1.87	50	0.037	1.9	2.2	88 of 88
Zinc	116.00	50	2.320	90.0	95.1	88 of 88
Chronic	FY04 Effluent Average (ug/L)	Dilution†	Concentration at ZID (ug/L)‡	Chronic Dissolved Criteria (ug/L)*	Chronic Recoverable Criteria (ug/L)**	Times Detected
Arsenic	0.50	70	0.007	36.0	36.0	2 of 24
Copper	13.30	70	0.190	3.1	3.7	101 of 130
Lead	1.38	70	0.020	8.1	8.5	11 of 12
Mercury	0.02	70	0.0003	0.9	1.1	89 of 98
Nickel	3.30	70	0.047	8.2	8.3	88 of 88
Zinc	32.60	70	0.466	81.0	85.6	88 of 88

No conversion factor or chronic criteria exist for silver.

† Permit estimate from Attachment S.

‡ ZID is Zone of Initial Dilution, the area directly around the outfall.

* National Recommended Water Quality Criteria for Priority Toxic Pollutants, Federal Register, 12/10/98.

** Calculated using the conversion factors in Appendix A of the Federal Register, 12/10/98.

II.C.1 Ambient Monitoring Plan

The new permit requires ambient monitoring of the Harbor and Massachusetts Bay. The ambient monitoring plan has three main components: the Harbor and Bay monitoring plan; the maintenance of the Bays Eutrophication Model; and the implementation of plume tracking. Table II.C.1 summarizes the first and third components of the monitoring plan. Note that the plume tracking component of the plan is now completed and results are available from ENQUAD.

The Bays Eutrophication Model is a three-dimensional hydrographic model that is run annually to provide information on whether new limits are needed on the effluent discharge. The Model is designed primarily to examine nutrient inputs.

In March 2004, the MWRA issued Revision 1 of the ambient monitoring plan, which made minor changes to the original plan. Highlights included reducing the number of nearfield and benthic monitoring stations, reducing the number of nearfield surveys, as well as exploring the possibility of real-time monitoring using permanent moorings.

Table II.C.1. Post-Discharge Ambient Monitoring Plan Summary

Task	Objective	Sampling Protocol	Analyses
Effluent sampling	Characterize wastewater discharge from Deer Island Treatment Plant	3x/daily Daily Weekly Several times monthly	Nutrients Solids and organic material Toxic contaminants Bacterial indicators Chlorine
Water Column			
Nearfield surveys	Collect water quality data near outfall location	12 surveys/year 7 stations	Temperature Salinity Dissolved oxygen Nutrients Solids Chlorophyll Water clarity Photosynthesis Respiration Plankton Marine mammal observations
Farfield surveys	Collect water quality data throughout Massachusetts and Cape Cod bays (Not all analyses are performed at every near- or farfield station)	6 surveys/year 25 stations	
Plume-track surveys	Track discharge plume, measure discharge dilution	Completed	Completed
Mooring (USGS and GoMOOS)	Provides continuous oceanographic data near outfall location and Cape Ann	Continuous monitoring USGS near outfall GoMOOS near Cape Ann	Temperature Salinity Water clarity Chlorophyll
Remote sensing	Provides oceanographic data on a regional scale through satellite imagery	Available daily (cloud-cover permitting)	Surface temperature Chlorophyll
Sea Floor			
Soft-bottom studies	Evaluate sediment quality and benthos in Boston Harbor and Massachusetts Bay	1 survey/year 23 nearfield stations 8 farfield stations	Sediment chemistry Sediment profile imagery Community composition
Hard-bottom studies	Characterize marine benthic communities in rock and cobble areas	1 survey/year 23 stations	Topography Substrate Community composition
Fish and Shellfish			
Winter flounder	Determine contaminant body burden and population health	1 survey/year 4 stations	Tissue contaminant concentrations Physical abnormalities Liver histopathology
American lobster	Determine contaminant body burden	1 survey/year 3 stations	Tissue contaminant concentrations Physical abnormalities
Blue mussel	Evaluate biological condition and potential contaminant bioaccumulation	1 survey/year 3 stations	Tissue contaminant concentrations

Adapted from Werme, C. 2003. 2002 *Outfall Monitoring Overview*. ENQUAD report 2003-12.
Updated from MWRA. 2004. *MWRA Effluent Outfall Ambient Monitoring Plan, rev. 1, 3/04*. ENQUAD report ms-092.

The Outfall Monitoring Science Advisory panel (OMSAP), a panel of scientific experts convened by the EPA and MA DEP, oversees the monitoring plan and examines scientific data produced by the MWRA and MWRA consultants. OMSAP also serves as a peer review board for technical reports, and advises EPA and MA DEP on the implications of monitoring observations. Finally, OMSAP evaluates any exceedances under the Contingency Plan, described in the next section.

Much more information on the ambient monitoring plan is available on the Internet. Documents directly associated with the permit, including Revision 1 of the ambient monitoring plan, can be found at:
http://www.mwra.state.ma.us/harbor/html/ambient.htm

Associated information and synthesis reports generated by ambient monitoring results can be found at:
Boston Harbor: http://www.mwra.state.ma.us/harbor/html/wklyintr.htm
Massachusetts Bay: http://www.mwra.state.ma.us/harbor/html/mbmon.htm

The OMSAP web page, including announcements for public meetings, is at:
http://www.epa.gov/region1/omsap/index.html

II.C.2 The Contingency Plan

The permit requires a contingency plan that defines a response plan when a parameter threshold is exceeded. Reponses may include changes in laboratory procedures, changes in treatment plant process, or, in a worse case scenario, examining the feasibility of re-opening the Deer Island harbor outfalls. Tables II.C.2.a-c show the thresholds for the parameters. The effluent and toxicity thresholds are set to be equal to the NPDES permit limits. However, the Contingency Plan includes a number of new thresholds related to parameters monitored under the Ambient Monitoring Plan in Massachusetts Bay.

Table II.C.2.a. Contingency Plan Thresholds: Toxic Contaminants

Parameter	Caution Level	Warning Level
Effluent chlorine	-	456 ug/L average monthly 631 ug/L maximum daily
Effluent PCBs	0.000045 ug/L monthly limit (as Arochlors)	-
Effluent toxicity	-	Acute: effluent LC50 < 50% for shrimp and fish Chronic: effluent NOEC for fish growth and sea urchin fertilization < 1.5%
Water column initial dilution of effluent	-	Effluent dilution predicted by EPA as basis for NPDES permit
Nearfield sediment toxics	-	NOAA Effects Range Median sediment guideline
Nearfield sediment toxics	90% EPA sediment criteria	EPA sediment criteria
Fish tissue mercury, near outfall	0.5 ug/g wet	0.8 ug/g wet
Fish tissue PCB, near outfall	1 ug/g wet	1.6 ug/g wet
Mussel tissue lead, near outfall	2 ug/g wet	3 ug/g wet
Fish tissue lipid-normalized toxics, near outfall	2 x baseline	-
Flounder liver disease incidence	Greater than harbor prevalence over time	-

Table II.C.2.b. Contingency Plan Thresholds: Nutrients		
Parameter	Caution Level	Warning Level
Effluent total nitrogen	12,500 mtons/year	14,000 mtons/year
Dissolved oxygen concentration, nearfield water column bottom, Stellwagen bottom	6.5 mg/L for any survey during stratification (June-Oct.) unless background conditions are lower	6 mg/L for any survey during stratification (June-Oct.) unless background conditions are lower
Dissolved oxygen percent saturation, nearfield water column bottom, Stellwagen bottom	80% saturation for any survey during stratification (June-Oct.) unless background conditions are lower	75% saturation for any survey during stratification (June-Oct.) unless background conditions are lower
Oxygen depletion rate, nearfield water column bottom	1.5 x baseline	2 x baseline
Nearfield water column chlorophyll	1.5 x baseline annual mean	2 x baseline annual mean
Nearfield water column chlorophyll	95th percentile of the baseline seasonal distribution	-
Nearfield water column nuisance algae (except *Alexandrium*)	95th percentile of the baseline seasonal mean	-
Nearfield water column zooplankton (1)	-	-
Nearfield water column *Alexandrium tamarense*	100 cells/L	-
Farfield water column PSP extent (2)	New incidence	-
Redox potential discontinuity, nearfield sediments	0.5 x baseline	-

(1) The MWRA will report annually on appreciable changes to the zooplankton community in its Annual Water Column Report and in the Outfall Monitoring Overview. The MWRA also makes every effort to participate in workshops to investigate food web pathways in Massachusetts and Cape Cod bays sponsored by NOAA Fisheries.

(2) The MWRA is continuing to work on improvements to the calculation of this threshold as proposed in its October 13, 2000 letter to the EPA and MADEP.

Table II.C.2.c. Contingency Plan Thresholds: Other Parameters		
Effluent cBOD	-	40 mg/L weekly 25 mg/L monthly
Effluent fecal coliform	-	14,000 fecal coliforms/100 ml
Effluent TSS	-	45 mg/L weekly 30 mg/L monthly
Nearfield benthic diversity	Appreciable change	-
Nearfield benthic opportunists	10%	25%
Effluent floatables (4)	-	-
Effluent oil and grease (petroleum)	-	15 mg/L weekly
Plant performance	5 violations/year	Noncompliance 5% of the time pH <6 or >9 at any time Flow >436 MGD for an annual average dry day

(3) Threshold currently under development by MWRA.

Adapted from MWRA. 2001. *Contingency Plan,* Revision 1, May 2001. MWRA Report ENQUAD ms-071.

Under the Contingency Plan, two types of thresholds exist: a caution level and a warning level. Figure II.C.1 on the following page details the processes required by the Contingency Plan in case of a threshold exceedance. Table II.C.3 below details the Contingency Plan exceedances in FY04. Note that the fecal coliform violation described previously is also a Contingency Plan exceedance. For more information on these exceedances, please refer to the web site listed below.

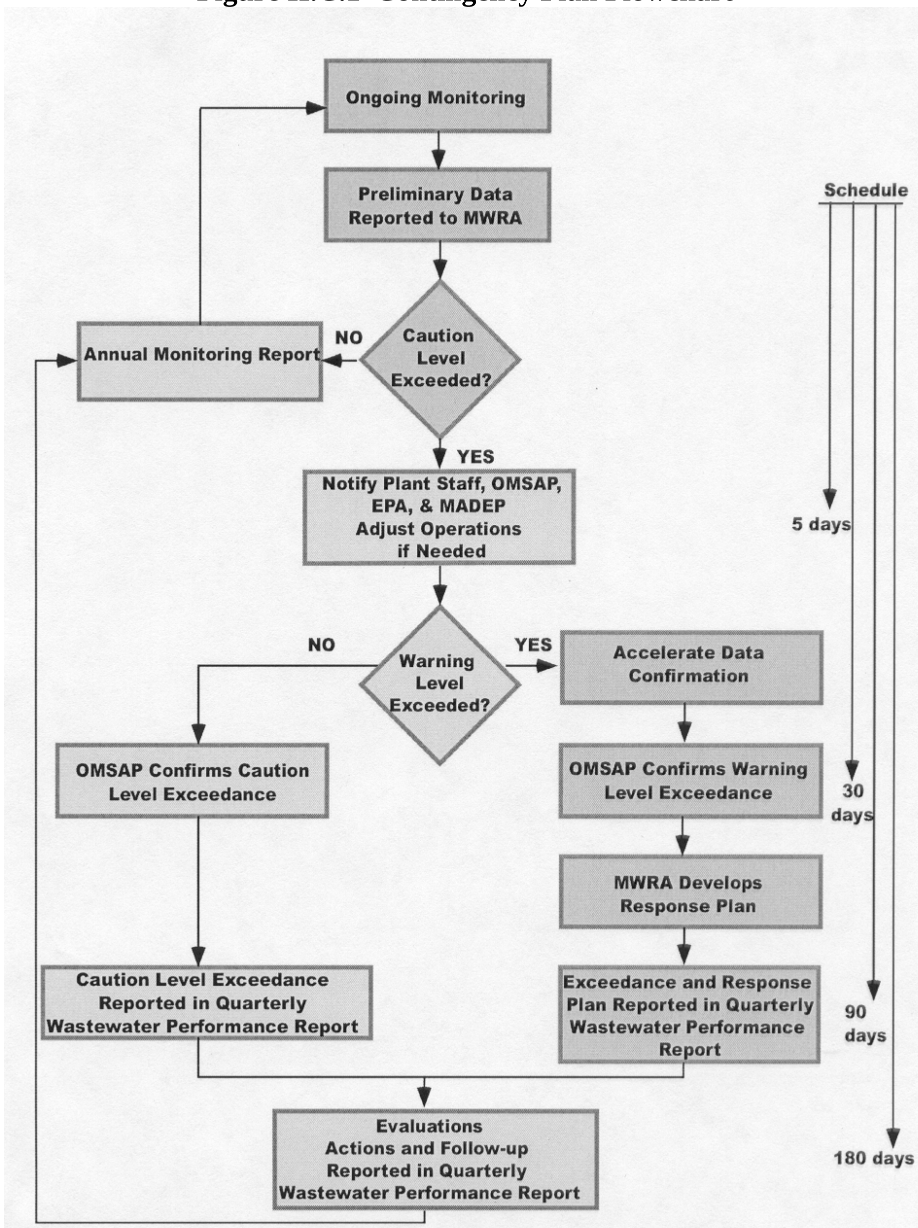
Table II.C.3. Contingency Plan Exceedances, FY04		
Date*	Threshold Level Exceeded	Threshold Exceeded
November 21, 2003	Caution (Ambient)	High concentration of polynuclear aromatic hydrocarbons in mussels.
November 24, 2003	Caution (Ambient)	Abundance of *Phaeocystis* was over the threshold for the summer season.
April 8, 2004	Warning (Effluent)	Daily geometric mean of three fecal coliform samples was over 14,000 colonies/100mL limit.
July 23, 2004	Caution (Ambient)	Abundance of *Phaeocystis* was over the threshold for both the winter/spring and summer seasons.
* Notification date; typically within 5 days of knowing of the violation.		

In addition to the thresholds, the Contingency Plan also requires several other unrelated items. First, the MWRA must update annually a technical survey regarding tertiary treatment systems designed to remove nutrients. Second, the Authority must maintain a nitrogen monitoring program at DITP to examine the need for tertiary treatment. Both of these efforts are ongoing. Third, there must be a "dry run" of a Contingency Plan violation to assess the validity of the Contingency Plan structure. Fourth, $81 million must be held in reserve for emergency use. Finally, the old Boston Harbor outfalls must be maintained in case diversion of the effluent back to the Harbor is deemed necessary. These last three options have been successfully completed.

More information on Contingency Plan topics is on the Internet at:
http://www.mwra.state.ma.us/harbor/html/contingency.htm

Exceedance reports are posted at:
http://www.mwra.state.ma.us/harbor/html/exceed.htm

Figure II.C.1 Contingency Plan Flowchart



III: Combined Sewer Overflows

Overview

MWRA monitors five CSO facilities in the North System. There are no CSO facilities in the South System. The monitoring results vary significantly between facilities because of differences in type and location. Location is especially important since storms can be highly localized, affecting the level and intensity of rainfall at the CSO facility and the area that the facility serves. Improvements to the transport system and the CSO facilities themselves have improved the capture of combined sewage. This is resulting in the somewhat paradoxical observation that although the facilities are having fewer activations, the average amount discharged per activation is rising.

To counteract the larger amounts of combined sewage being captured, each CSO facility screens and chlorinates combined wastewater (sewage and storm water) prior to discharge. The Cottage Farm and Prison Point facilities also have pumping and tank storage capacity. Pumping and tank storage allows screened and chlorinated wastewater to be held at these facilities up to their storage capacities prior to discharge. Stored wastewater can eventually be pumped back into the system and processed at Deer Island. Any wastewater exceeding the storage capacity will overflow and discharged through the CSO outfalls.

The other three CSO facilities – Somerville Marginal, Fox Point, and Commercial Point – are gravity CSO facilities, meaning that combined wastewater arrives and leaves the CSO facility by gravity instead of pumping. The combined wastewater is screened, chlorinated, and dechlorinated. The disinfected wastewater overflows to the receiving water as quickly as it arrives at the facility. A detailed description of the five CSO facilities can be found in Appendix H.

III.A.1 Cottage Farm Activations

Table III.A.1 and Figures III.A.1 and III.A.2 summarize activation data for the Cottage Farm CSO facility. Cottage Farm is hydraulically connected to Deer Island, so the increased pumping capacity at Deer Island is partially responsible for the general trend of decreasing activations since FY94.

From FY03 to FY04, releases from Cottage Farm increased from 116.7 to 209.2 million gallons. Number of activations remained about the same, as did rainfall. This combination suggests that FY04's rainfall was distributed as a small number of intense rainstorms, which greatly increase the volume discharged by the CSO facilities. Additionally, improvements to the collection system resulted in greater capture of combined sewage flows. A near doubling of the average flow per activation in FY04 compared to FY03 supports this hypothesis.

Table III.A.1. Cottage Farm CSO Activations Summary

	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	**FY04**
Number of activations	31	25	26	24	19	11	19	15	8	14	13
Number of days activated	31	25	33	29	22	13	24	18	10	16	15
Total volume treated (MG)	621	574	918.49	1092.1	792.31	259	440.27	667.42	50.9	116.71	209.19
Maximum flow (MGD)	123	100	94.02	199.23	113.62	47	86.04	223.37	13.4	20.62	62.47
Minimum flow (MGD)	0.08	0.09	1.88	0.63	0.76	1.35	0.56	0.22	0.63	0.91	0.61
Average flow (MGD)	20.032	22.96	27.833	37.659	36.014	19.923	18.345	37.08	5.09	7.29	13.95
Total rainfall (inches)	45	37.4	42.55	48.79	50.87	32.41	46.08	41.02	34.14	43.51	42.02

Average flow = Total volume treated divided by the number of days activated.

Figure III.A.1. Cottage Farm CSO Activations Compared to Precipitation, FY94-04

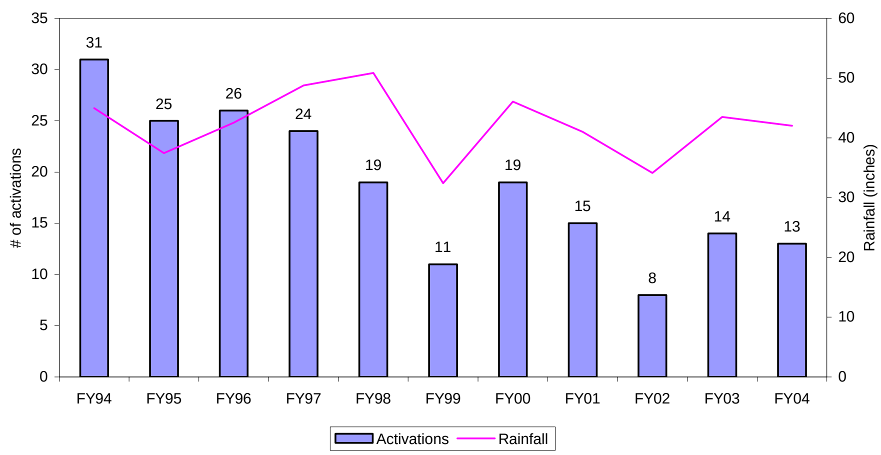
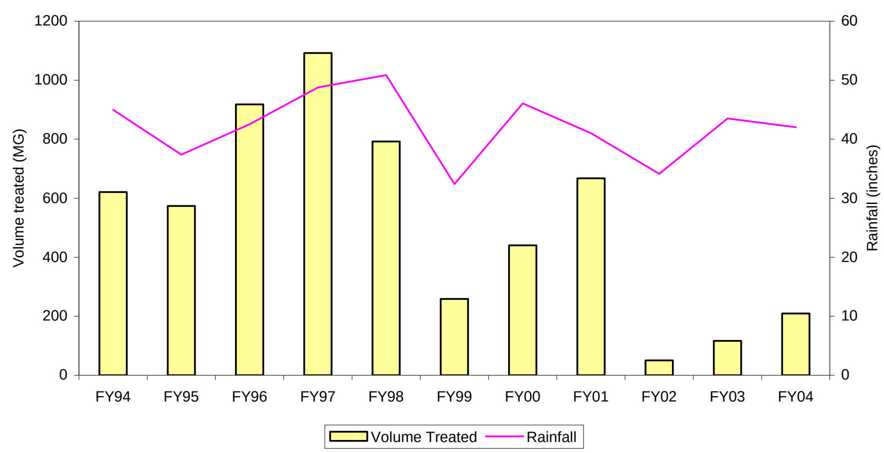


Figure III.A.2. Cottage Farm CSO Volume Treated Compared to Precipitation, FY94-04



III.A.2 Cottage Farm Conventional Parameters

Table B-1 of Appendix B contains detailed data on conventional parameters in Cottage Farm effluent. Table III.A.2 below summarizes this data. As is the case with all five facilities covered in this chapter, Cottage Farm is a CSO facility that provides floatables control, chlorination, and dechlorination. Such a facility cannot provide the same level of effluent treatment as a full-fledged treatment plant such as Deer Island. CSO effluent pH is often rather low in comparison to effluent from Deer Island or other treatment plants as CSO facilities cannot correct for sewage that enters the facility with an already low pH.

Table III.A.2. Cottage Farm CSO Effluent Characteristics, FY04

Parameter	Minimum	Average	Maximum
TSS (mg/L)	43.0	60.0	70.7
BOD (mg/L)	31.6	58.3	94.6
Fecal Coliform (col/100 mL)	10	28	160
pH (SU)	5.9		6.6

III.A.3 Cottage Farm Effluent Metals

For permit compliance, MWRA tests CSO effluent for metals and surfactants whenever the CSO facility is sampled. The results of these tests are presented in Appendix B, Tables B-2 and B-3. The target metals were detected in nearly every sample. Table III.A.3 summarizes average metal concentrations in Cottage Farm effluent in FY04.

Table III.A.3. Cottage Farm CSO Effluent Metals, FY04		
Parameter	Average Concentration	Times Detected
Cadmium (ug/L)	0.37	3 of 6
Calcium (ug/L)	12350.00	3 of 3
Chromium (ug/L)	5.75	3 of 4
Copper (ug/L)	39.88	3 of 3
Lead (ug/L)	29.30	3 of 3
Magnesium (ug/L)	2755.00	3 of 3
Mercury (ug/L)	0.08	3 of 3
Nickel (ug/L)	3.99	3 of 5
Zinc (ug/L)	95.45	3 of 3

III.B.1 Prison Point Activations

Activation data for the Prison Point CSO facility are summarized in Table III.B.1 and Figures III.B.1 and III.B.2.

Unlike the Cottage Farm facility, Prison Point is not hydraulically connected to the Deer Island Treatment Plant, so increased pumping at Deer Island will not affect Prison Point activations; hence they have remained relatively constant since FY94, primarily dependent on rainfall.

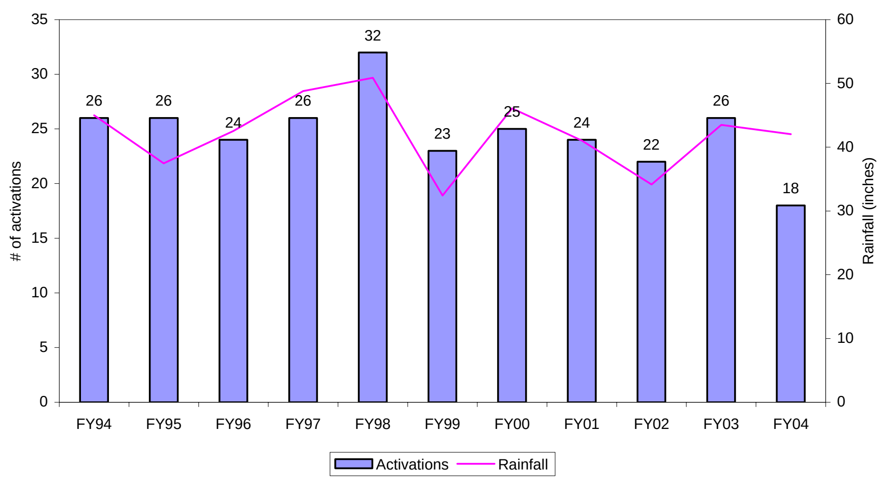
The amount discharged by Prison Point increased a small amount in FY04 compared to FY03. The number of activations decreased fairly sharply, leading to a substantial increase in the average amount discharged.

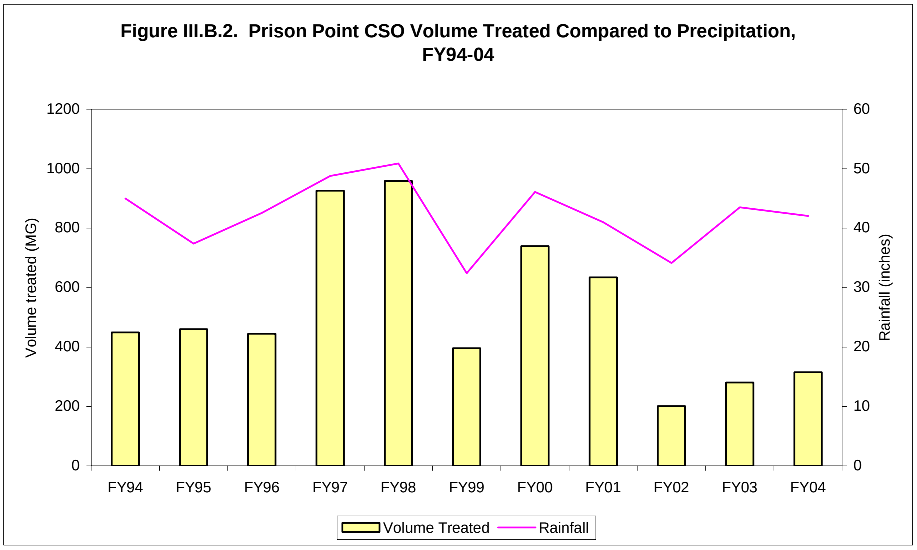
Table III.B.1. Prison Point CSO Activations Summary

	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	**FY04**
Number of activations	26	26	24	26	32	23	25	24	22	26	18
Number of days activated	26	26	29	30	34	23	30	26	27	27	21
Total volume treated (MG)	449	460	445	925.82	958	396	739.5	634.05	201.23	280.71	314.79
Maximum flow (MGD)	80.32	127	62.6	228	143	51	149	188	24.5	31.34	97.55
Minimum flow (MGD)	3.01	1.63	1.24	1.5	2	1.4	2.5	1	0.41	0.47	0.79
Average flow (MGD)	17.27	17.69	15.34	30.86	28.18	17.22	24.65	24.39	7.45	10.4	14.99
Total rainfall (inches)	45	37.4	42.55	48.79	50.87	32.41	46.08	41.02	34.14	43.51	42.02

Average flow = Total volume treated divided by the number of days activated.

Figure III.B.1. Prison Point CSO Activations Compared to Precipitation, FY94-04





III.B.2 Prison Point Conventional Parameters

Conventional parameter data for Prison Point effluent are provided in Appendix C, Tables C-1 and C-2. Table III.B.2 summarizes that data. See Section III.A.2 for an explanation of the low effluent pH.

Table III.B.2. Prison Point CSO Effluent Characteristics, FY04

Parameter	Minimum	Average	Maximum
TSS (mg/L)	84.0	90.0	95.9
BOD (mg/L)	17.4	19.8	22.1
Fecal Coliform (col/100 mL)	32	40	49
pH (SU)	5.8		6.3

III.B.3 Prison Point Effluent Metals

The results of priority pollutant testing for Prison Point can be found in Tables C-2 and C-3 of Appendix C. As with Cottage Farm, the target metals were detected in nearly all of the samples. Table III.B.3 summarizes average metals concentrations in FY04 Prison Point effluent.

Table III.B.3. Prison Point CSO Effluent Metals, FY04

Parameter	Average Concentration	Times Detected
Cadmium (ug/L)	0.66	2 of 4
Chromium (ug/L)	12.80	2 of 2
Copper (ug/L)	51.65	2 of 2
Lead (ug/L)	74.55	2 of 2
Mercury (ug/L)	0.10	2 of 2
Nickel (ug/L)	5.94	3 of 3
Zinc (ug/L)	201.00	2 of 2

III.C.1 Somerville Marginal Activations

Table III.C.1 and Figures III.C.1 and III.C.2 summarize activation information for the Somerville Marginal facility. Recently, there has been increased attention to SSOs (Sanitary Sewer Overflows); see Chapter V for more information. MWRA has intensified its monitoring efforts at areas known to overflow where there is a measurable rainfall event. In coordination with this increased SSO monitoring, MWRA has monitored its unmanned gravity CSO facilities of Somerville Marginal, Fox Point, and Commercial Point more frequently. As a result, the statistics for FY98 and after may not be strictly comparable to the earlier years.

In FY04, the volume discharged at Somerville Marginal increased dramatically, although less activations were recorded. Average volume per discharge, however, more than doubled despite essentially the same level of rainfall as FY03. Differing storm patterns and intensities between the two years can possibly explain these discrepancies.

Table III.C.1. Somerville Marginal CSO Activations Summary

	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	**FY04**
Number of activations	34	28	28	28	30	19	28	17	29	26	17
Number of days activated	34	28	30	29	31	19	34	21	30	28	17
Total volume treated (MG)	72	49	80.04	142.24	127.81	57.32	113.8	90.9	33.87	54.05	93.13
Maximum flow (MGD)	11	14	8.5	64.18	21.72	10.29	25.06	33	5.1	6.76	26.68
Minimum flow (MGD)	0.006	0.158	0.25	0.13	0.09	0.04	0.01	0.09	0.02	0.05	0.51
Average flow (MGD)	2.12	1.75	2.67	4.90	4.12	3.02	3.35	4.33	1.17	1.93	5.48
Total rainfall (inches)	45	37.4	42.55	48.79	50.87	32.41	46.08	41.02	34.14	43.51	42.02

Average flow = Total volume treated divided by the number of days activated.

Figure III.C.1. Somerville Marginal CSO Activations Compared to Precipitation, FY94-04

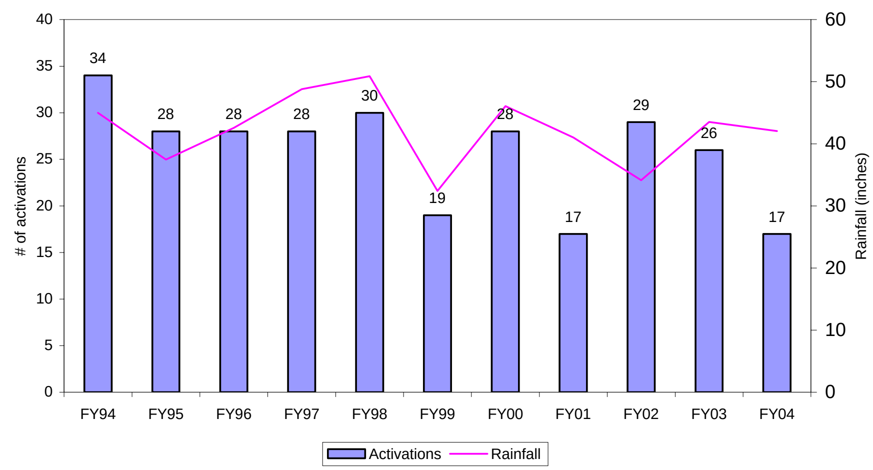
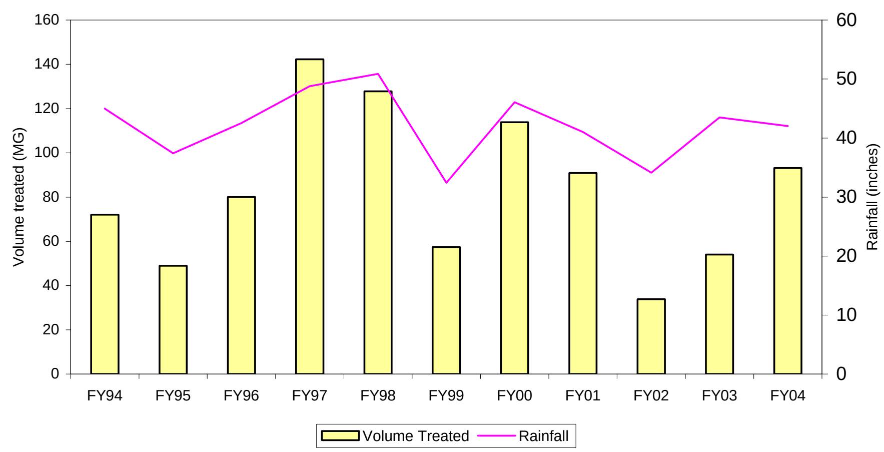


Figure III.C.2. Somerville Marginal CSO Volume Treated Compared to Precipitation, FY94-04



III.C.2 Somerville Marginal Conventional Parameters

Somerville Marginal conventional parameter data is provided in Appendix D, and summarized below in Table III.C.2.

Table III.C.2. Somerville Marginal CSO Effluent Characteristics, FY04

Parameter	Minimum	Average	Maximum
TSS (mg/L)	37.2	93.1	149.0
BOD (mg/L)	71.0	11.8	15.8
Fecal Coliform (col/100 mL)	29	148	760
pH (SU)	6.7		7.9

III.C.3 Somerville Marginal Effluent Metals

The results of Somerville Marginal priority pollutant testing can be found in Appendix D, Tables D-2 and D-3. As with the other CSO facilities, the target metals were detected in most of the samples. Table III.C.3 summarizes the average metals concentration in FY04.

Table III.C.3. Somerville Marginal CSO Effluent Metals, FY04

Parameter	Average Concentration	Times Detected
Cadmium (ug/L)	0.18	1 of 2
Calcium (ug/L)	3690.00	1 of 1
Chromium (ug/L)	4.25	1 of 1
Copper (ug/L)	10.80	1 of 1
Lead (ug/L)	18.70	1 of 1
Magnesium (ug/L)	818.00	1 of 1
Mercury (ug/L)	0.04	1 of 1
Nickel (ug/L)	1.90	1 of 2
Zinc (ug/L)	52.60	1 of 1

III.D.1 Fox Point Activations

Table III.D.1 and Figures III.D.1 and III.D.2 summarize activation data for the Fox Point CSO facility.

In FY04 Fox Point discharged approximately the same volume of effluent that it did in FY03, in slightly less activations.

Table III.D.1. Fox Point CSO Activations Summary

	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	**FY04**
Number of activations	20	4	12	16	21	12	23	17	28	30	22
Number of days activated	20	4	14	18	24	12	25	20	28	33	23
Total volume treated (MG)	76	24	96.63	153.81	166	59.3	96.93	65.69	50.26	75.92	73.76
Maximum flow (MGD)	12	10	17.23	45.16	39	14.8	24.66	16.16	5.67	7.16	20.4
Minimum flow (MGD)	0.4	1.5	1.09	0.26	0.171	0.31	0.47	0.03	0.2	0.06	0.35
Average flow (MGD)	3.8	6	6.90	8.55	6.92	4.94	3.88	3.28	1.79	2.3	3.51
Total rainfall (inches)	45	37.4	42.55	48.79	50.87	32.41	46.08	41.02	34.14	43.51	42.02

Average flow = Total volume treated divided by the number of days activated.

Figure III.D.1. Fox Point CSO Activations Compared to Precipitation, FY94-04

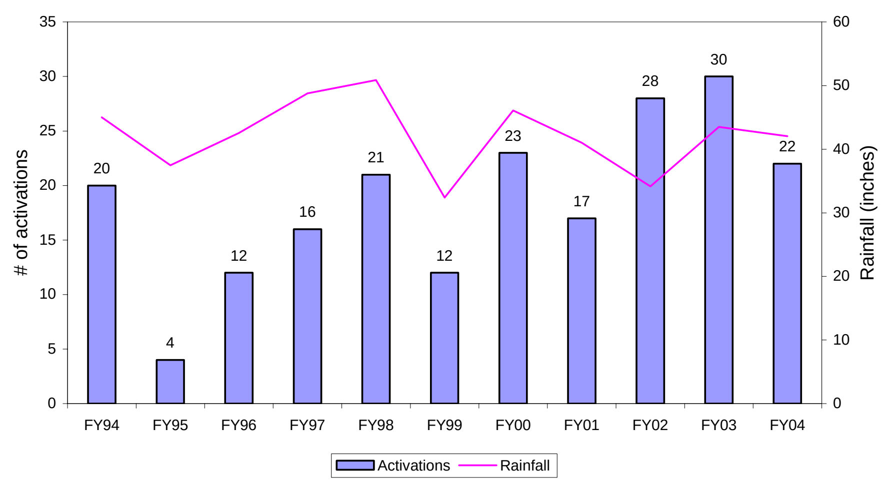
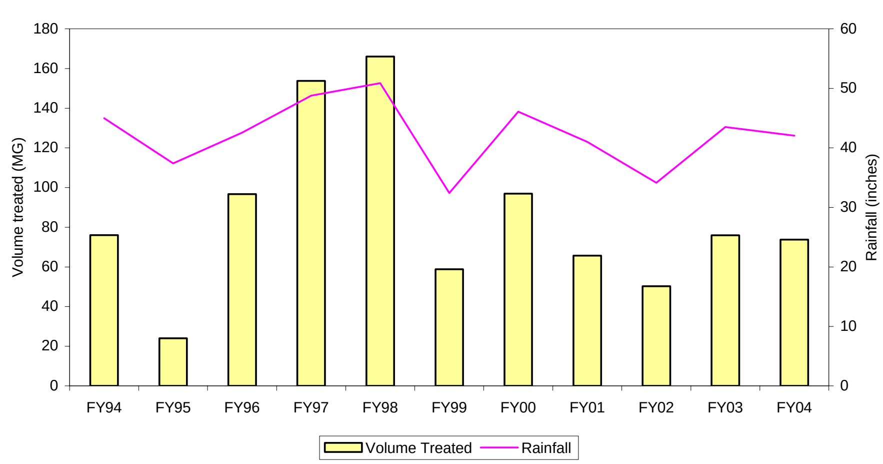


Figure III.D.2. Fox Point CSO Volume Treated Compared to Precipitation, FY94-04



III.D.2
Fox Point Conventional Parameters

Appendix E, Table E-1, provides data on conventional pollutants collected at Fox Point in FY04. Results are summarized below in Table III.D.2. As explained in Section III.A.2, CSO facilities have no pH control mechanisms, so the pH of the effluent is wholly dependent on the influent pH. Hence, the operation of Fox Point cannot be blamed for the very low effluent pH of 4.2 seen in FY04.

Table III.D.2. Fox Point CSO Effluent Characteristics, FY04

Parameter	Minimum	Average	Maximum
TSS (mg/L)	85.6	95.9	115.8
BOD (mg/L)	5.7	10.6	14.7
Fecal Coliform (col/100 mL)	10	16	29
pH (SU)	4.2		7.6

III.D.3
Fox Point Effluent Metals

The results of sampling for priority pollutants at Fox Point can be found in Appendix E, Tables E-2 and E-3. Table III.D.3 summarizes the average metals concentrations in FY04.

Table III.D.3. Fox Point CSO Effluent Metals, FY04

Parameter	Average Concentration	Times Detected
Cadmium (ug/L)	0.35	2 of 4
Chromium (ug/L)	5.57	2 of 3
Copper (ug/L)	15.50	2 of 2
Lead (ug/L)	58.10	2 of 2
Mercury (ug/L)	0.09	2 of 2
Nickel (ug/L)	4.60	2 of 3
Zinc (ug/L)	105.30	2 of 2

III.E.1 Commercial Point Activations

Data on Commercial Point activations can be found in Appendix F, and in the table and two figures below.

Commercial Point discharged substantially more effluent in FY04 than in FY03 – in fact, the most the facility has discharged since FY97. Average flows increased to more than double the flows of the previous fiscal year. Again, changes in storm patterns and intensities could be responsible for the increased volume discharged despite rainfall that was essentially the same as in FY03.

Table III.E.1. Commercial Point CSO Activations Summary

	FY94	FY95	FY96	FY97	FY98	FY99	FY00	FY01	FY02	FY03	**FY04**
Number of activations	25	19	13	23	25	20	32	19	32	30	25
Number of days activated	25	19	14	24	28	20	36	24	35	32	26
Total volume treated (MG)	93	55.95	70.14	158.14	124.74	62.78	101.33	93.77	79.23	64.5	124.92
Maximum flow (MGD)	16.52	16.7	18.42	53.86	25	12.39	30.42	30.84	7.8	7.3	35.85
Minimum flow (MGD)	0.21	0.15	0.06	0.19	0.14	0.1	0.03	0.06	0.2	0.05	0.03
Average flow (MGD)	3.72	2.94	5.01	6.59	4.46	3.14	2.81	3.91	2.26	2.02	4.8
Total rainfall (inches)	45	37.47	42.55	48.79	50.87	32.41	46.08	41.02	34.14	43.51	42.02

Average flow = Total volume treated divided by the number of days activated.

Figure III.E.1. Commercial Point CSO Activations Compared to Precipitation, FY94-04

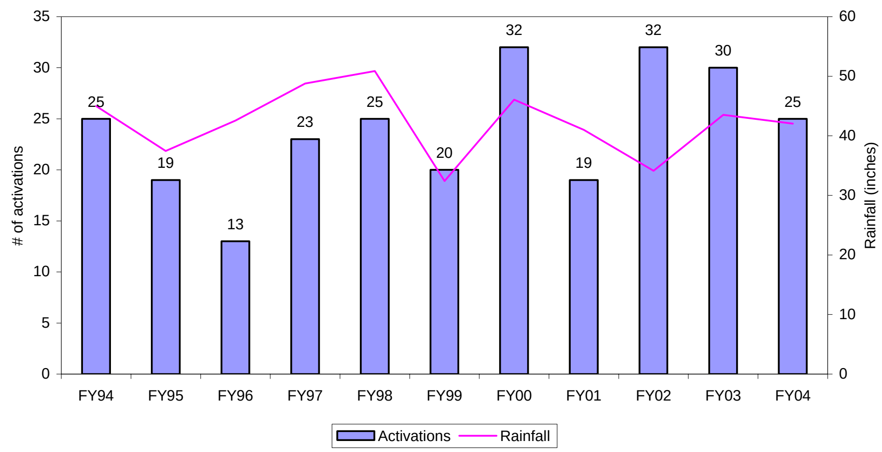
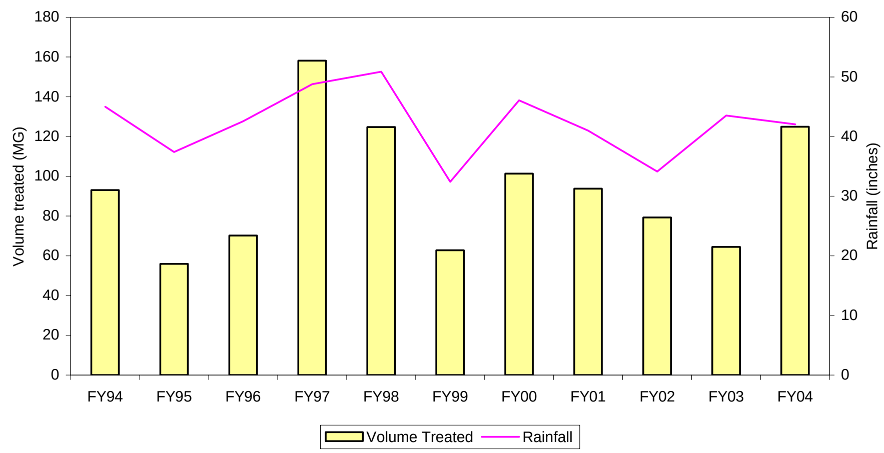


Figure III.E.2. Commercial Point CSO Volume Treated Compared to Precipitation, FY94-04



III.E.2 Commercial Point Conventional Parameters

Appendix F, Table F-1 presents data for conventional parameters sampled at Commercial Point in FY04. Results are summarized in Table III.E.2 below.

Table III.E.2. Commercial Point CSO Effluent Characteristics, FY04

Parameter	Minimum	Average	Maximum
TSS (mg/L)	87.5	184.3	281
BOD (mg/L)	8.7	16.8	24.9
Fecal Coliform (col/100 mL)	10	14	20
pH (SU)	6.8		7.8

III.E.3 Commercial Point Effluent Metals

Table III.E.3 summarizes data from Appendix F, Tables F-2 and F-3 regarding priority pollutants at Commercial Point. Metals were found in detectable amounts in nearly all the samples.

Table III.E.3. Commercial Point CSO Effluent Metals, FY04

Parameter	Average Concentration	Times Detected
Cadmium (ug/L)	1.16	2 of 2
Chromium (ug/L)	4.64	1 of 1
Copper (ug/L)	10.70	1 of 1
Lead (ug/L)	28.70	1 of 1
Mercury (ug/L)	0.21	1 of 1
Nickel (ug/L)	1.62	1 of 2
Zinc (ug/L)	82.00	1 of 1

IV: Sludge Processing

Overview

In December 1991, the MWRA ceased discharge of sludge into Boston Harbor. The sludge was then sent to a new plant located on the Fore River in Quincy for processing into fertilizer pellets.

IV.A Pelletizing Process

The pelletizing process begins at the Deer Island Treatment Plant, where gravity thickeners handle sludge and scum from the plant's primary batteries. Centrifuges thicken secondary sludge and scum, with the help of added polymers. Centrate, or the liquid produced by these processes, is sent back to the head of the plant for treatment.

The thickened product is then transferred to Deer Island's most distinctive feature, the egg-shaped anaerobic digesters. In the digesters, bacteria break down the sludge into methane, carbon dioxide, organic material, and water. The methane is tapped, stored, and used later to generate electrical power or heat for Deer Island. The digested sludge is centrifuged again and then is barged across the Harbor to the Fore River Pelletizing facility.

At the pelletizing plant, centrifuges dewater the sludge into "cake," and dryers further process the sludge into the fertilizer pellets. The centrate from the centrifuges is barged back to Deer Island for treatment. The pellets, marketed as "Bay State Fertilizer," are stored at the facility after production. They can either be packaged on-site, or loaded and shipped out in bulk by rail.

Bay State Fertilizer is available in limited quantities to the general public, and is more widely available to local municipalities and for wholesale purchase.

In the future, sludge will be transferred to the Fore River facility via one of two tunnels built inside the Inter-Island Tunnel, and a connection from Nut Island (the southern terminus of the Inter-Island Tunnel) to the pelletizing facility. Centrate will return to Deer Island via the second tunnel inside the Inter-Island Tunnel. These connections will obviate the need for barging sludge and centrate between the two sites.

IV.B Sludge Pellet Regulations

Both the federal government and the Commonwealth of Massachusetts have regulations for the composition of fertilizer pellets. The federal government regulates copper, molybdenum, nickel, zinc, arsenic, cadmium, lead, mercury, and selenium. Massachusetts sets limits for all of the above except arsenic and selenium, while adding limits for boron and chromium. In most cases the Massachusetts standard are tougher than the federal standards. Meeting these regulations has generally not been a problem for the MWRA or its contractor, New England Fertilizer Company. Table IV.B.1 (next page) summarizes the applicable standards.

Table IV.B.1 Federal and State Limits for Sludge Pellet Metals		
Parameter	Federal Limit (ppm)	Massachusetts Type 1* Limit (ppm)
Arsenic	41	NR
Boron	NR	300
Cadmium	39	14
Chromium	NR	1000
Copper	1500	1000
Lead	300	300
Mercury	17	10
Molybdenum	75	25
Nickel	420	200
Selenium	100	NR
Zinc	2800	2500

NR: Not regulated

*: Type 1 pellets are certified for marketing and distribution in Massacusetts by MADEP

Due to the February 19 annual submittal date for sludge data, complete data is not available for FY04 operations. However, in calendar year 2003 (CY03; the latest available data), there were no violations of federal standards for sludge pellets. In five months there were violations of the Massachusetts standard for molybdenum. Table IV.B.2 summarizes the analytical results. The plant processed 32,983 dry tons of sludge in CY03.

Table IV.B.2 Summary of Sludge Pellet Analysis, Calendar Year 2003												
Parameter	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03	Oct-03	Nov-03	Dec-03
Arsenic (mg/kg, dry weight)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Boron (mg/kg, dry weight)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium (mg/kg, dry weight)	2.9	3.7	3.5	3.9	3.6	3.1	2.7	2.3	2.4	2.1	2.1	1.5
Chromium (mg/kg, dry weight)	56.1	49.6	57.3	61.6	56.9	52.3	52.4	53.1	54.9	54.2	54.5	52.7
Copper (mg/kg, dry weight)	670.3	708.5	678.0	674.8	653.5	685.0	711.4	765.5	799.3	760.0	718.3	707.8
Lead (mg/kg, dry weight)	186.8	158.3	162.0	185.2	176.8	179.8	198.4	222.0	232.5	202.6	205.8	180.4
Mercury (mg/kg, dry weight)	4.0	3.6	3.8	3.4	3.2	3.6	4.3	4.2	4.0	3.2	3.8	3.2
Molybdenum (mg/kg, dry weight)	19.1	17.0	16.3	14.1	14.3	20.0	23.5	**30.5**	**33.3**	**41.5**	**38.6**	**31.9**
Nickel (mg/kg, dry weight)	31.0	28.7	30.7	31.7	27.9	25.6	24.5	24.1	24.6	23.8	25.9	25.8
Selenium (mg/kg, dry weight)	3.6	3.5	3.7	4.7	4.8	4.3	3.9	4.5	5.1	5.1	5.6	5.1
Zinc (mg/kg, dry weight)	1130.0	1152.5	1125.0	1162.0	1100.0	1135.0	1202.0	1292.5	1332.5	1208.0	1177.5	1146.0

ND: No data

Bold indicates violations of the MADEP limits for Type 1 sludge. There were no violation of the federal limits.

V: Transport Systems

V.A.1
North System Headworks Choking

Figure V.A.1 below shows the number of hours of maintenance- and rain-related choking at the remote headworks since FY94. Testing and maintenance hours have steadily declined as the MWRA has completed the new DITP.

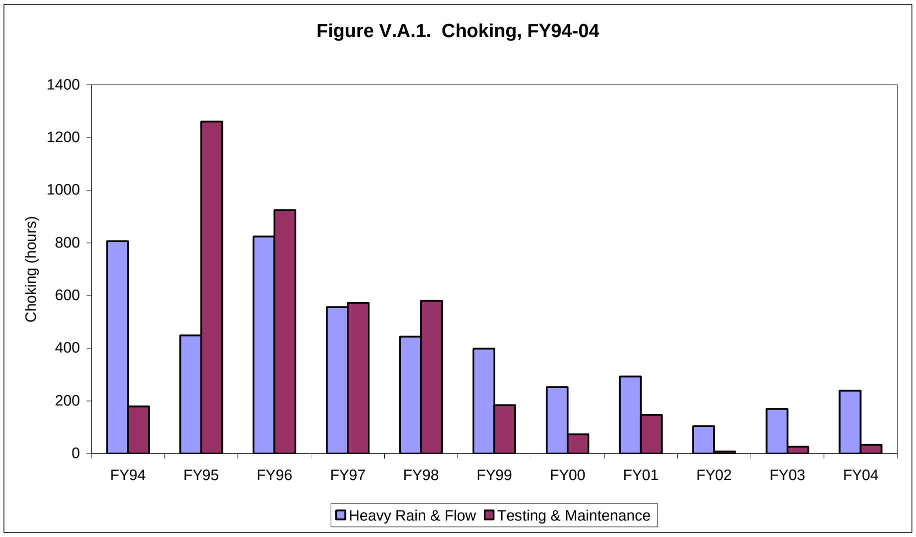
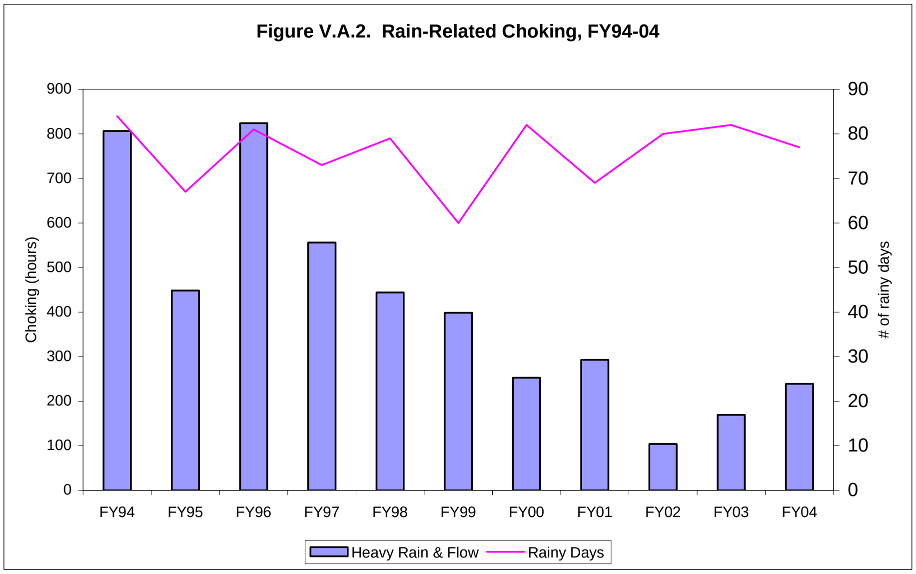
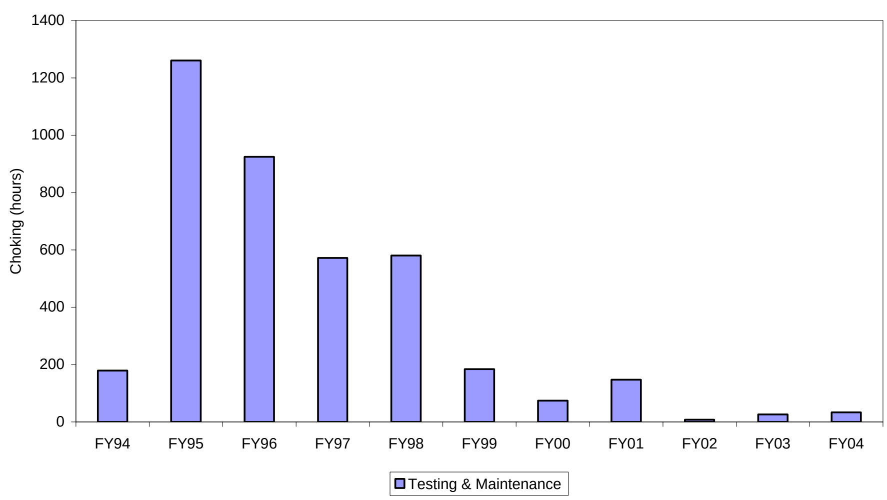


Figure V.A.2 shows the influence of the number of rainy days in a year on the hours of rain-related choking. A rainy day is defined as a day with greater than 0.09 inches of rainfall. Differences in storm intensity between the years can explain years that have similar amounts of rainy days yet vastly different choking hours (i.e., FY96 versus FY98 and the three years of FY02-FY04).



Choking for maintenance purposes is plotted in Figure V.A.3. Maintenance choking peaked in FY95 due to the maintenance and testing involved in bringing the new primary treatment plant on-line. From FY96 to FY98 the number of hours of maintenance-related choking continued to be fairly high because of maintenance and testing related to the startup of the new primary and secondary treatment plants. For example, in FY98, of the approximately 580 choking hours related to testing and maintenance, 442 hours were due to testing. Since there were no new systems to test in FY99, there was a significant decrease in the testing/maintenance choking hours from FY98 to FY99. Testing and maintenance increased in FY01 due to the finishing of both secondary Battery C and the outfall tunnel. With no new systems post-FY02, choking due to testing and maintenance fell to minimal levels.

Figure V.A.3. Testing and Maintenance-related Choking, FY94-04



V.A.2 North System Sanitary Sewer Overflows

MWRA monitors sanitary sewer overflows (SSOs) visually and with meters in both the North and South Systems. SSOs occur when extreme rainfall overwhelms the transport system. Note that SSOs differ from CSOs (combined sewer overflows) in that CSO relief points are pipes that were specifically designed to relieve the combined sewer system. When the system becomes overloaded, these CSOs discharge combined sewage and storm water into a receiving body of water, such as the Charles River. SSOs, on the other hand, are weak points in the separate system, such as manholes, which will overflow during heavy rain events.

There were nine reported overflows in FY04 for the North System (see Table V.A.1). However, this count includes only overflows at MWRA-owned overflow areas. There may be overflows for which the local municipalities are responsible. MWRA monitors these local overflows less frequently, and only when notified by municipalities or concerned citizens. A list of all the known overflow locations in MWRA lines is provided in Appendix H, Table H-4. FY04 had an increased number of overflows due to a 50-year storm that occurred between March 31 and April 2, 2004.

Table V.A.1. Sanitary Sewer Overflows, North System, FY03-04		
	Number of Overflows	
Location	FY03	FY04
Section 133B Framingham (Framingham Extension Sewer)	1	
Section 107 Medford (Rt. 16)	1	1
Section B Cambridge (near MBTA garage)		1
Cottage Farm CSO		1
Section 95A-40 Malden		1
Section C Medford (Auburn St./Rt. 16)		1
Section 91B Medford (headhouse)		1
Section 91B Medford (manhole)		1
Section 51 Melrose (Brunswick Park)		1
Section 113 Winchester (Ginn Field)		1

V.B South System Sanitary Sewer Overflows

There were nine overflows at two locations in the South System in FY04. Although the number of South System overflows in FY04 was comparable to FY03, some of the overflows at Smelt Brook can be directly attributed to the 50-year storm mention above.

Table V.B.1. Sanitary Sewer Overflows, South System, FY03-04		
	Number of Overflows	
Location	FY03	FY04
Section 628 Braintree (Pearl St.)	1	
Section 626 Braintree/Weymouth (Smelt Brook)	7	8
Section 570 Boston (Archdale St.)		1

V.C Inflow and Infiltration

Inflow and infiltration (I/I) is a potentially serious problem that affects all sewerage systems. The NPDES permit requires the MWRA to address issues associated with I/I. Inflow is defined as the introduction of non-sanitary sewer water such as stormwater, residential basement pump-out, and industrial cooling water, into sanitary sewers. Infiltration is the leakage of groundwater into sewage lines through cracks, inadequately sealed joints, etc. In both cases, this additional load decreases system capacity, potentially leading to SSOs. I/I poses both a wet and dry weather problem; however, wet weather exacerbates I/I problems.

A summary of all actions minimizing I/I is prepared annually by MWRA. In addition, the MWRA participates in a Regional I/I Task Force responsible for creating a Regional I/I Reduction Plan for both MWRA and local community collection systems. The I/I Task Force includes MWRA staff, state regulators, and representatives from local communities. To reduce I/I, the MWRA "may consider incentive programs, rate structures, grant and loan programs, technical assistance and public education efforts as well as regulatory and enforcement mechanisms…" (permit section 18.bb.iv) At the end of FY03, MWRA submitted the Regional I/I Reduction Plan for regulatory review.

Find permit-related I/I materials at:
http://www.mwra.state.ma.us/harbor/html/operations.htm

VI: Miscellaneous NPDES Permit Requirements

Overview

The MWRA's NPDES permit includes a number of other sections other than effluent quality for Deer Island and the CSO facilities, making it one of the most comprehensive permits ever issued by EPA.

VI.A Facility Best Management Practices Plans

Best Management Practices Plans (BMPs) are designed to minimize the environmental impact of MWRA facilities. The MWRA has developed plans for the following facilities:

- Deer Island Treatment Plant
- Nut Island Headworks
- Ward Street Headworks
- Columbus Park Headworks
- Chelsea Creek Headworks
- Cottage Farm CSO facility
- Prison Point CSO facility
- Somerville Marginal CSO facility
- Fox Point CSO facility
- Commercial Point CSO facility
- Fore River Pelletizing Plant

The objectives of BMPs are "(1) minimize the potential for violations of the permit, (2) protect the designated water uses of the surrounding water bodies, and (3) mitigate pollution from materials storage areas, site runoff, improper use of waste disposal system, accidental spillage, etc." (permit section 9.a)

BMPs are available at the above facilities or by request.

VI.B Water Conservation / Dry Day Flow Limit

As described in the Executive Summary, one of the requirements of the permit is the adherence to a 436 MGD dry day flow limit. In FY04, the MWRA was well within compliance for this limit. See Figure 2 in the Executive Summary for details. If dry day flow reaches 415 MGD, MWRA cannot accept new connections larger than 1.4 MGD.

Additionally, a report is prepared annually documenting the MWRA's demand management program. The demand management program, run with the cooperation of member communities, reviews historical water and wastewater use, and looks at the effectiveness of past and future conservation programs.

Find permit-related water conservation and dry day flow limit materials at: http://www.mwra.state.ma.us/harbor/html/flow.htm

VI.C Pollution Prevention Program

The pollution prevention requirement of the permit requires MWRA to develop strategies to reduce pollutant loadings from households and permitted industries in the service area. The main target of the program is polychlorinated biphenyls, or PCBs, a known human carcinogen. Manufacture of PCBs has been banned for several decades; however, quantities remain in the environment. The other main aspect of the program is the development of educational materials regarding domestic household hazardous waste, with the aim of preventing those materials from entering the MWRA sewerage system through proper disposal techniques.

For more information on the MWRA's pollution prevention program, visit: http://www.mwra.state.ma.us/harbor/html/pollution.htm

VI.D Groundwater Remediation

Currently, groundwater remediation site waters cannot be discharged into the MWRA sewer system. If this prohibition is ever relaxed, a comprehensive assessment of its effects on the sewage system and treatment process is required. As of the end of FY04, no action has been taken on this section.

VI.E Local Limits and Industrial Pretreatment Programs

These two related programs deal exclusively with non-domestic users, which are primarily industry. Under the local limits program, the MWRA develops and enforces specific limits on effluent from industrial users.

The industrial pretreatment program requires the MWRA to inspect and sample industrial users as specified by 40 CFR (Code of Federal Regulations) Part 403. 40 CFR Part 403 is designed as a source reduction program to limit the amount of pollutants in treatment plant influent.

Both programs result in cleaner influent to Deer Island, reducing stress on the plant, improving the efficiency of the treatment process, and reducing "pass-through" of contaminants to the effluent. Additionally, the sludge produced is cleaner and more amenable to safe fertilizer production.

More information on local limits and the pretreatment program is on-line at: http://www.mwra.state.ma.us/harbor/html/local.htm

VI.F Reporting

Finally, the permit also requires the MWRA to provide the public with easy access to permit compliance reports and other information.

MWRA maintains a NPDES permit website at: http://www.mwra.state.ma.us/harbor/html/ditp_performance.htm

EPA maintains an electronic mailing list for permit-related announcements: http://www.epa.gov/region1/eco/mwra/listserv.html

Finally, there are two library repositories for permit documents:

MWRA Library
Charlestown Navy Yard
100 First Avenue
Boston, MA 02129

Hyannis Public Library
401 Main Street
Hyannis, MA 02601

Appendix A

Table A-1. Deer Island Treatment Plant Operations Summary, FY04

North System Influent

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Flow (mgd)															
Average	209.5	224.6	201.3	226.0	224.5	300.1	230.8	207.1	212.8	375.2	246.8	199.7		238.2	
Minimum	183.9	175.1	176.6	171.6	188.9	194.9	197.6	181.6	184.0	241.0	198.0	174.7	171.6		
Maximum	298.2	357.9	291.1	435.0	331.2	537.4	295.1	319.0	539.0	829.5	404.9	263.2			829.5
Temperature (deg F)															
Average	70.9	71.9	69.9	68.1	65.9	60.8	59.3	61.8	61.3	55.4	61.4	66.0		64.4	
Minimum	67.8	69.6	66.7	61.2	61.9	48.2	54.1	55.4	55.6	50.0	56.7	61.2	48.2		
Maximum	73.0	73.9	74.5	72.9	69.8	65.1	63.0	67.5	67.8	59.4	64.9	69.1			74.5
pH (SU)															
Average	6.9	6.8	6.8	6.9	6.7	6.5	6.5	6.6	6.7	6.7	6.8	6.9		6.7	
Minimum	6.6	6.2	6.5	6.7	6.2	6.1	6.2	6.1	5.9	6.3	6.4	6.6	5.9		
Maximum	7.2	7.3	7.1	7.2	7.2	6.8	7.1	7.0	7.2	7.1	7.4	7.1			7.4

North System Influent: Conventional Parameters (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Total Suspended Solids															
Average	209	218	239	268	258	190	294	242	245	140	198	246		229	
Minimum	132	122	172	186	180	122	200	118	168	72	127	170	72		
Maximum	382	472	336	480	364	340	484	368	329	206	264	532			532
cBOD															
Average	109	106	134	138	144	103	149	141	149	80	111	119		124	
Minimum	69	81	95	83	110	64	97	99	112	35	47	78	35		
Maximum	156	176	213	212	204	153	208	229	181	116	171	156			229
Settleable Solids (mL/L)															
Average	7.1	6.8	8.0	7.9	7.8	5.3	13.1	7.9	7.5	3.4	5.7	10.2		7.6	
Minimum	3.0	2.0	5.0	2.0	1.5	0.2	4.0	5.0	5.0	0.1	2.5	3.0	0.1		
Maximum	20.0	22.0	14.0	19.0	14.0	19.0	37.0	24.0	16.0	11.0	10.0	110.0			110.0
Total Solids															
Average	2069	1713	1642	1458	1410	1533	1455	1397	1434	1017	1281	1646		1505	
Minimum	1200	1240	1060	860	980	960	976	900	908	680	968	1340	680		
Maximum	8660	2540	2310	2190	1830	3300	2510	1980	2590	1400	1640	2260			8660
Volatile Solids															
Average	726	476	484	465	446	346	468	429	422	270	361	501		450	
Minimum	352	312	320	288	312	172	308	148	328	192	224	352	148		
Maximum	6590	748	724	924	744	648	684	712	584	396	468	800			6590
Volatile Suspended Solids															
Average	178	185	206	231	226	166	259	211	215	121	173	215		199	
Minimum	118	108	156	140	156	106	180	102	150	60	103	150	60		
Maximum	316	408	256	408	312	276	422	308	276	186	228	448			448

Table A-1. Deer Island Treatment Plant Operations Summary, FY04 (cont.)

North System Influent: Conventional Parameters (mg/L; cont.)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
BOD															
Average	164	158	205	221	216	164	236	222	217	127	165	201		191	
Minimum	105	97	170	138	174	103	172	144	155	65	83	140	65		
Maximum	278	205	271	353	280	313	299	347	307	204	216	431			431
COD															
Average	416	381	467	515	487	331	519	521	485	264	373	457		435	
Minimum	292	62	380	300	279	178	407	106	374	115	187	363	62		
Maximum	574	569	604	819	600	526	694	1190	670	394	496	664			1190
Chloride															
Average	728	634	578	475	500	644	507	476	535	368	441	599		540	
Minimum	432	426	292	268	300	338	285	310	248	203	312	378	203		
Maximum	1070	967	857	877	677	1580	974	853	1200	554	652	957			1580

North System Influent: Nutrients (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Ammonia															
Average	18.2	18.0	23.7	22.4	23.7	14.8	22.0	22.3	20.0	12.2	21.3	23.7		20.2	
Minimum	13.6	15.5	22.0	7.8	22.1	10.8	19.2	21.8	15.8	9.2	18.5	18.8	7.8		
Maximum	23.2	21.4	26.6	28.2	25.0	20.2	24.7	23.1	21.8	13.4	23.2	26.1			28.2
Nitrite															
Average	0.60	0.33	0.02	0.18	0.01	0.42	0.01	0.01	0.11	0.20	0.15	0.13		0.18	
Minimum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.13	0.01	0.01	0.01		
Maximum	2.98	0.85	0.02	0.71	0.01	1.01	0.01	0.01	0.44	0.27	0.36	0.65			2.98
Nitrate															
Average	0.09	0.08	0.01	0.11	0.01	0.40	0.01	0.01	0.10	0.88	0.12	0.01		0.15	
Minimum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.13	0.01	0.01	0.01		
Maximum	0.40	0.17	0.03	0.39	0.01	1.10	0.02	0.01	0.38	1.62	0.39	0.05			1.62
Total Kjeldahl Nitrogen															
Average	27.2	28.1	38.2	37.7	37.9	24.9	35.1	38.4	31.5	20.6	28.0	38.1		32.1	
Minimum	22.8	23.3	34.7	16.0	35.1	19.8	33.0	34.7	27.9	16.2	21.4	29.9	16.0		
Maximum	31.3	30.7	43.3	47.4	39.3	33.9	37.1	44.0	33.8	24.1	31.6	45.0			47.4
Orthophosphates															
Average	2.1	2.4	2.8	2.5	3.1	1.8	2.6	2.5	2.1	1.2	2.0	2.7		2.3	
Minimum	1.4	1.9	2.4	0.6	2.8	1.0	2.1	2.2	1.5	1.0	1.6	1.8	0.6		
Maximum	2.9	2.8	3.3	3.3	3.6	2.7	3.1	2.7	2.5	1.2	2.4	3.1			3.6
Total Phosphorus															
Average	4.8	4.8	6.1	5.9	6.8	4.4	6.3	5.9	6.3	3.4	4.7	6.1		5.5	
Minimum	3.6	4.4	5.4	3.0	6.2	3.2	6.1	4.6	5.7	2.7	3.7	4.5	2.7		
Maximum	6.0	5.3	6.7	7.4	7.2	5.6	6.4	6.8	7.5	3.6	5.3	7.8			7.8

Table A-1. Deer Island Treatment Plant Operations Summary, FY04 (cont.)

South System Influent

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Flow (mgd)															
Average	98.2	94.4	84.0	91.7	106.8	170.3	120.0	99.8	103.2	208.1	132.7	99.6		117.4	
Minimum	69.7	75.6	80.0	71.2	95.3	97.7	99.2	90.7	90.9	140.5	112.5	86.3	69.7		
Maximum	116.9	128.5	93.5	169.2	118.9	306.3	153.8	134.1	152.4	337.1	180.0	115.2			337.1
Temperature (deg F)															
Average	66.3	67.8	68.1	65.7	61.9	56.5	53.5	52.4	53.4	52.7	58.8	62.8		60.0	
Minimum	61.9	66.4	66.7	61.5	59.5	52.0	51.1	50.9	51.3	48.6	54.9	59.9	48.6		
Maximum	77.5	75.9	71.4	69.6	64.6	67.8	55.9	54.1	60.8	58.1	68.5	68.9			77.5
pH (SU)															
Average	6.6	6.6	6.7	6.6	6.5	6.2	6.2	6.1	6.3	6.4	6.7	6.7		6.5	
Minimum	6.4	6.3	6.4	6.4	6.2	5.9	5.7	5.8	5.9	5.8	6.4	6.5	5.7		
Maximum	7.4	7.1	7.0	6.9	6.9	6.7	6.7	6.8	6.8	6.7	7.3	6.9			7.4

South System Influent: Conventional Parameters (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Total Suspended Solids															
Average	398	198	184	244	328	190	250	208	228	109	307	273		243	
Minimum	134	58	134	84	128	58	94	78	66	50	148	162	50		
Maximum	696	357	220	380	676	368	570	362	374	204	632	630			696
cBOD															
Average	175	121	147	144	148	100	129	140	139	65	134	131		131	
Minimum	99	69	106	78	74	43	72	96	80	41	77	87	41		
Maximum	228	204	183	211	285	173	237	207	202	128	255	208			285
Settleable Solids (mL/L)															
Average	18.8	11.2	10.3	13.2	16.5	11.1	15.9	16.2	13.6	3.9	10.6	9.0		12.5	
Minimum	2.0	4.0	8.5	5.0	5.5	1.6	0.2	5.0	5.0	0.2	4.0	5.5	0.2		
Maximum	40.0	25.0	13.0	24.0	28.0	32.0	44.0	70.0	37.0	8.0	32.0	25.0			70.0
Total Solids															
Average	1512	1420	1661	1385	1335	1071	1011	1234	1262	838	1207	1441		1282	
Minimum	1060	1100	1160	972	980	672	448	888	812	664	884	1170	448		
Maximum	1840	1880	2430	1820	1960	1930	1370	3520	1780	1040	1600	2210			3520
Volatile Solids															
Average	563	422	471	438	476	311	357	457	402	232	442	484		421	
Minimum	276	232	280	264	300	64	156	184	244	160	260	328	64		
Maximum	748	596	640	628	728	540	700	2610	584	396	776	1090			2610
Volatile Suspended Solids															
Average	346	173	164	214	286	166	222	182	202	96	270	241		214	
Minimum	124	50	120	72	120	50	82	70	56	44	133	144	44		
Maximum	604	293	193	352	604	328	500	312	334	182	552	544			604

Table A-1. Deer Island Treatment Plant Operations Summary, FY04 (cont.)

South System Influent: Conventional Parameters (mg/L; cont.)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
BOD															
Average	252	175	204	214	230	156	203	201	198	102	234	226		200	
Minimum	118	83	166	113	134	57	113	138	107	58	107	133	57		
Maximum	389	317	234	355	358	370	304	314	290	176	568	399			568
COD															
Average	644	435	461	530	584	354	474	468	474	213	555	515		476	
Minimum	356	217	356	252	308	109	236	300	233	124	185	369	109		
Maximum	899	698	531	803	992	711	813	704	752	318	1200	975			1200
Chloride															
Average	486	513	617	460	440	392	335	405	447	307	353	475		436	
Minimum	343	369	396	343	328	274	276	258	314	249	276	380	249		
Maximum	658	992	1030	649	771	812	480	780	688	414	449	647			1030

South System Influent: Nutrients (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Ammonia															
Average	16.8	17.7	20.4	17.9	17.0	12.7	15.0	18.0	19.2	8.3	14.6	20.6		16.5	
Minimum	14.6	13.8	19.7	11.0	14.3	6.1	12.6	15.5	17.2	6.5	9.9	18.2	6.1		
Maximum	19.5	20.8	21.5	21.7	19.1	18.1	17.2	21.7	21.9	10.5	18.7	24.1			24.1
Nitrite															
Average	0.01	0.01	0.02	0.01	0.01	0.18	0.01	0.01	0.01	0.18	0.01	0.01		0.04	
Minimum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.07	0.01	0.01	0.01		
Maximum	0.01	0.02	0.02	0.01	0.01	0.36	0.01	0.01	0.02	0.27	0.01	0.01			0.36
Nitrate															
Average	0.01	0.01	0.01	0.01	0.01	0.28	0.01	0.01	0.01	0.68	0.01	0.01		0.09	
Minimum	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
Maximum	0.01	0.01	0.02	0.02	0.01	1.09	0.01	0.01	0.04	1.53	0.01	0.01			1.53
Total Kjeldahl Nitrogen															
Average	32.8	28.6	32.9	32.6	34.0	22.3	27.0	28.9	29.1	15.2	27.5	34.8		28.8	
Minimum	25.4	22.5	31.7	20.0	26.9	12.3	20.5	24.7	21.3	13.9	16.9	30.5	12.3		
Maximum	39.0	31.7	34.6	38.5	37.7	38.4	30.3	31.2	36.4	16.9	35.9	40.8			40.8
Orthophosphates															
Average	2.2	2.3	2.6	2.2	2.5	1.4	1.8	2.1	2.0	0.7	1.7	2.5		2.0	
Minimum	1.8	1.6	2.5	1.1	2.2	0.5	1.5	1.9	1.7	0.5	0.9	2.1	0.5		
Maximum	2.7	2.6	2.8	2.8	2.8	2.2	2.1	2.4	2.5	0.9	2.3	3.0			3.0
Total Phosphorus															
Average	6.1	5.0	9.7	5.5	7.1	4.6	4.9	4.5	5.5	2.7	5.4	6.1		5.6	
Minimum	4.6	3.9	5.3	3.5	5.2	2.2	3.4	4.2	3.6	2.2	3.5	5.2	2.2		
Maximum	8.7	6.2	18.0	6.8	8.7	7.6	5.9	5.4	7.8	3.1	6.8	7.0			18.0

Table A-1. Deer Island Treatment Plant Operations Summary, FY04 (cont.)

Flow-Weighted Influent (North+South Systems): Conventional Parameters (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Total Suspended Solids															
Average	269	212	223	261	281	190	279	231	240	129	236	255	129	234	281
cBOD															
Average	130	111	138	140	145	102	142	141	146	75	119	123	75	126	146
Settleable Solids (mL/L)															
Average	10.8	8.1	8.6	9.4	10.6	7.4	14.0	10.6	9.5	3.6	7.4	9.8	3.6	9.2	14.0
Total Solids															
Average	1891	1626	1648	1437	1386	1366	1303	1344	1378	953	1255	1578	953	1430	1891
Volatile Solids															
Average	674	460	481	457	455	333	430	438	416	257	389	495	257	440	674
Volatile Suspended Solids															
Average	232	182	194	226	245	166	246	202	211	112	207	224	112	204	246
BOD															
Average	192	163	205	219	220	161	224	215	211	118	189	209	118	194	224
COD															
Average	489	397	465	519	518	339	504	504	481	246	436	476	246	448	519
Chloride															
Average	651	598	590	471	481	553	448	453	506	346	410	557	346	505	651

Flow-Weighted Influent (North+South Systems): Nutrients (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Ammonia															
Average	17.7	17.9	22.7	21.1	21.5	14.0	19.6	20.9	19.7	10.8	19.0	22.7	10.8	19.0	22.7
Nitrite															
Average	0.41	0.24	0.02	0.13	0.01	0.33	0.01	0.01	0.08	0.19	0.10	0.09	0.01	0.13	0.41
Nitrate															
Average	0.06	0.06	0.01	0.08	0.01	0.35	0.01	0.01	0.07	0.81	0.08	0.01	0.01	0.13	0.81
Total Kjeldahl Nitrogen															
Average	29.0	28.2	36.6	36.2	36.6	24.0	32.3	35.3	30.7	18.7	27.8	37.0	18.7	31.0	37.0
Orthophosphates															
Average	2.1	2.3	2.8	2.4	2.9	1.7	2.3	2.3	2.1	1.0	1.9	2.7	1.0	2.2	2.9
Total Phosphorus															
Average	5.2	4.8	7.1	5.8	6.9	4.5	5.8	5.4	6.0	3.1	4.9	6.1	3.1	5.5	7.1

Table A-1. Deer Island Treatment Plant Operations Summary, FY04 (cont.)

Final Effluent	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Flow (mgd)															
Average	307.4	319.0	285.2	317.5	331.2	470.4	350.8	306.9	315.9	583.3	379.5	299.2		355.5	
Minimum	258.6	253.3	258.2	246.0	291.5	292.3	298.3	274.6	275.2	381.3	310.5	263.0	246.0		
Maximum	397.5	462.4	382.5	604.0	446.9	807.7	448.9	432.1	691.3	1131.9	573.9	377.7			1131.9
Temperature (deg F)															
Average	68.7	70.6	69.8	67.6	64.5	58.2	56.3	55.7	56.6	55.5	61.7	65.3		62.5	
Minimum	66.2	69.4	65.5	65.1	62.6	51.4	54.9	51.6	54.5	49.8	58.5	61.9	49.8		
Maximum	71.6	72.0	71.2	69.6	66.7	62.8	58.6	57.0	58.1	64.0	63.9	68.0			72.0
pH (SU)*															
Average	6.6	6.5	6.6	6.7	6.6	6.5	6.5	6.6	6.6	6.6	6.6	6.6		6.6	
Minimum	6.3	6.3	6.2	6.4	6.2	6.3	6.3	6.3	6.2	6.2	6.4	6.5	6.2		
Maximum	7.0	6.9	6.9	6.9	6.9	6.9	6.7	6.9	6.9	6.9	7.0	6.8			7.0

Final Effluent: Conventional Parameters (mg/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Total Suspended Solids															
Average	13.4	12.2	13.7	17.5	14.9	23.2	19.0	18.8	18.5	21.8	18.0	13.6		17.1	
Minimum	6.0	5.0	6.0	5.5	8.0	11.0	10.5	12.0	8.5	9.5	8.5	5.0	5.0		
Maximum	27.5	33.1	56.2	47.3	37.5	78.0	26.0	27.0	35.3	45.0	34.0	26.0			78.0
cBOD															
Average	8.3	6.1	7.0	11.4	11.4	15.7	12.8	16.0	15.9	15.5	11.9	10.3		11.9	
Minimum	4.6	2.9	3.9	4.7	4.1	8.3	8.3	8.9	9.9	10.1	6.1	5.3	2.9		
Maximum	17.1	17.7	21.0	25.3	30.6	49.8	20.3	24.4	26.1	23.4	22.6	23.8			49.8
Settleable Solids (mL/L)															
Average	0.1	0.1	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	
Minimum	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
Maximum	0.1	0.2	0.1	6.0	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1			6.0
Total Chlorine Residual*															
Average	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03		0.03	
Minimum	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03		
Maximum	0.03	0.03	0.30	0.03	0.17	0.43	0.03	0.03	0.03	0.03	0.03	0.03			0.43
Fecal Coliform (colonies/100mL)*															
Geometric Mean	12	20	27	32	30	62	35	25	27	75	34	34		31	
Minimum	5	5	5	5	6	5	5	5	8	9	10	9	5		
Maximum	448	766	1196	3876	6180	2899	758	136	221	15223	290	348			15223
Total Solids															
Average	1275	1222	1303	1189	1057	1037	963	1101	1115	858	959	1232		1109	
Minimum	804	872	940	784	788	668	720	860	720	532	808	1020	532		
Maximum	1640	1690	2260	1870	1700	2220	1380	1810	1680	1230	1210	1650			2260

Table A-1. Deer Island Treatment Plant Operations Summary, FY04 (cont.)

Final Effluent: Conventional Parameters (mg/L; cont.)	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Min**	**Annual Average**	**Max**
Volatile Solids															
Average	268	249	246	209	171	152	174	190	182	152	172	234		200	
Minimum	160	124	108	88	92	72	88	104	84	72	92	156	72		
Maximum	376	408	436	384	300	324	456	324	260	260	260	372			456
Volatile Suspended Solids															
Average	11.7	10.9	12.5	15.3	13.1	19.8	16.5	16.4	16.1	18.5	16.0	12.3		14.9	
Minimum	5.5	5.0	5.5	5.0	7.3	10.0	9.0	10.5	8.0	10.0	7.0	5.0	5.0		
Maximum	24.0	28.5	51.2	40.7	32.5	62.0	22.5	23.0	28.0	33.5	30.5	23.0			62.0
BOD															
Average	23.7	19.7	19.2	18.8	17.1	23.5	19.5	24.1	22.5	24.0	21.2	19.6		21.1	
Minimum	10.4	10.9	12.8	6.8	8.7	13.4	12.2	15.3	12.0	14.9	9.2	9.3	6.8		
Maximum	40.7	42.6	35.7	45.0	34.8	60.3	26.8	33.4	38.0	36.6	34.4	42.0			60.3
COD															
Average	80	70	82	97	88	86	83	98	96	80	80	92		86	
Minimum	52	45	57	58	62	41	64	79	77	60	59	74	41		
Maximum	120	110	182	165	122	133	107	117	118	103	113	170			182
Total Organic Carbon															
Average	21.3	13.1	18.2	26.2	14.8	28.1	17.9	28.5	24.3	20.0	20.2	19.5		21.0	
Minimum	19.0	12.4	17.7	25.6	13.4	25.1	17.3	24.6	22.7	19.2	16.0	18.7	12.4		
Maximum	23.6	13.8	18.7	26.8	16.1	31.1	18.4	32.3	25.9	20.8	24.3	20.2			32.3
Chloride															
Average	538	508	533	494	473	472	417	461	494	352	375	512		469	
Minimum	375	323	346	307	318	296	307	309	311	211	303	420	211		
Maximum	745	840	966	850	806	1070	610	783	945	534	508	710			1070
Fats, Oils, and Grease															
Average	7.0	7.0	7.0	16.4	7.0	8.7	7.0	7.0	7.0	7.0	7.0	7.0		7.9	
Minimum	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		
Maximum	7.0	7.0	7.0	54.0	7.0	14.0	7.0	7.0	7.0	7.0	7.0	7.0			54.0

Table A-1. Deer Island Treatment Plant Operations Summary, FY04 (cont.)

Final Effluent: Nutrients (mg/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Min	Annual Average	Max
Ammonia															
Average	16.7	18.1	21.7	20.9	21.1	16.2	17.9	21.4	21.6	9.1	16.4	21.6		18.6	
Minimum	13.1	14.4	18.8	10.2	16.4	8.7	13.2	19.2	17.3	7.5	12.6	17.5	7.5		
Maximum	21.0	22.2	25.1	27.7	25.1	22.0	23.8	26.0	25.4	10.3	19.1	28.0			28.0
Nitrite															
Average	0.15	0.22	0.15	0.24	0.28	0.33	0.13	0.06	0.17	0.31	0.18	0.29		0.21	
Minimum	0.03	0.13	0.02	0.01	0.22	0.01	0.06	0.02	0.01	0.28	0.07	0.24	0.01		
Maximum	0.20	0.33	0.20	0.40	0.38	0.69	0.22	0.08	0.48	0.39	0.37	0.34			0.69
Nitrate															
Average	1.95	2.27	1.81	0.34	1.21	1.67	1.78	2.01	2.09	2.98	1.92	3.07		1.93	
Minimum	0.05	1.72	0.04	0.03	0.83	0.02	1.23	0.02	0.04	1.85	0.01	2.49	0.01		
Maximum	3.34	3.74	2.60	0.61	1.68	3.08	2.18	3.14	3.75	3.88	3.15	3.83			3.88
Total Kjeldahl Nitrogen															
Average	22.0	19.7	25.1	26.9	21.8	19.7	19.2	23.8	24.3	12.6	17.8	23.3		21.4	
Minimum	15.3	16.1	22.9	12.2	13.4	12.0	14.3	21.4	19.8	11.0	12.7	19.5	11.0		
Maximum	29.8	22.9	28.7	33.3	27.6	27.2	21.8	25.9	28.4	14.1	21.6	32.2			33.3
Orthophosphates															
Average	1.9	2.1	2.3	2.1	2.6	1.5	1.7	2.1	2.2	0.9	1.9	2.4		2.0	
Minimum	1.2	1.6	1.9	1.2	2.3	0.7	1.5	1.8	1.9	0.7	1.2	1.9	0.7		
Maximum	2.5	2.7	2.8	2.9	2.9	2.3	1.9	2.5	2.7	1.1	2.4	3.2			3.2
Total Phosphorus															
Average	2.8	2.5	2.8	2.9	3.3	2.4	2.6	3.0	3.7	1.8	2.6	3.3		2.8	
Minimum	1.9	2.0	2.3	1.7	2.8	1.6	2.3	2.6	3.1	1.7	2.1	2.6	1.6		
Maximum	3.4	3.1	3.3	3.8	3.7	3.2	2.9	3.3	5.2	2.0	3.0	4.0			5.2

~: No data collected

*: Effluent pH, TCR, and fecal coliform are sampled multiple times daily. The minimum and maximum are the minimum and maximum daily averages, not single sample minimums and maximums.

Table A-2. Deer Island Influent Characterization (North & South Systems), FY04

Metals (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
ANTIMONY	~	~	~	12.5	~	12.5	12.5	12.5	12.5	~	12.5	12.5	12.5	12.5	0 of 28
ARSENIC	~	~	~	**0.968**	~	**0.822**	**1.7**	**1.04**	**0.9**	~	**1.85**	0.4	1.2	2.13	15 of 28
BERYLLIUM	~	~	~	0.25	~	0.25	0.25	0.25	0.25	~	0.25	0.25	0.25	0.25	0 of 28
BORON	~	~	~	**315**	~	125	125	125	219	~	125	**155**	160	339	8 of 28
CADMIUM	~	~	~	**0.696**	~	**0.475**	**0.737**	**0.642**	**0.373**	~	**0.496**	**0.331**	0.54	0.901	28 of 28
CHROMIUM	~	~	~	**13.2**	~	**3.08**	**6.72**	**7.05**	**3.46**	~	**6.59**	**2.87**	6.08	17.7	28 of 28
COPPER	~	~	~	**124**	~	**64.2**	**98.3**	**93.2**	**60.2**	~	**66.8**	**55.2**	79.2	152	28 of 28
HEXAVALENT CHROMIUM	~	~	~	2.5	~	2.5	2.5	2.5	2.5	~	2.5	2.5	2.5	2.5	0 of 28
IRON	~	~	~	**3430**	~	**1720**	**3080**	**3010**	**1980**	~	**2270**	**1720**	2460	4340	28 of 28
LEAD	~	~	~	**14.1**	~	**10.2**	**18.8**	**21.8**	**7.76**	~	**16.8**	**7.2**	14.4	31.6	28 of 28
MERCURY	~	~	~	**0.564**	~	**0.175**	**0.239**	**0.359**	**0.227**	~	**0.134**	**0.142**	0.245	0.805	30 of 30
MOLYBDENUM	~	~	~	**9.09**	~	**8.95**	**6.09**	**8.99**	**6.23**	~	**9.9**	**11.2**	8.63	11.9	28 of 28
NICKEL	~	~	~	**7.51**	~	**4.09**	**4.95**	**6.62**	**5.07**	~	**4.87**	**2.7**	5.05	8.79	28 of 28
SELENIUM	~	~	~	0.45	~	0.45	0.45	0.45	0.45	~	0.45	0.45	0.45	0.45	0 of 28
SILVER	~	~	~	**3.52**	~	**2.85**	**3.03**	**2.69**	**2.23**	~	**1.42**	**2.13**	2.46	4.38	28 of 28
THALLIUM	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
ZINC	~	~	~	**217**	~	**110**	**176**	**174**	**114**	~	**120**	**103**	143	281	28 of 28

Cyanide (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
CYANIDE	~	~	~	5	~	5	5	**7.73**	5	~	5	5	5.39	11	1 of 28

Oil and Grease, Surfactants, and Petroleum Hydrocarbons (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
FATS OIL AND GREASE	~	~	~	**60.1**	~	**52.2**	**56.9**	**59.1**	**67.8**	~	**27.1**	**46.8**	53.8	72.1	26 of 26
MBAS	~	~	~	**5.02**	~	**3.71**	**1.98**	**4.04**	**5.0**	~	**2.89**	**4.79**	3.7	5.5	28 of 28
PETROLEUM HYDROCARBON	~	~	~	**0.893**	~	**1.91**	**1.74**	**3.02**	**2.76**	~	**0.619**	**1.4**	1.71	3.86	28 of 28

Table A-2. Deer Island Influent Characterization (North & South Systems), FY04 (cont.)

Organochlorine Pesticides and PCBs (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
2,4'-DDD	~	~	~	0.0000548	~	0.000114	~	0.0000582	~	~	~	**0.000309**	0.000128	0.000512	2 of 44
2,4'-DDE	~	~	~	0.0000548	~	0.000114	~	0.0000582	~	~	~	0.0000934	0.000073	0.000114	0 of 44
2,4'-DDT	~	~	~	0.0000548	~	0.000114	~	0.0000582	~	~	~	0.0000934	0.000073	0.000114	0 of 44
4,4'-DDD	~	~	~	**0.00172**	~	**0.00145**	0.00234	**0.0033**	0.00228	~	0.00203	**0.000836**	0.00199	0.00415	35 of 75
4,4'-DDE	~	~	~	**0.00273**	~	**0.0021**	0.00234	**0.00371**	0.00228	~	0.00203	**0.00236**	0.00249	0.00416	46 of 75
4,4'-DDT	~	~	~	**0.00373**	~	**0.00127**	0.00234	**0.0013**	0.00228	~	0.00203	**0.00115**	0.00218	0.00494	27 of 75
ALDRIN	~	~	~	0.000755	~	0.00113	0.00234	0.000525	0.00228	~	0.00203	0.000542	0.0014	0.00238	0 of 75
ALPHA-BHC	~	~	~	0.00219	~	0.00221	0.00234	0.00218	0.00228	~	0.00203	0.00234	0.00221	0.00238	0 of 26
ALPHA-CHLORDANE	~	~	~	**0.00465**	~	**0.00322**	0.00234	**0.00308**	0.00228	~	0.00203	**0.00334**	0.00304	0.00602	48 of 75
AROCLOR-1016	~	~	~	0.0548	~	0.0554	0.0586	0.0544	0.0569	~	0.0508	0.0584	0.0554	0.0599	0 of 26
AROCLOR-1221	~	~	~	0.11	~	0.111	0.118	0.109	0.114	~	0.101	0.117	0.111	0.12	0 of 26
AROCLOR-1232	~	~	~	0.0548	~	0.0554	0.0586	0.0544	0.0569	~	0.0508	0.0584	0.0554	0.0599	0 of 26
AROCLOR-1242	~	~	~	0.0548	~	0.0554	0.0586	0.0544	0.0569	~	0.0508	**0.167**	0.0699	0.276	1 of 26
AROCLOR-1248	~	~	~	0.0548	~	0.0554	0.0586	0.0544	0.0569	~	0.0508	0.0584	0.0554	0.0599	0 of 26
AROCLOR-1254	~	~	~	0.0548	~	0.0554	0.0586	0.0544	0.0569	~	0.0508	0.0584	0.0554	0.0599	0 of 26
AROCLOR-1260	~	~	~	0.0548	~	0.0554	0.0586	0.0544	0.0569	~	0.0508	0.0584	0.0554	0.0599	0 of 26
BETA-BHC	~	~	~	0.00219	~	0.00221	0.00234	0.00218	0.00228	~	0.00203	0.00234	0.00221	0.00238	0 of 26
CHLORDANE (TECHNICAL)	~	~	~	0.0548	~	0.0554	0.0586	0.0544	0.0569	~	0.0508	0.0584	0.0554	0.0599	0 of 26
DDMU	~	~	~	0.0000548	~	0.000114	~	0.0000582	~	~	~	0.0000934	0.000073	0.000114	0 of 44
DELTA-BHC	~	~	~	0.00219	~	0.00221	0.00234	0.00218	0.00228	~	0.00203	0.00234	0.00221	0.00238	0 of 26
DIELDRIN	~	~	~	0.000755	~	0.00113	0.00234	0.000525	0.00228	~	0.00203	0.000542	0.0014	0.00238	0 of 75
ENDOSULFAN I	~	~	~	0.00219	~	0.00221	0.00234	0.00218	0.00228	~	0.00203	0.00234	0.00221	0.00238	0 of 26
ENDOSULFAN II	~	~	~	0.00219	~	0.00221	0.00234	0.00218	0.00228	~	0.00203	0.00234	0.00221	0.00238	0 of 26
ENDOSULFAN SULFATE	~	~	~	0.00219	~	0.00221	0.00234	0.00218	0.00228	~	0.00203	0.00234	0.00221	0.00238	0 of 26
ENDRIN	~	~	~	0.000755	~	0.00113	0.00234	0.000525	0.00228	~	0.00203	0.000542	0.0014	0.00238	0 of 75
ENDRIN ALDEHYDE	~	~	~	0.00219	~	0.00221	0.00234	0.00218	0.00228	~	0.00203	0.00234	0.00221	0.00238	0 of 26
ENDRIN KETONE	~	~	~	0.00219	~	0.00221	0.00234	0.00218	0.00228	~	0.00203	0.00234	0.00221	0.00238	0 of 26
GAMMA-BHC (LINDANE)	~	~	~	**0.00142**	~	0.00113	0.00234	0.000525	0.00228	~	0.00203	0.000542	0.00153	0.00238	3 of 75
GAMMA-CHLORDANE	~	~	~	**0.00484**	~	**0.00327**	0.00234	**0.00281**	0.00228	~	0.00203	**0.00371**	0.00309	0.00634	48 of 75
HEPTACHLOR	~	~	~	0.000755	~	0.00113	0.00234	0.000525	0.00228	~	0.00203	0.000542	0.0014	0.00238	0 of 75
HEPTACHLOR EPOXIDE	~	~	~	0.000755	~	0.00113	0.00234	0.000525	0.00228	~	0.00203	0.000542	0.0014	0.00238	0 of 75
HEXACHLOROBENZENE	~	~	~	0.0000548	~	**0.000183**	~	**0.000296**	~	~	~	**0.000224**	0.000179	0.000367	22 of 44
METHOXYCHLOR	~	~	~	0.0219	~	0.0221	0.0234	0.0218	0.0228	~	0.0203	0.0234	0.0221	0.0238	0 of 26
MIREX	~	~	~	0.0000548	~	0.000114	~	0.0000582	~	~	~	0.0000934	0.000073	0.000114	0 of 44
TOTAL CHLORDANE	~	~	~	**0.015**	~	**0.00877**	~	**0.00763**	~	~	~	**0.00921**	0.0108	0.0163	44 of 44
TOTAL DDT	~	~	~	**0.00834**	~	**0.00212**	~	**0.00869**	~	~	~	**0.00379**	0.0065	0.0108	42 of 44
TOXAPHENE	~	~	~	0.0548	~	0.0554	0.0586	0.0544	0.0569	~	0.0508	0.0584	0.0554	0.0599	0 of 26
TRANS-NONACHLOR	~	~	~	**0.00376**	~	**0.00162**	~	**0.00127**	~	~	~	**0.00157**	0.00226	0.00394	44 of 44

Table A-2. Deer Island Influent Characterization (North & South Systems), FY04 (cont.)

Semivolatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,2,4-TRICHLOROBENZENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
1,2-DICHLOROBENZENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
1,2-DIPHENYLHYDRAZINE (AS AZOBENZENE)	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
1,3-DICHLOROBENZENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
1,4-DICHLOROBENZENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2,2'-OXYBIS(1-CHLOROPROPANE)	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2,4,5-TRICHLOROPHENOL	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2,4,6-TRICHLOROPHENOL	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2,4-DICHLOROPHENOL	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2,4-DIMETHYLPHENOL	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2,4-DINITROPHENOL	~	~	~	2.11	~	2.93	2.53	2.43	2.32	~	2.01	2.11	2.33	3.56	0 of 31
2,4-DINITROTOLUENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2,6-DINITROTOLUENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2-CHLORONAPHTHALENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2-CHLOROPHENOL	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2-METHYL-4,6-DINITROPHENOL	~	~	~	10.6	~	14.6	12.6	12.1	11.6	~	10.1	10.5	11.7	17.8	0 of 31
2-METHYLNAPHTHALENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2-METHYLPHENOL	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2-NITROANILINE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
2-NITROPHENOL	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
3,3'-DICHLOROBENZIDINE	~	~	~	2.11	~	2.93	2.53	2.43	2.32	~	2.01	2.11	2.33	3.56	0 of 31
3-NITROANILINE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
4-BROMOPHENYL PHENYL ETHER	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
4-CHLORO-3-METHYLPHENOL	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
4-CHLOROANILINE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
4-CHLOROPHENYL PHENYL ETHER	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
4-METHYLPHENOL (INCLUDES 3-METHYLPHENOL)	~	~	~	**13.2**	~	**10.4**	**5.9**	**9.35**	**24.6**	~	1.01	**14.4**	10	28.7	22 of 31
4-NITROANILINE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
4-NITROPHENOL	~	~	~	2.11	~	2.93	2.53	2.43	2.32	~	2.01	2.11	2.33	3.56	0 of 31
ACENAPHTHENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
ACENAPHTHYLENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
ANILINE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
ANTHRACENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
BENZIDINE	~	~	~	5.29	~	7.31	6.32	6.07	**28.7**	~	**146**	5.26	38.9	266	2 of 31
BENZO(A)ANTHRACENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
BENZO(A)PYRENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31

Table A-2. Deer Island Influent Characterization (North & South Systems), FY04 (cont.)

Semivolatile Organics (ug/L)	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Average**	**Maximum**	**Times Detected**
BENZO(B)FLUORANTHENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
BENZO(GHI)PERYLENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
BENZO(K)FLUORANTHENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
BENZOIC ACID	~	~	~	**9.82**	~	2.93	2.53	2.43	**27.1**	~	2.01	2.11	6.16	40.9	5 of 31
BENZYL ALCOHOL	~	~	~	1.06	~	**3.72**	**4.59**	1.21	**9.45**	~	1.01	**11.6**	4.37	14.1	13 of 31
BIS(2-CHLOROETHOXY)METHANE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
BIS(2-CHLOROETHYL)ETHER	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
BIS(2-ETHYLHEXYL)PHTHALATE	~	~	~	**13.6**	~	**14.7**	**24.6**	**21.9**	**16.3**	~	**9.76**	**15.1**	16.5	25.9	31 of 31
BUTYL BENZYL PHTHALATE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
CARBAZOLE	~	~	~	~	~	~	~	~	1.16	~	1.01	1.05	1.06	1.19	0 of 12
CHRYSENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
DI-N-BUTYLPHTHALATE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
DI-N-OCTYLPHTHALATE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
DIBENZO(A,H)ANTHRACENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
DIBENZOFURAN	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
DIETHYL PHTHALATE	~	~	~	**1.76**	~	1.46	1.26	1.21	**5.05**	~	1.01	1.05	1.71	7.18	4 of 31
DIMETHYL PHTHALATE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
FLUORANTHENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
FLUORENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
HEXACHLOROBENZENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
HEXACHLOROBUTADIENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
HEXACHLOROCYCLOPENTADIENE	~	~	~	5.29	~	7.31	6.32	6.07	5.8	~	5.03	5.26	5.83	8.9	0 of 31
HEXACHLOROETHANE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
INDENO(1,2,3-CD)PYRENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
ISOPHORONE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
N-DECANE	~	~	~	~	~	~	~	~	~	~	~	**2.15**	2.15	3.19	1 of 4
N-NITROSODI-N-PROPYLAMINE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
N-NITROSODIMETHYLAMINE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
N-NITROSODIPHENYLAMINE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
N-OCTADECANE	~	~	~	~	~	~	~	~	~	~	~	**2.45**	2.45	3.79	2 of 4
NAPHTHALENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
NITROBENZENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31
PENTACHLOROPHENOL	~	~	~	3.17	~	4.39	3.79	3.64	3.48	~	3.02	3.16	3.5	5.34	0 of 31
PHENANTHRENE	~	~	~	0.106	~	0.146	**0.432**	**0.55**	1.16	~	1.01	1.05	0.668	1.19	5 of 31
PHENOL	~	~	~	2.11	~	2.93	2.53	**5.34**	2.32	~	2.01	**3.71**	2.92	8.66	2 of 31
PYRENE	~	~	~	1.06	~	1.46	1.26	1.21	1.16	~	1.01	1.05	1.17	1.78	0 of 31

Table A-2. Deer Island Influent Characterization (North & South Systems), FY04 (cont.)

Volatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,1,1-TRICHLOROETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
1,1,2,2-TETRACHLOROETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	**1.63**	0.5	0.719	2.68	1 of 28
1,1,2-TRICHLOROETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
1,1-DICHLOROETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
1,1-DICHLOROETHENE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
1,2-DICHLOROBENZENE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
1,2-DICHLOROETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
1,2-DICHLOROPROPANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
1,3-DICHLOROBENZENE	~	~	~	**1.14**	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.571	1.15	2 of 28
1,4-DICHLOROBENZENE	~	~	~	**0.818**	~	0.5	0.5	**0.828**	0.5	~	0.5	**1.31**	0.692	1.5	4 of 28
2-BUTANONE	~	~	~	**5.63**	~	**7.84**	**2.45**	**5.91**	**3.32**	~	0.5	**4.01**	3.94	9.82	15 of 28
2-CHLOROETHYL VINYL ETHER	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
2-HEXANONE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
4-METHYL-2-PENTANONE	~	~	~	**1.32**	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.591	2.09	1 of 28
ACETONE	~	~	~	**201**	~	**120**	**47.7**	**88.3**	**63.5**	~	**84.5**	**100**	96.1	258	27 of 28
ACROLEIN	~	~	~	1	~	1	1	1	1	~	1	1	1	1	0 of 28
ACRYLONITRILE	~	~	~	1	~	1	**1.43**	1	1	~	1	1	1.07	1.87	1 of 28
BENZENE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
BROMODICHLOROMETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
BROMOFORM	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
BROMOMETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
CARBON DISULFIDE	~	~	~	0.5	~	**1.5**	0.5	**6.62**	**4.48**	~	0.5	**5.11**	2.6	9.83	8 of 28
CARBON TETRACHLORIDE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
CHLOROBENZENE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
CHLOROETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
CHLOROFORM	~	~	~	**7.65**	~	**8.65**	**2.95**	**7.93**	**9.43**	~	**5.64**	**9.25**	7.08	9.91	26 of 28
CHLOROMETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
CIS-1,2-DICHLOROETHENE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
CIS-1,3-DICHLOROPROPENE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
DIBROMOCHLOROMETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
ETHYLBENZENE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
M,P-XYLENE	~	~	~	1	~	1	1	1	1	~	1	1	1	1	0 of 28
METHYLENE CHLORIDE	~	~	~	0.5	~	**2.07**	**1.17**	**0.913**	**2.3**	~	0.5	0.5	1.09	3.74	6 of 28
O-XYLENE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
STYRENE	~	~	~	0.5	~	**6.05**	0.5	0.5	**3.3**	~	0.5	0.5	1.57	9.72	3 of 28
TETRACHLOROETHENE	~	~	~	**3.28**	~	**2.59**	**1.23**	**4.38**	**3.67**	~	**2.04**	**2.87**	2.75	5.91	18 of 28
TOLUENE	~	~	~	**9.16**	~	**6.85**	**1.26**	**19**	**25.8**	~	**1.85**	**6.89**	9.22	47.8	23 of 28
TRANS-1,2-DICHLOROETHENE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
TRANS-1,3-DICHLOROPROPENE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
TRICHLOROETHENE	~	~	~	0.5	~	0.5	0.5	0.5	**0.885**	~	0.5	0.5	0.546	1.25	1 of 28
TRICHLOROFLUOROMETHANE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
VINYL ACETATE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28
VINYL CHLORIDE	~	~	~	0.5	~	0.5	0.5	0.5	0.5	~	0.5	0.5	0.5	0.5	0 of 28

Notes

~: No data or no samples taken

Results in **bold** indicate one or more detects that month

Yearly averages are calculated from individual results collected during the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Table A-3. Deer Island Influent Loadings (North & South Systems), FY04

Metals (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
ANTIMONY	~	~	~	27	~	32	44.9	34.5	31.4	~	55.3	32.6	36.8	59.9	0 of 28
ARSENIC	~	~	~	**2.09**	~	**2.11**	**6.12**	**2.87**	**2.26**	~	**8.19**	1.04	3.53	9.41	15 of 28
BERYLLIUM	~	~	~	0.541	~	0.641	0.897	0.69	0.627	~	1.11	0.652	0.736	1.2	0 of 28
BORON	~	~	~	**681**	~	320	449	345	549	~	553	**404**	472	736	8 of 28
CADMIUM	~	~	~	**1.51**	~	**1.22**	**2.65**	**1.77**	**0.936**	~	**2.19**	**0.862**	1.59	2.93	28 of 28
CHROMIUM	~	~	~	**28.5**	~	**7.91**	**24.1**	**19.5**	**8.67**	~	**29.1**	**7.47**	17.9	38.6	28 of 28
COPPER	~	~	~	**268**	~	**164**	**353**	**257**	**151**	~	**295**	**144**	233	401	28 of 28
HEXAVALENT CHROMIUM	~	~	~	5.58	~	6.62	8.45	7.16	6.06	~	9.74	6.8	7.2	10.1	0 of 28
IRON	~	~	~	**7430**	~	**4410**	**11100**	**8310**	**4970**	~	**10000**	**4480**	7240	12600	28 of 28
LEAD	~	~	~	**30.4**	~	**26.2**	**67.5**	**60.3**	**19.5**	~	**74.2**	**18.8**	42.4	106	28 of 28
MERCURY	~	~	~	**1.22**	~	**0.45**	**0.859**	**0.991**	**0.57**	~	**0.594**	**0.371**	0.722	1.74	30 of 30
MOLYBDENUM	~	~	~	**19.7**	~	**22.9**	**21.8**	**24.8**	**15.6**	~	**43.8**	**29.2**	25.4	51.6	28 of 28
NICKEL	~	~	~	**16.2**	~	**10.5**	**17.8**	**18.3**	**12.7**	~	**21.5**	**7.05**	14.9	28.7	28 of 28
SELENIUM	~	~	~	0.973	~	1.15	1.62	1.24	1.13	~	1.99	1.17	1.33	2.15	0 of 28
SILVER	~	~	~	**7.61**	~	**7.3**	**10.9**	**7.42**	**5.6**	~	**6.28**	**5.56**	7.24	11.1	28 of 28
THALLIUM	~	~	~	1.08	~	1.28	1.79	1.38	1.25	~	2.21	1.3	1.47	2.39	0 of 28
ZINC	~	~	~	**469.00**	~	**281.00**	**631.00**	**479.00**	**285.00**	~	**528.00**	**268.00**	420.00	699.00	28 of 28

Cyanide (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
CYANIDE	~	~	~	11.2	~	13.2	16.9	**22.1**	12.1	~	19.5	13.6	15.5	28.7	1 of 28

Oil and Grease, Surfactants, and Petroleum Hydrocarbons (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
FATS OIL AND GREASE	~	~	~	**134000**	~	**138000**	**192000**	**169000**	**164000**	~	**101000**	**127000**	150000	205000	26 of 26
MBAS	~	~	~	**10900**	~	**9510**	**7120**	**11200**	**12400**	~	**12800**	**12500**	10900	14000	28 of 28
PETROLEUM HYDROCARBON	~	~	~	**1990**	~	**5060**	**5880**	**8660**	**6680**	~	**2410**	**3820**	4930	9540	28 of 28

Table A-3. Deer Island Influent Loadings (North & South Systems), FY04 (cont.)

Organochlorine Pesticides and PCBs (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
2,4'-DDD	~	~	~	0.000197	~	0.000293	~	0.000161	~	~	~	**0.000806**	0.000374	0.00134	2 of 44
2,4'-DDE	~	~	~	0.000197	~	0.000293	~	0.000161	~	~	~	0.000244	0.000214	0.000293	0 of 44
2,4'-DDT	~	~	~	0.000197	~	0.000293	~	0.000161	~	~	~	0.000244	0.000214	0.000293	0 of 44
4,4'-DDD	~	~	~	**0.00536**	~	**0.00373**	0.00839	**0.00912**	0.00572	~	0.00897	**0.00218**	0.00615	0.0129	35 of 75
4,4'-DDE	~	~	~	**0.00853**	~	**0.00538**	0.00839	**0.0102**	0.00572	~	0.00897	**0.00614**	0.00768	0.0146	46 of 75
4,4'-DDT	~	~	~	**0.0116**	~	**0.00325**	0.00839	**0.00359**	0.00572	~	0.00897	**0.003**	0.00672	0.0249	27 of 75
ALDRIN	~	~	~	0.00236	~	0.0029	0.00839	0.00145	0.00572	~	0.00897	0.00141	0.00432	0.00958	0 of 75
ALPHA-BHC	~	~	~	0.00475	~	0.00568	0.00839	0.00601	0.00572	~	0.00897	0.00609	0.00665	0.00958	0 of 26
ALPHA-CHLORDANE	~	~	~	**0.0145**	~	**0.00825**	0.00839	**0.00851**	0.00572	~	0.00897	**0.00871**	0.00937	0.0304	48 of 75
AROCLOR-1016	~	~	~	0.119	~	0.142	0.21	0.15	0.143	~	0.224	0.152	0.166	0.239	0 of 26
AROCLOR-1221	~	~	~	0.238	~	0.284	0.422	0.301	0.285	~	0.448	0.305	0.333	0.479	0 of 26
AROCLOR-1232	~	~	~	0.119	~	0.142	0.21	0.15	0.143	~	0.224	0.152	0.166	0.239	0 of 26
AROCLOR-1242	~	~	~	0.119	~	0.142	0.21	0.15	0.143	~	0.224	**0.436**	0.21	0.717	1 of 26
AROCLOR-1248	~	~	~	0.119	~	0.142	0.21	0.15	0.143	~	0.224	0.152	0.166	0.239	0 of 26
AROCLOR-1254	~	~	~	0.119	~	0.142	0.21	0.15	0.143	~	0.224	0.152	0.166	0.239	0 of 26
AROCLOR-1260	~	~	~	0.119	~	0.142	0.21	0.15	0.143	~	0.224	0.152	0.166	0.239	0 of 26
BETA-BHC	~	~	~	0.00475	~	0.00568	0.00839	0.00601	0.00572	~	0.00897	0.00609	0.00665	0.00958	0 of 26
CHLORDANE (TECHNICAL)	~	~	~	0.119	~	0.142	0.21	0.15	0.143	~	0.224	0.152	0.166	0.239	0 of 26
DDMU	~	~	~	0.000197	~	0.000293	~	0.000161	~	~	~	0.000244	0.000214	0.000293	0 of 44
DELTA-BHC	~	~	~	0.00475	~	0.00568	0.00839	0.00601	0.00572	~	0.00897	0.00609	0.00665	0.00958	0 of 26
DIELDRIN	~	~	~	0.00236	~	0.0029	0.00839	0.00145	0.00572	~	0.00897	0.00141	0.00432	0.00958	0 of 75
ENDOSULFAN I	~	~	~	0.00475	~	0.00568	0.00839	0.00601	0.00572	~	0.00897	0.00609	0.00665	0.00958	0 of 26
ENDOSULFAN II	~	~	~	0.00475	~	0.00568	0.00839	0.00601	0.00572	~	0.00897	0.00609	0.00665	0.00958	0 of 26
ENDOSULFAN SULFATE	~	~	~	0.00475	~	0.00568	0.00839	0.00601	0.00572	~	0.00897	0.00609	0.00665	0.00958	0 of 26
ENDRIN	~	~	~	0.00236	~	0.0029	0.00839	0.00145	0.00572	~	0.00897	0.00141	0.00432	0.00958	0 of 75
ENDRIN ALDEHYDE	~	~	~	0.00475	~	0.00568	0.00839	0.00601	0.00572	~	0.00897	0.00609	0.00665	0.00958	0 of 26
ENDRIN KETONE	~	~	~	0.00475	~	0.00568	0.00839	0.00601	0.00572	~	0.00897	0.00609	0.00665	0.00958	0 of 26
GAMMA-BHC (LINDANE)	~	~	~	**0.00444**	~	0.0029	0.00839	0.00145	0.00572	~	0.00897	0.00141	0.00473	0.00958	3 of 75
GAMMA-CHLORDANE	~	~	~	**0.0151**	~	**0.00839**	0.00839	**0.00776**	0.00572	~	0.00897	**0.00966**	0.00954	0.0319	48 of 75
HEPTACHLOR	~	~	~	0.00236	~	0.0029	0.00839	0.00145	0.00572	~	0.00897	0.00141	0.00432	0.00958	0 of 75
HEPTACHLOR EPOXIDE	~	~	~	0.00236	~	0.0029	0.00839	0.00145	0.00572	~	0.00897	0.00141	0.00432	0.00958	0 of 75
HEXACHLOROBENZENE	~	~	~	0.000197	~	**0.000471**	~	**0.000816**	~	~	~	**0.000583**	0.000523	0.00101	22 of 44
METHOXYCHLOR	~	~	~	0.0475	~	0.0568	0.0839	0.0601	0.0572	~	0.0897	0.0609	0.0665	0.0958	0 of 26
MIREX	~	~	~	0.000197	~	0.000293	~	0.000161	~	~	~	0.000244	0.000214	0.000293	0 of 44
TOTAL CHLORDANE	~	~	~	**0.0539**	~	**0.0226**	~	**0.0211**	~	~	~	**0.024**	0.0315	0.082	44 of 44
TOTAL DDT	~	~	~	**0.03**	~	**0.00546**	~	**0.024**	~	~	~	**0.00987**	0.019	0.048	42 of 44
TOXAPHENE	~	~	~	0.119	~	0.142	0.21	0.15	0.143	~	0.224	0.152	0.166	0.239	0 of 26
TRANS-NONACHLOR	~	~	~	**0.0135**	~	**0.00415**	~	**0.00351**	~	~	~	**0.0041**	0.00663	0.0198	44 of 44

Table A-3. Deer Island Influent Loadings (North & South Systems), FY04 (cont.)

Semivolatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,2,4-TRICHLOROBENZENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
1,2-DICHLOROBENZENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
1,2-DIPHENYLHYDRAZINE (AS AZOBENZENE)	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
1,3-DICHLOROBENZENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
1,4-DICHLOROBENZENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2,2'-OXYBIS(1-CHLOROPROPANE)	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2,4,5-TRICHLOROPHENOL	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2,4,6-TRICHLOROPHENOL	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2,4-DICHLOROPHENOL	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2,4-DIMETHYLPHENOL	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2,4-DINITROPHENOL	~	~	~	4.57	~	7.5	9.08	6.7	5.82	~	8.89	5.49	6.87	10.6	0 of 31
2,4-DINITROTOLUENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2,6-DINITROTOLUENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2-CHLORONAPHTHALENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2-CHLOROPHENOL	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2-METHYL-4,6-DINITROPHENOL	~	~	~	22.9	~	37.5	45.4	33.5	29.1	~	44.5	27.4	34.3	53	0 of 31
2-METHYLNAPHTHALENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2-METHYLPHENOL	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2-NITROANILINE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
2-NITROPHENOL	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
3,3'-DICHLOROBENZIDINE	~	~	~	4.57	~	7.5	9.08	6.7	5.82	~	8.89	5.49	6.87	10.6	0 of 31
3-NITROANILINE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
4-BROMOPHENYL PHENYL ETHER	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
4-CHLORO-3-METHYLPHENOL	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
4-CHLOROANILINE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
4-CHLOROPHENYL PHENYL ETHER	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
4-METHYLPHENOL (INCLUDES 3-METHYLPHENOL)	~	~	~	**28.6**	~	**26.7**	**21.2**	**25.8**	**61.8**	~	4.45	**37.7**	29.5	72.7	22 of 31
4-NITROANILINE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
4-NITROPHENOL	~	~	~	4.57	~	7.5	9.08	6.7	5.82	~	8.89	5.49	6.87	10.6	0 of 31
ACENAPHTHENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
ACENAPHTHYLENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
ANILINE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
ANTHRACENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
BENZIDINE	~	~	~	11.4	~	18.8	22.7	16.8	**72.1**	~	**647**	13.7	115	1270	2 of 31
BENZO(A)ANTHRACENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
BENZO(A)PYRENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31

Table A-3. Deer Island Influent Loadings (North & South Systems), FY04 (cont.)

Semivolatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
BENZO(B)FLUORANTHENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
BENZO(GHI)PERYLENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
BENZO(K)FLUORANTHENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
BENZOIC ACID	~	~	~	**21.2**	~	7.5	9.08	6.7	**68**	~	8.89	5.49	18.1	102	5 of 31
BENZYL ALCOHOL	~	~	~	2.29	~	**9.53**	**16.5**	3.35	**23.7**	~	4.45	**30.2**	12.9	35.8	13 of 31
BIS(2-CHLOROETHOXY)METHANE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
BIS(2-CHLOROETHYL)ETHER	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
BIS(2-ETHYLHEXYL)PHTHALATE	~	~	~	**29.5**	~	**37.7**	**88.5**	**60.4**	**40.8**	~	**43.2**	**39.3**	48.5	97.1	31 of 31
BUTYL BENZYL PHTHALATE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
CARBAZOLE	~	~	~	~	~	~	~	~	2.91	~	4.45	2.74	3.37	4.79	0 of 12
CHRYSENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
DI-N-BUTYLPHTHALATE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
DI-N-OCTYLPHTHALATE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
DIBENZO(A,H)ANTHRACENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
DIBENZOFURAN	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
DIETHYL PHTHALATE	~	~	~	**3.81**	~	3.75	4.54	3.35	**12.7**	~	4.45	2.74	5.04	18.2	4 of 31
DIMETHYL PHTHALATE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
FLUORANTHENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
FLUORENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
HEXACHLOROBENZENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
HEXACHLOROBUTADIENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
HEXACHLOROCYCLOPENTADIENE	~	~	~	11.4	~	18.8	22.7	16.8	14.6	~	22.2	13.7	17.2	26.5	0 of 31
HEXACHLOROETHANE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
INDENO(1,2,3-CD)PYRENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
ISOPHORONE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
N-DECANE	~	~	~	~	~	~	~	~	~	~	~	**5.59**	5.59	8.3	1 of 4
N-NITROSODI-N-PROPYLAMINE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
N-NITROSODIMETHYLAMINE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
N-NITROSODIPHENYLAMINE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
N-OCTADECANE	~	~	~	~	~	~	~	~	~	~	~	**6.38**	6.38	9.87	2 of 4
NAPHTHALENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
NITROBENZENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31
PENTACHLOROPHENOL	~	~	~	6.86	~	11.3	13.6	10.1	8.73	~	13.3	8.23	10.3	15.9	0 of 31
PHENANTHRENE	~	~	~	0.229	~	0.375	**1.55**	**1.52**	2.91	~	4.45	2.74	1.97	4.79	5 of 31
PHENOL	~	~	~	4.57	~	7.5	9.08	**14.7**	5.82	~	8.89	**9.67**	8.61	20.9	2 of 31
PYRENE	~	~	~	2.29	~	3.75	4.54	3.35	2.91	~	4.45	2.74	3.43	5.3	0 of 31

Table A-3. Deer Island Influent Loadings (North & South Systems), FY04 (cont.)

Volatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,1,1-TRICHLOROETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
1,1,2,2-TETRACHLOROETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	**6.36**	1.36	2.07	10.9	1 of 28
1,1,2-TRICHLOROETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
1,1-DICHLOROETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
1,1-DICHLOROETHENE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
1,2-DICHLOROBENZENE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
1,2-DICHLOROETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
1,2-DICHLOROPROPANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
1,3-DICHLOROBENZENE	~	~	~	**2.54**	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.64	2.64	2 of 28
1,4-DICHLOROBENZENE	~	~	~	**1.83**	~	1.32	1.69	**2.37**	1.21	~	1.95	**3.57**	1.99	3.91	4 of 28
2-BUTANONE	~	~	~	**12.6**	~	**20.8**	**8.26**	**16.9**	**8.05**	~	1.95	**10.9**	11.3	25.3	15 of 28
2-CHLOROETHYL VINYL ETHER	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
2-HEXANONE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
4-METHYL-2-PENTANONE	~	~	~	**2.95**	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.7	4.81	1 of 28
ACETONE	~	~	~	**449**	~	**318**	**161**	**253**	**154**	~	**329**	**273**	277	592	27 of 28
ACROLEIN	~	~	~	2.23	~	2.65	3.38	2.86	2.42	~	3.9	2.72	2.88	4.05	0 of 28
ACRYLONITRILE	~	~	~	2.23	~	2.65	**4.82**	2.86	2.42	~	3.9	2.72	3.09	6.2	1 of 28
BENZENE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
BROMODICHLOROMETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
BROMOFORM	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
BROMOMETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
CARBON DISULFIDE	~	~	~	1.12	~	**3.96**	1.69	**18.9**	**10.9**	~	1.95	**13.9**	7.49	30.5	8 of 28
CARBON TETRACHLORIDE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
CHLOROBENZENE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
CHLOROETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
CHLOROFORM	~	~	~	**17.1**	~	**22.9**	**9.98**	**22.7**	**22.9**	~	**22**	**25.2**	20.4	28.8	26 of 28
CHLOROMETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
CIS-1,2-DICHLOROETHENE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
CIS-1,3-DICHLOROPROPENE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
DIBROMOCHLOROMETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
ETHYLBENZENE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
M,P-XYLENE	~	~	~	2.23	~	2.65	3.38	2.86	2.42	~	3.9	2.72	2.88	4.05	0 of 28
METHYLENE CHLORIDE	~	~	~	1.12	~	**5.49**	**3.95**	**2.62**	**5.58**	~	1.95	1.36	3.15	9.63	6 of 28
O-XYLENE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
STYRENE	~	~	~	1.12	~	**16**	1.69	1.43	**8.01**	~	1.95	1.36	4.51	26.5	3 of 28
TETRACHLOROETHENE	~	~	~	**7.33**	~	**6.87**	**4.16**	**12.5**	**8.9**	~	**7.93**	**7.81**	7.93	13.6	18 of 28
TOLUENE	~	~	~	**20.4**	~	**18.1**	**4.27**	**54.5**	**62.5**	~	**7.2**	**18.7**	26.6	113	23 of 28
TRANS-1,2-DICHLOROETHENE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
TRANS-1,3-DICHLOROPROPENE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
TRICHLOROETHENE	~	~	~	1.12	~	1.32	1.69	1.43	**2.15**	~	1.95	1.36	1.57	3.11	1 of 28
TRICHLOROFLUOROMETHANE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
VINYL ACETATE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28
VINYL CHLORIDE	~	~	~	1.12	~	1.32	1.69	1.43	1.21	~	1.95	1.36	1.44	2.03	0 of 28

Notes
~: No data or no samples taken
Results in **bold** indicate one or more detects that month
Yearly averages are calculated from individual results collected during the fiscal year.
Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Table A-4. Deer Island Influent Characterization (North System), FY04

Metals (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
ANTIMONY	10	10	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.1	12.5	0 of 24
ARSENIC	0.4	0.4	0.4	**1.2**	**1.7**	**1.03**	**1.62**	**1.16**	**1.15**	0.4	**2.03**	0.4	1.04	2.18	12 of 24
BERYLLIUM	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0 of 24
BORON	**313**	**270**	**323**	**309**	**189**	125	125	125	**189**	125	125	125	184	334	10 of 24
CADMIUM	**0.376**	**0.432**	**0.387**	**0.822**	**0.497**	**0.487**	**0.611**	**0.677**	**0.408**	**0.476**	**0.479**	**0.337**	0.5	1.11	24 of 24
CHROMIUM	**3.55**	**4.12**	**3.11**	**9.57**	**4.88**	**2.8**	**6.01**	**7.49**	**3.96**	**4.88**	**7.33**	**3.1**	5.2	12.8	24 of 24
COPPER	**70.2**	**64.1**	**66.2**	**141**	**88**	**61.5**	**76.2**	**92.5**	**63.2**	**40.9**	**65.1**	**52.2**	71.3	180	24 of 24
HEXAVALENT CHROMIUM	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	0 of 24
IRON	**1870**	**1940**	**1600**	**4130**	**2330**	**1590**	**2560**	**3130**	**2080**	**1970**	**2310**	**1710**	2260	5410	24 of 24
LEAD	**14.5**	**15.3**	**11.3**	**17.9**	**15.2**	**11.7**	**16.9**	**27.2**	**9.41**	**7.57**	**19.3**	**8.31**	14.7	40.6	24 of 24
MERCURY	**0.48**	**0.2**	**0.303**	**0.673**	**0.308**	**0.198**	**0.17**	**0.367**	**0.267**	**0.136**	**0.138**	**0.14**	0.262	0.961	25 of 25
MOLYBDENUM	**14.8**	**17.5**	**18.9**	**10.3**	**16**	**10.9**	**7**	**10.8**	**7.68**	**7.56**	**12.5**	**14.2**	12	24.9	24 of 24
NICKEL	**5.64**	**4.7**	**5.61**	**6.16**	**4.88**	**4.11**	**4.22**	**6.98**	**4.95**	**4.17**	**4.59**	**2.79**	4.84	8.1	24 of 24
SELENIUM	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0 of 24
SILVER	**2.58**	**2.43**	**2.89**	**4.29**	**3.17**	**3.13**	**2.57**	**2.59**	**2.57**	**1.19**	**1.35**	**1.78**	2.41	5.57	24 of 24
THALLIUM	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
ZINC	**121**	**117**	**114**	**258**	**151**	**106**	**137**	**181**	**123**	**105**	**119**	**98.9**	133	348	24 of 24

Cyanide (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
CYANIDE	5	5	5	5	5	5	5	**8.87**	5	5	5	5	5.33	13.8	1 of 24

Oil and Grease, Surfactants, and Petroleum Hydrocarbons (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
FATS OIL AND GREASE	**35.1**	**44.1**	**70**	**57.1**	**52**	**52.5**	**46**	**54.6**	**71.4**	**22**	**26**	**45.7**	47	78	23 of 23
MBAS	**3.05**	**3.29**	**4.07**	**4.47**	**3.19**	**3.27**	**2.01**	**3.42**	**4.7**	**3.18**	**2.82**	**4.42**	3.39	5.36	24 of 24
PETROLEUM HYDROCARBON	**0.602**	**0.428**	**0.77**	**0.864**	**0.645**	**1.83**	**1.23**	**2.85**	**2.96**	**0.443**	**0.48**	**1.38**	1.14	4.42	24 of 24

Table A-4. Deer Island Influent Characterization (North System), FY04 (cont.)

Organochlorine Pesticides and PCBs (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
2,4'-DDD	~	0.0000745	~	0.0000532	~	0.0000905	~	0.0000614	~	**0.000853**	~	0.0000999	0.000248	0.00107	4 of 38
2,4'-DDE	~	0.0000745	~	0.0000532	~	0.0000905	~	0.0000614	~	0.0000829	~	0.0000999	0.0000768	0.00012	0 of 38
2,4'-DDT	~	0.0000745	~	0.0000532	~	0.0000905	~	0.0000614	~	0.0000829	~	0.0000999	0.0000768	0.00012	0 of 38
4,4'-DDD	0.00204	**0.0017**	0.00206	**0.00199**	0.00219	**0.00152**	0.00234	**0.00376**	0.00237	**0.00116**	0.00204	**0.000812**	0.00196	0.00497	32 of 63
4,4'-DDE	0.00204	**0.00217**	0.00206	**0.00272**	0.00219	**0.00195**	0.00234	**0.00417**	0.00237	**0.00203**	0.00204	**0.00234**	0.00235	0.00481	36 of 63
4,4'-DDT	0.00204	**0.00155**	0.00206	**0.00456**	0.00219	**0.00086**	0.00234	**0.00146**	0.00237	**0.00212**	0.00204	**0.0011**	0.00213	0.00641	24 of 63
ALDRIN	0.00204	0.00129	0.00206	0.000843	0.00219	0.000735	0.00234	0.000475	0.00237	0.000516	0.00204	0.00052	0.00137	0.00241	0 of 63
ALPHA-BHC	0.00204	0.00215	0.00206	0.0024	0.00219	0.00219	0.00234	0.00213	0.00237	0.00225	0.00204	0.0022	0.00219	0.00253	0 of 25
ALPHA-CHLORDANE	0.00204	**0.00269**	**0.00738**	**0.00441**	0.00219	**0.00495**	0.00234	**0.0029**	0.00237	**0.00298**	0.00204	**0.00263**	0.00331	0.0126	39 of 63
AROCLOR-1016	0.0511	0.0538	0.0515	0.0601	0.0547	0.0547	0.0588	0.0533	0.0592	0.0561	0.0511	0.055	0.0549	0.0633	0 of 25
AROCLOR-1221	0.102	0.108	0.103	0.121	0.109	0.109	0.118	0.107	0.118	0.112	0.102	0.11	0.11	0.127	0 of 25
AROCLOR-1232	0.0511	0.0538	0.0515	0.0601	0.0547	0.0547	0.0588	0.0533	0.0592	0.0561	0.0511	0.055	0.0549	0.0633	0 of 25
AROCLOR-1242	0.0511	0.0538	0.0515	0.0601	0.0547	0.0547	0.0588	0.0533	0.0592	0.0561	0.0511	**0.221**	0.0668	0.386	1 of 25
AROCLOR-1248	0.0511	0.0538	0.0515	0.0601	0.0547	0.0547	0.0588	0.0533	0.0592	0.0561	0.0511	0.055	0.0549	0.0633	0 of 25
AROCLOR-1254	0.0511	0.0538	0.0515	0.0601	0.0547	0.0547	0.0588	0.0533	0.0592	0.0561	0.0511	0.055	0.0549	0.0633	0 of 25
AROCLOR-1260	0.0511	**0.114**	0.0515	**0.176**	0.0547	0.0547	0.0588	0.0533	0.0592	0.0561	0.0511	0.055	0.0671	0.292	3 of 25
BETA-BHC	0.00204	0.00215	0.00206	0.0024	0.00219	0.00219	0.00234	0.00213	0.00237	0.00225	0.00204	0.0022	0.00219	0.00253	0 of 25
CHLORDANE (TECHNICAL)	0.0511	0.0538	0.0515	0.0601	0.0547	0.0547	0.0588	0.0533	0.0592	0.0561	0.0511	0.055	0.0549	0.0633	0 of 25
DDMU	~	0.0000745	~	0.0000532	~	0.0000905	~	0.0000614	~	0.0000829	~	0.0000999	0.0000768	0.00012	0 of 38
DELTA-BHC	0.00204	0.00215	0.00206	0.0024	0.00219	0.00219	0.00234	0.00213	0.00237	0.00225	0.00204	0.0022	0.00219	0.00253	0 of 25
DIELDRIN	0.00204	0.00129	0.00206	0.000843	0.00219	0.000735	0.00234	0.000475	0.00237	0.000516	0.00204	0.00052	0.00137	0.00241	0 of 63
ENDOSULFAN I	0.00204	0.00215	0.00206	0.0024	0.00219	0.00219	0.00234	0.00213	0.00237	0.00225	0.00204	0.0022	0.00219	0.00253	0 of 25
ENDOSULFAN II	0.00204	0.00215	0.00206	0.0024	0.00219	0.00219	0.00234	0.00213	0.00237	0.00225	0.00204	0.0022	0.00219	0.00253	0 of 25
ENDOSULFAN SULFATE	0.00204	0.00215	0.00206	0.0024	0.00219	0.00219	0.00234	0.00213	0.00237	0.00225	0.00204	0.0022	0.00219	0.00253	0 of 25
ENDRIN	0.00204	0.00129	0.00206	0.000843	0.00219	0.000735	0.00234	0.000475	0.00237	0.000516	0.00204	0.00052	0.00137	0.00241	0 of 63
ENDRIN ALDEHYDE	0.00204	0.00215	0.00206	0.0024	0.00219	0.00219	0.00234	0.00213	0.00237	0.00225	0.00204	0.0022	0.00219	0.00253	0 of 25
ENDRIN KETONE	0.00204	0.00215	0.00206	0.0024	0.00219	0.00219	0.00234	0.00213	0.00237	0.00225	0.00204	0.0022	0.00219	0.00253	0 of 25
GAMMA-BHC (LINDANE)	0.00204	**0.0016**	0.00206	**0.00159**	0.00219	0.000735	0.00234	0.000475	0.00237	0.000516	0.00204	0.00052	0.00148	0.00241	3 of 63
GAMMA-CHLORDANE	0.00204	**0.00261**	**0.0105**	**0.00456**	0.00219	**0.00485**	0.00234	**0.00255**	0.00237	**0.00305**	0.00204	**0.00287**	0.00348	0.0187	39 of 63
HEPTACHLOR	0.00204	0.00129	0.00206	0.000843	0.00219	0.000735	0.00234	0.000475	0.00237	0.000516	0.00204	0.00052	0.00137	0.00241	0 of 63
HEPTACHLOR EPOXIDE	0.00204	0.00129	0.00206	0.000843	0.00219	0.000735	0.00234	0.000475	0.00237	0.000516	0.00204	0.00052	0.00137	0.00241	0 of 63
HEXACHLOROBENZENE	~	**0.000105**	~	0.0000532	~	**0.000103**	~	**0.000313**	~	0.0000829	~	**0.000275**	0.000144	0.000469	14 of 38
METHOXYCHLOR	0.0204	0.0215	0.0206	0.024	0.0219	0.0219	0.0234	0.0213	0.0237	0.0225	0.0204	0.022	0.0219	0.0253	0 of 25
MIREX	~	0.0000745	~	0.0000532	~	0.0000905	~	0.0000614	~	0.0000829	~	0.0000999	0.0000768	0.00012	0 of 38
TOTAL CHLORDANE	~	**0.00756**	~	**0.0141**	~	**0.0137**	~	**0.00691**	~	**0.00797**	~	**0.00698**	0.0101	0.0178	38 of 38
TOTAL DDT	~	**0.00487**	~	**0.00956**	~	**0.00305**	~	**0.0101**	~	**0.00578**	~	**0.00354**	0.00628	0.013	36 of 38
TOXAPHENE	0.0511	0.0538	0.0515	0.0601	0.0547	0.0547	0.0588	0.0533	0.0592	0.0561	0.0511	0.055	0.0549	0.0633	0 of 25
TRANS-NONACHLOR	~	**0.00154**	~	**0.00358**	~	**0.00233**	~	**0.00117**	~	**0.00156**	~	**0.0012**	0.00203	0.00385	38 of 38

Table A-4. Deer Island Influent Characterization (North System), FY04 (cont.)

Semivolatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,2,4-TRICHLOROBENZENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
1,2-DICHLOROBENZENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
1,2-DIPHENYLHYDRAZINE (AS AZOBENZENE)	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
1,3-DICHLOROBENZENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
1,4-DICHLOROBENZENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2,2'-OXYBIS(1-CHLOROPROPANE)	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2,4,5-TRICHLOROPHENOL	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2,4,6-TRICHLOROPHENOL	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2,4-DICHLOROPHENOL	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2,4-DIMETHYLPHENOL	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2,4-DINITROPHENOL	2.26	2.22	2	2.05	2.11	3.33	2.78	2.58	2.31	2.21	2.02	2.06	2.32	4.24	0 of 26
2,4-DINITROTOLUENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2,6-DINITROTOLUENE	1.13	**8.3**	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.72	15.6	1 of 26
2-CHLORONAPHTHALENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2-CHLOROPHENOL	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2-METHYL-4,6-DINITROPHENOL	11.3	11.1	10	10.2	10.6	16.6	13.9	12.9	11.6	11	10.1	10.3	11.6	21.2	0 of 26
2-METHYLNAPHTHALENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2-METHYLPHENOL	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2-NITROANILINE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
2-NITROPHENOL	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
3,3'-DICHLOROBENZIDINE	2.26	2.22	2	2.05	2.11	3.33	2.78	2.58	2.31	2.21	2.02	2.06	2.32	4.24	0 of 26
3-NITROANILINE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
4-BROMOPHENYL PHENYL ETHER	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
4-CHLORO-3-METHYLPHENOL	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
4-CHLOROANILINE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
4-CHLOROPHENYL PHENYL ETHER	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
4-METHYLPHENOL (INCLUDES 3-METHYLPHENOL)	**4.51**	**8.32**	**19.4**	**12.6**	1.06	**4.7**	**3.98**	**5.03**	**23.5**	1.1	1.01	**9.42**	6.9	29.9	14 of 26
4-NITROANILINE	1.13	1.11	**4.25**	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.37	7.55	1 of 26
4-NITROPHENOL	2.26	2.22	2	2.05	2.11	3.33	2.78	2.58	2.31	2.21	2.02	2.06	2.32	4.24	0 of 26
ACENAPHTHENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
ACENAPHTHYLENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
ANILINE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
ANTHRACENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
BENZIDINE	5.65	5.55	5	5.12	5.28	8.32	6.95	6.45	**40**	5.52	**216**	5.15	34.6	375	2 of 26
BENZO(A)ANTHRACENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
BENZO(A)PYRENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26

Table A-4. Deer Island Influent Characterization (North System), FY04 (cont.)

Semivolatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
BENZO(B)FLUORANTHENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
BENZO(GHI)PERYLENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
BENZO(K)FLUORANTHENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
BENZOIC ACID	2.26	2.22	**7.1**	**7.89**	2.11	3.33	2.78	2.58	**13.2**	2.21	2.02	2.06	3.81	24.3	3 of 26
BENZYL ALCOHOL	**9.84**	**10.1**	**9.43**	1.02	1.06	1.66	**3.15**	1.29	**8.05**	1.1	1.01	**10.5**	4.38	14.8	10 of 26
BIS(2-CHLOROETHOXY)METHANE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
BIS(2-CHLOROETHYL)ETHER	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
BIS(2-ETHYLHEXYL)PHTHALATE	**15.5**	**13**	**10.6**	**13.7**	**21.9**	**15.7**	**24.8**	**22**	**13.6**	**10.6**	**9.33**	**15.9**	15.4	27.6	26 of 26
BUTYL BENZYL PHTHALATE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
CARBAZOLE	~	~	~	~	~	~	~	~	1.16	1.1	1.01	1.03	1.07	1.19	0 of 8
CHRYSENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
DI-N-BUTYLPHTHALATE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
DI-N-OCTYLPHTHALATE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
DIBENZO(A,H)ANTHRACENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
DIBENZOFURAN	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
DIETHYL PHTHALATE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	**3.65**	1.1	1.01	1.03	1.34	6.13	1 of 26
DIMETHYL PHTHALATE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
FLUORANTHENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
FLUORENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
HEXACHLOROBENZENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
HEXACHLOROBUTADIENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
HEXACHLOROCYCLOPENTADIENE	5.65	5.55	5	5.12	5.28	8.32	6.95	6.45	5.78	5.52	5.04	5.15	5.8	10.6	0 of 26
HEXACHLOROETHANE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
INDENO(1,2,3-CD)PYRENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
ISOPHORONE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
N-DECANE	~	~	~	~	~	~	~	~	~	~	~	**2.7**	2.7	4.34	1 of 2
N-NITROSODI-N-PROPYLAMINE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
N-NITROSODIMETHYLAMINE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
N-NITROSODIPHENYLAMINE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
N-OCTADECANE	~	~	~	~	~	~	~	~	~	~	~	**2.91**	2.91	4.75	1 of 2
NAPHTHALENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
NITROBENZENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26
PENTACHLOROPHENOL	3.39	3.33	3	3.07	3.17	4.99	4.17	3.87	3.47	3.31	3.03	3.09	3.48	6.36	0 of 26
PHENANTHRENE	0.113	0.111	0.1	0.102	0.106	0.166	0.139	**0.736**	1.16	1.1	1.01	1.03	0.539	1.2	2 of 26
PHENOL	2.26	2.22	2	2.05	2.11	3.33	2.78	**6.71**	2.31	2.21	2.02	2.06	2.66	11.9	1 of 26
PYRENE	1.13	1.11	1	1.02	1.06	1.66	1.39	1.29	1.16	1.1	1.01	1.03	1.16	2.12	0 of 26

Table A-4. Deer Island Influent Characterization (North System), FY04 (cont.)

Volatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,1,1-TRICHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
1,1,2,2-TETRACHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**2.31**	0.5	0.684	3.96	1 of 24
1,1,2-TRICHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
1,1-DICHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
1,1-DICHLOROETHENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
1,2-DICHLOROBENZENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
1,2-DICHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
1,2-DICHLOROPROPANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
1,3-DICHLOROBENZENE	**1.49**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.574	2.56	1 of 24
1,4-DICHLOROBENZENE	0.5	**1.64**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.625	2.51	1 of 24
2-BUTANONE	**6.55**	**5.6**	**8.61**	**5.24**	**13.1**	**7.68**	0.5	**2.81**	0.5	**10.3**	0.5	**2.46**	5.32	21.8	16 of 24
2-CHLOROETHYL VINYL ETHER	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
2-HEXANONE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
4-METHYL-2-PENTANONE	0.5	0.5	0.5	**1.66**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.576	2.73	1 of 24
ACETONE	**176**	**168**	**149**	**216**	**226**	**125**	**49.3**	**57.9**	**60.9**	**66**	**83.1**	**91.2**	119	336	23 of 24
ACROLEIN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0 of 24
ACRYLONITRILE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0 of 24
BENZENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
BROMODICHLOROMETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
BROMOFORM	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
BROMOMETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
CARBON DISULFIDE	0.5	**9.52**	**1.77**	0.5	**4.9**	**1.96**	0.5	**7.16**	**5.44**	0.5	0.5	**7.39**	3.45	13.4	11 of 24
CARBON TETRACHLORIDE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
CHLOROBENZENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
CHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
CHLOROFORM	**9.69**	**7.9**	**6.51**	**8.31**	**8.23**	**10.1**	**3.32**	**7.99**	**10.3**	**5.89**	**6.07**	**10.2**	7.69	11.3	23 of 24
CHLOROMETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
CIS-1,2-DICHLOROETHENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
CIS-1,3-DICHLOROPROPENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
DIBROMOCHLOROMETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
ETHYLBENZENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
M,P-XYLENE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0 of 24
METHYLENE CHLORIDE	0.5	**1.87**	0.5	0.5	0.5	0.5	**1.57**	0.5	**1.81**	0.5	0.5	0.5	0.834	3.18	3 of 24
O-XYLENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
STYRENE	0.5	0.5	0.5	0.5	0.5	**8.63**	0.5	0.5	0.5	0.5	0.5	0.5	1.11	13.8	2 of 24
TETRACHLOROETHENE	**1.84**	0.5	**9.7**	**4.43**	**2.2**	**2.91**	**1.67**	**3.8**	**3.68**	**1.91**	**2.95**	**2.11**	2.89	11.2	16 of 24
TOLUENE	**5.83**	**5.09**	**65.7**	**10.2**	**3.46**	**8.17**	**1.72**	**25**	**35.7**	0.5	**1.67**	**7.69**	12.3	127	20 of 24
TRANS-1,2-DICHLOROETHENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
TRANS-1,3-DICHLOROPROPENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
TRICHLOROETHENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
TRICHLOROFLUOROMETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
VINYL ACETATE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24
VINYL CHLORIDE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 24

Notes
~: No data or no samples taken
Results in **bold** indicate one or more detects that month
Yearly averages are calculated from individual results collected during the fiscal year.
Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Table A-5. Deer Island Influent Loadings (North System), FY04

Metals (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
ANTIMONY	17.1	18.6	19.4	19.3	23.4	21.5	28.8	24.4	21	35.4	37.1	21.3	23.9	42.2	0 of 24
ARSENIC	0.684	0.741	0.621	**1.84**	**3.18**	**1.77**	**3.75**	**2.25**	**1.93**	1.13	**6.03**	0.681	2.05	7.37	12 of 24
BERYLLIUM	0.427	0.463	0.388	0.386	0.468	0.429	0.577	0.487	0.42	0.707	0.741	0.426	0.493	0.845	0 of 24
BORON	**535**	**501**	**501**	**476**	**354**	215	288	244	**318**	354	371	213	364	579	10 of 24
CADMIUM	**0.642**	**0.8**	**0.6**	**1.27**	**0.93**	**0.836**	**1.41**	**1.32**	**0.686**	**1.35**	**1.42**	**0.574**	0.986	1.85	24 of 24
CHROMIUM	**6.07**	**7.64**	**4.82**	**14.8**	**9.14**	**4.81**	**13.9**	**14.6**	**6.65**	**13.8**	**21.7**	**5.28**	10.3	29.4	24 of 24
COPPER	**120**	**119**	**103**	**217**	**165**	**106**	**176**	**180**	**106**	**116**	**193**	**88.9**	141	281	24 of 24
HEXAVALENT CHROMIUM	4.52	6.58	3.85	3.95	4.75	4.52	5.29	5.05	4.07	6.71	6.11	4.56	5	7.47	0 of 24
IRON	**3190**	**3600**	**2490**	**6370**	**4370**	**2730**	**5900**	**6090**	**3500**	**5570**	**6840**	**2900**	4460	9020	24 of 24
LEAD	**24.8**	**28.4**	**17.6**	**27.6**	**28.4**	**20.1**	**39**	**53.1**	**15.8**	**21.4**	**57.3**	**14.1**	29	92	24 of 24
MERCURY	**0.822**	**0.37**	**0.471**	**1.04**	**0.576**	**0.34**	**0.392**	**0.715**	**0.449**	**0.386**	**0.409**	**0.238**	0.517	1.5	25 of 25
MOLYBDENUM	**25.4**	**32.5**	**29.3**	**15.9**	**29.9**	**18.6**	**16.2**	**21**	**12.9**	**21.4**	**37**	**24.3**	23.7	43.6	24 of 24
NICKEL	**9.65**	**8.7**	**8.7**	**9.5**	**9.14**	**7.06**	**9.73**	**13.6**	**8.32**	**11.8**	**13.6**	**4.75**	9.55	18.2	24 of 24
SELENIUM	0.769	0.834	0.698	0.694	0.843	0.773	1.04	0.877	0.756	1.27	1.33	0.766	0.888	1.52	0 of 24
SILVER	**4.41**	**4.51**	**4.49**	**6.62**	**5.93**	**5.38**	**5.92**	**5.05**	**4.31**	**3.37**	**3.99**	**3.03**	4.75	8.71	24 of 24
THALLIUM	0.855	0.927	0.776	0.771	0.937	0.859	1.15	0.974	0.84	1.41	1.48	0.851	0.987	1.69	0 of 24
ZINC	**207**	**218**	**178**	**398**	**282**	**182**	**315**	**352**	**207**	**298**	**352**	**168**	263	544	24 of 24

Cyanide (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
CYANIDE	9.04	13.2	7.69	7.9	9.49	9.05	10.6	**17.9**	8.14	13.4	12.2	9.11	10.6	24.5	1 of 24

Oil and Grease, Surfactants, and Petroleum Hydrocarbons (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
FATS OIL AND GREASE	**63400**	**116000**	**108000**	**90200**	**98600**	**95000**	**97400**	**110000**	**116000**	**58900**	**60800**	**83200**	92800	134000	23 of 23
MBAS	**5220**	**6110**	**6310**	**6890**	**5980**	**5620**	**4630**	**6660**	**7890**	**9000**	**8350**	**7530**	6680	9760	24 of 24
PETROLEUM HYDROCARBON	**1090**	**1130**	**1180**	**1370**	**1230**	**3300**	**2600**	**5750**	**4820**	**1190**	**1170**	**2510**	2280	7060	24 of 24

Table A-5. Deer Island Influent Loadings (North System), FY04 (cont.)

Organochlorine Pesticides and PCBs (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
2,4'-DDD	~	0.000139	~	0.000138	~	0.000243	~	0.00012	~	**0.00241**	~	0.00017	0.000573	0.00294	4 of 38
2,4'-DDE	~	0.000139	~	0.000138	~	0.000243	~	0.00012	~	0.000234	~	0.00017	0.000177	0.000303	0 of 38
2,4'-DDT	~	0.000139	~	0.000138	~	0.000243	~	0.00012	~	0.000234	~	0.00017	0.000177	0.000303	0 of 38
4,4'-DDD	0.00349	**0.00315**	0.0032	**0.00445**	0.0041	**0.00358**	0.0054	**0.00733**	0.00398	**0.00327**	0.00606	**0.00138**	0.00411	0.0113	32 of 63
4,4'-DDE	0.00349	**0.00402**	0.0032	**0.0061**	0.0041	**0.00459**	0.0054	**0.00812**	0.00398	**0.00575**	0.00606	**0.00399**	0.00493	0.0115	36 of 63
4,4'-DDT	0.00349	**0.00288**	0.0032	**0.0102**	0.0041	**0.00203**	0.0054	**0.00285**	0.00398	**0.00601**	0.00606	**0.00187**	0.00448	0.0233	24 of 63
ALDRIN	0.00349	0.0024	0.0032	0.00189	0.0041	0.00173	0.0054	0.000926	0.00398	0.00146	0.00606	0.000885	0.00287	0.00676	0 of 63
ALPHA-BHC	0.00349	0.00399	0.0032	0.0037	0.0041	0.00376	0.0054	0.00415	0.00398	0.00636	0.00606	0.00374	0.00433	0.00676	0 of 25
ALPHA-CHLORDANE	0.00349	**0.00499**	**0.0115**	**0.00986**	0.0041	**0.0117**	0.0054	**0.00565**	0.00398	**0.00842**	0.00606	**0.00448**	0.00695	0.0274	39 of 63
AROCLOR-1016	0.0873	0.0996	0.08	0.0927	0.102	0.094	0.136	0.104	0.0994	0.159	0.152	0.0936	0.108	0.169	0 of 25
AROCLOR-1221	0.174	0.199	0.16	0.186	0.204	0.188	0.272	0.208	0.198	0.318	0.303	0.187	0.216	0.338	0 of 25
AROCLOR-1232	0.0873	0.0996	0.08	0.0927	0.102	0.094	0.136	0.104	0.0994	0.159	0.152	0.0936	0.108	0.169	0 of 25
AROCLOR-1242	0.0873	0.0996	0.08	0.0927	0.102	0.094	0.136	0.104	0.0994	0.159	0.152	**0.377**	0.132	0.658	1 of 25
AROCLOR-1248	0.0873	0.0996	0.08	0.0927	0.102	0.094	0.136	0.104	0.0994	0.159	0.152	0.0936	0.108	0.169	0 of 25
AROCLOR-1254	0.0873	0.0996	0.08	0.0927	0.102	0.094	0.136	0.104	0.0994	0.159	0.152	0.0936	0.108	0.169	0 of 25
AROCLOR-1260	0.0873	**0.211**	0.08	**0.272**	0.102	0.094	0.136	0.104	0.0994	0.159	0.152	0.0936	0.132	0.457	3 of 25
BETA-BHC	0.00349	0.00399	0.0032	0.0037	0.0041	0.00376	0.0054	0.00415	0.00398	0.00636	0.00606	0.00374	0.00433	0.00676	0 of 25
CHLORDANE (TECHNICAL)	0.0873	0.0996	0.08	0.0927	0.102	0.094	0.136	0.104	0.0994	0.159	0.152	0.0936	0.108	0.169	0 of 25
DDMU	~	0.000139	~	0.000138	~	0.000243	~	0.00012	~	0.000234	~	0.00017	0.000177	0.000303	0 of 38
DELTA-BHC	0.00349	0.00399	0.0032	0.0037	0.0041	0.00376	0.0054	0.00415	0.00398	0.00636	0.00606	0.00374	0.00433	0.00676	0 of 25
DIELDRIN	0.00349	0.0024	0.0032	0.00189	0.0041	0.00173	0.0054	0.000926	0.00398	0.00146	0.00606	0.000885	0.00287	0.00676	0 of 63
ENDOSULFAN I	0.00349	0.00399	0.0032	0.0037	0.0041	0.00376	0.0054	0.00415	0.00398	0.00636	0.00606	0.00374	0.00433	0.00676	0 of 25
ENDOSULFAN II	0.00349	0.00399	0.0032	0.0037	0.0041	0.00376	0.0054	0.00415	0.00398	0.00636	0.00606	0.00374	0.00433	0.00676	0 of 25
ENDOSULFAN SULFATE	0.00349	0.00399	0.0032	0.0037	0.0041	0.00376	0.0054	0.00415	0.00398	0.00636	0.00606	0.00374	0.00433	0.00676	0 of 25
ENDRIN	0.00349	0.0024	0.0032	0.00189	0.0041	0.00173	0.0054	0.000926	0.00398	0.00146	0.00606	0.000885	0.00287	0.00676	0 of 63
ENDRIN ALDEHYDE	0.00349	0.00399	0.0032	0.0037	0.0041	0.00376	0.0054	0.00415	0.00398	0.00636	0.00606	0.00374	0.00433	0.00676	0 of 25
ENDRIN KETONE	0.00349	0.00399	0.0032	0.0037	0.0041	0.00376	0.0054	0.00415	0.00398	0.00636	0.00606	0.00374	0.00433	0.00676	0 of 25
GAMMA-BHC (LINDANE)	0.00349	**0.00296**	0.0032	**0.00356**	0.0041	0.00173	0.0054	0.000926	0.00398	0.00146	0.00606	0.000885	0.00311	0.00676	3 of 63
GAMMA-CHLORDANE	0.00349	**0.00484**	**0.0162**	**0.0102**	0.0041	**0.0114**	0.0054	**0.00497**	0.00398	**0.00863**	0.00606	**0.00488**	0.00731	0.0293	39 of 63
HEPTACHLOR	0.00349	0.0024	0.0032	0.00189	0.0041	0.00173	0.0054	0.000926	0.00398	0.00146	0.00606	0.000885	0.00287	0.00676	0 of 63
HEPTACHLOR EPOXIDE	0.00349	0.0024	0.0032	0.00189	0.0041	0.00173	0.0054	0.000926	0.00398	0.00146	0.00606	0.000885	0.00287	0.00676	0 of 63
HEXACHLOROBENZENE	~	**0.000195**	~	0.000138	~	**0.000276**	~	**0.00061**	~	0.000234	~	**0.000468**	0.000332	0.000803	14 of 38
METHOXYCHLOR	0.0349	0.0399	0.032	0.037	0.041	0.0376	0.054	0.0415	0.0398	0.0636	0.0606	0.0374	0.0433	0.0676	0 of 25
MIREX	~	0.000139	~	0.000138	~	0.000243	~	0.00012	~	0.000234	~	0.00017	0.000177	0.000303	0 of 38
TOTAL CHLORDANE	~	**0.0141**	~	**0.0366**	~	**0.0369**	~	**0.0135**	~	**0.0226**	~	**0.0119**	0.0234	0.0647	38 of 38
TOTAL DDT	~	**0.00909**	~	**0.0248**	~	**0.0082**	~	**0.0197**	~	**0.0164**	~	**0.00603**	0.0145	0.0421	36 of 38
TOXAPHENE	0.0873	0.0996	0.08	0.0927	0.102	0.094	0.136	0.104	0.0994	0.159	0.152	0.0936	0.108	0.169	0 of 25
TRANS-NONACHLOR	~	**0.00287**	~	**0.00929**	~	**0.00625**	~	**0.00229**	~	**0.00442**	~	**0.00204**	0.00468	0.014	38 of 38

Table A-5. Deer Island Influent Loadings (North System), FY04 (cont.)

Semivolatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,2,4-TRICHLOROBENZENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
1,2-DICHLOROBENZENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
1,2-DIPHENYLHYDRAZINE (AS AZOBENZENE)	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
1,3-DICHLOROBENZENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
1,4-DICHLOROBENZENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2,2'-OXYBIS(1-CHLOROPROPANE)	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2,4,5-TRICHLOROPHENOL	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2,4,6-TRICHLOROPHENOL	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2,4-DICHLOROPHENOL	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2,4-DIMETHYLPHENOL	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2,4-DINITROPHENOL	3.87	4.11	3.1	3.16	3.95	5.72	6.41	5.03	3.88	6.25	5.98	3.51	4.58	7.83	0 of 26
2,4-DINITROTOLUENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2,6-DINITROTOLUENE	1.93	**15.4**	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	3.4	28.7	1 of 26
2-CHLORONAPHTHALENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2-CHLOROPHENOL	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2-METHYL-4,6-DINITROPHENOL	19.3	20.6	15.5	15.8	19.8	28.6	32.1	25.1	19.4	31.2	29.9	17.5	22.9	39.2	0 of 26
2-METHYLNAPHTHALENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2-METHYLPHENOL	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2-NITROANILINE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
2-NITROPHENOL	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
3,3'-DICHLOROBENZIDINE	3.87	4.11	3.1	3.16	3.95	5.72	6.41	5.03	3.88	6.25	5.98	3.51	4.58	7.83	0 of 26
3-NITROANILINE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
4-BROMOPHENYL PHENYL ETHER	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
4-CHLORO-3-METHYLPHENOL	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
4-CHLOROANILINE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
4-CHLOROPHENYL PHENYL ETHER	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
4-METHYLPHENOL (INCLUDES 3-METHYLPHENOL)	**7.71**	**15.4**	**30.1**	**19.4**	1.98	**8.08**	**9.17**	**9.8**	**39.5**	3.12	2.99	**16**	13.6	50.9	14 of 26
4-NITROANILINE	1.93	2.06	**6.59**	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.71	11.6	1 of 26
4-NITROPHENOL	3.87	4.11	3.1	3.16	3.95	5.72	6.41	5.03	3.88	6.25	5.98	3.51	4.58	7.83	0 of 26
ACENAPHTHENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
ACENAPHTHYLENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
ANILINE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
ANTHRACENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
BENZIDINE	9.66	10.3	7.76	7.9	9.88	14.3	16	12.6	**67.2**	15.6	**639**	8.77	68.3	1270	2 of 26
BENZO(A)ANTHRACENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
BENZO(A)PYRENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26

Table A-5. Deer Island Influent Loadings (North System), FY04 (cont.)

Semivolatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
BENZO(B)FLUORANTHENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
BENZO(GHI)PERYLENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
BENZO(K)FLUORANTHENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
BENZOIC ACID	3.87	4.11	**11**	**12.2**	3.95	5.72	6.41	5.03	**22.2**	6.25	5.98	3.51	7.52	40.3	3 of 26
BENZYL ALCOHOL	**16.8**	**18.7**	**14.6**	1.58	1.98	2.86	**7.28**	2.51	**13.5**	3.12	2.99	**17.9**	8.65	25.2	10 of 26
BIS(2-CHLOROETHOXY)METHANE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
BIS(2-CHLOROETHYL)ETHER	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
BIS(2-ETHYLHEXYL)PHTHALATE	**26.4**	**24.1**	**16.5**	**21.1**	**41**	**26.9**	**57.2**	**42.9**	**22.8**	**29.9**	**27.7**	**27.1**	30.3	68	26 of 26
BUTYL BENZYL PHTHALATE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
CARBAZOLE	~	~	~	~	~	~	~	~	1.94	3.12	2.99	1.75	2.45	3.38	0 of 8
CHRYSENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
DI-N-BUTYLPHTHALATE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
DI-N-OCTYLPHTHALATE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
DIBENZO(A,H)ANTHRACENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
DIBENZOFURAN	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
DIETHYL PHTHALATE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	**6.14**	3.12	2.99	1.75	2.64	10.4	1 of 26
DIMETHYL PHTHALATE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
FLUORANTHENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
FLUORENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
HEXACHLOROBENZENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
HEXACHLOROBUTADIENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
HEXACHLOROCYCLOPENTADIENE	9.66	10.3	7.76	7.9	9.88	14.3	16	12.6	9.71	15.6	15	8.77	11.5	19.6	0 of 26
HEXACHLOROETHANE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
INDENO(1,2,3-CD)PYRENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
ISOPHORONE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
N-DECANE	~	~	~	~	~	~	~	~	~	~	~	**4.6**	4.6	7.4	1 of 2
N-NITROSODI-N-PROPYLAMINE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
N-NITROSODIMETHYLAMINE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
N-NITROSODIPHENYLAMINE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
N-OCTADECANE	~	~	~	~	~	~	~	~	~	~	~	**4.95**	4.95	8.1	1 of 2
NAPHTHALENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
NITROBENZENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26
PENTACHLOROPHENOL	5.8	6.17	4.66	4.74	5.93	8.58	9.62	7.54	5.82	9.37	8.97	5.26	6.87	11.7	0 of 26
PHENANTHRENE	0.193	0.206	0.155	0.158	0.198	0.286	0.321	**1.43**	1.94	3.12	2.99	1.75	1.06	3.38	2 of 26
PHENOL	3.87	4.11	3.1	3.16	3.95	5.72	6.41	**13.1**	3.88	6.25	5.98	3.51	5.25	19.4	1 of 26
PYRENE	1.93	2.06	1.55	1.58	1.98	2.86	3.21	2.51	1.94	3.12	2.99	1.75	2.29	3.92	0 of 26

Table A-5. Deer Island Influent Loadings (North System), FY04 (cont.)

Volatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,1,1-TRICHLOROETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
1,1,2,2-TETRACHLOROETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	**5.63**	0.911	1.37	10.1	1 of 24
1,1,2-TRICHLOROETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
1,1-DICHLOROETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
1,1-DICHLOROETHENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
1,2-DICHLOROBENZENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
1,2-DICHLOROETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
1,2-DICHLOROPROPANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
1,3-DICHLOROBENZENE	**2.69**	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	1.15	4.43	1 of 24
1,4-DICHLOROBENZENE	0.904	**4.32**	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	1.25	7.5	1 of 24
2-BUTANONE	**11.8**	**14.7**	**13.2**	**8.29**	**24.9**	**13.9**	1.06	**5.67**	0.814	**27.5**	1.22	**4.48**	10.6	41.9	16 of 24
2-CHLOROETHYL VINYL ETHER	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
2-HEXANONE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
4-METHYL-2-PENTANONE	0.904	1.32	0.769	**2.62**	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	1.15	4.48	1 of 24
ACETONE	**318**	**441**	**230**	**341**	**428**	**226**	**104**	**117**	**99.2**	**177**	**203**	**166**	238	644	23 of 24
ACROLEIN	1.81	2.63	1.54	1.58	1.9	1.81	2.12	2.02	1.63	2.68	2.44	1.82	2	2.99	0 of 24
ACRYLONITRILE	1.81	2.63	1.54	1.58	1.9	1.81	2.12	2.02	1.63	2.68	2.44	1.82	2	2.99	0 of 24
BENZENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
BROMODICHLOROMETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
BROMOFORM	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
BROMOMETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
CARBON DISULFIDE	0.904	**25**	**2.72**	0.79	**9.31**	**3.55**	1.06	**14.5**	**8.86**	1.34	1.22	**13.5**	6.89	27.7	11 of 24
CARBON TETRACHLORIDE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
CHLOROBENZENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
CHLOROETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
CHLOROFORM	**17.5**	**20.8**	**10**	**13.1**	**15.6**	**18.2**	**7.03**	**16.1**	**16.7**	**15.8**	**14.8**	**18.5**	15.4	25.1	23 of 24
CHLOROMETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
CIS-1,2-DICHLOROETHENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
CIS-1,3-DICHLOROPROPENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
DIBROMOCHLOROMETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
ETHYLBENZENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
M,P-XYLENE	1.81	2.63	1.54	1.58	1.9	1.81	2.12	2.02	1.63	2.68	2.44	1.82	2	2.99	0 of 24
METHYLENE CHLORIDE	0.904	**4.93**	0.769	0.79	0.949	0.905	**3.32**	1.01	**2.95**	1.34	1.22	0.911	1.67	8.72	3 of 24
O-XYLENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
STYRENE	0.904	1.32	0.769	0.79	0.949	**15.6**	1.06	1.01	0.814	1.34	1.22	0.911	2.23	26.1	2 of 24
TETRACHLOROETHENE	**3.32**	1.32	**14.9**	**7**	**4.17**	**5.26**	**3.53**	**7.68**	**6**	**5.13**	**7.21**	**3.84**	5.78	17.2	16 of 24
TOLUENE	**10.5**	**13.4**	**101**	**16.1**	**6.56**	**14.8**	**3.64**	**50.5**	**58.2**	1.34	**4.09**	**14**	24.5	195	20 of 24
TRANS-1,2-DICHLOROETHENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
TRANS-1,3-DICHLOROPROPENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
TRICHLOROETHENE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
TRICHLOROFLUOROMETHANE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
VINYL ACETATE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24
VINYL CHLORIDE	0.904	1.32	0.769	0.79	0.949	0.905	1.06	1.01	0.814	1.34	1.22	0.911	0.999	1.49	0 of 24

Notes

~: No data or no samples taken

Results in **bold** indicate one or more detects that month

Yearly averages are calculated from individual results collected during the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Table A-6. Deer Island Influent Characterization (South System), FY04

Metals (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
ANTIMONY	~	10	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.3	12.5	0 of 22
ARSENIC	~	0.4	0.4	0.4	**0.665**	0.4	**1.85**	**0.767**	0.4	0.4	**1.48**	0.4	0.762	2.06	6 of 22
BERYLLIUM	~	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0 of 22
BORON	~	**316**	**338**	**330**	**258**	125	125	125	**279**	125	125	**211**	191	352	11 of 22
CADMIUM	~	**0.434**	**0.294**	**0.382**	**0.398**	**0.452**	**0.964**	**0.558**	**0.302**	**0.325**	**0.531**	**0.318**	0.466	1.05	22 of 22
CHROMIUM	~	**4.43**	**1.82**	**22.2**	**3.46**	**3.66**	**8**	**5.99**	**2.45**	**1.64**	**5.09**	**2.43**	4.94	30.6	22 of 22
COPPER	~	**78**	**68.4**	**83**	**62.4**	**69.6**	**138**	**94.9**	**54.1**	**16.5**	**70.1**	**61**	68.8	158	22 of 22
HEXAVALENT CHROMIUM	~	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	0 of 22
IRON	~	**2420**	**1760**	**1700**	**1650**	**1990**	**4030**	**2730**	**1780**	**1090**	**2200**	**1740**	2080	4500	22 of 22
LEAD	~	**13.6**	**4.76**	**4.61**	**5.14**	**7.23**	**22.2**	**8.86**	**4.43**	**4.23**	**11.6**	**5.11**	8.68	23.5	22 of 22
MERCURY	~	**0.247**	**0.198**	**0.294**	**0.243**	**0.129**	**0.364**	**0.339**	**0.147**	**0.0924**	**0.127**	**0.146**	0.199	0.427	23 of 23
MOLYBDENUM	~	**6.27**	**14.1**	**6.05**	**7.33**	**5.1**	**4.44**	**4.68**	**3.26**	**1.98**	**4.67**	**5.51**	5.14	14.1	22 of 22
NICKEL	~	**4.6**	**3.49**	**10.9**	**5.43**	**4.07**	**6.28**	**5.76**	**5.3**	**3.08**	**5.44**	**2.54**	4.92	11.1	22 of 22
SELENIUM	~	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0 of 22
SILVER	~	**1.72**	**1.73**	**1.6**	**2.13**	**2.27**	**3.86**	**2.92**	**1.56**	**0.704**	**1.57**	**2.8**	2	4.05	22 of 22
THALLIUM	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
ZINC	~	**133**	**107**	**115**	**97.2**	**118**	**247**	**156**	**94.6**	**57.4**	**121**	**110**	121	278	22 of 22

Cyanide (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
CYANIDE	~	5	5	5	5	5	5	5	5	5	5	5	5	5	0 of 22

Oil and Grease, Surfactants, and Petroleum Hydrocarbons (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
FATS OIL AND GREASE	~	**65.3**	**64.5**	**67.5**	**44.6**	**51.5**	**75.1**	**70**	**60.5**	**19**	**31.6**	**49.1**	50.3	83	22 of 22
MBAS	~	**4.38**	**4.89**	**6.4**	**3.6**	**4.6**	**1.94**	**5.54**	**5.45**	**2.22**	**3.04**	**5.48**	3.89	6.48	22 of 22
PETROLEUM HYDROCARBON	~	**1.37**	**0.86**	**0.964**	**0.756**	**2.1**	**2.61**	**3.45**	**2.34**	**0.139**	**0.854**	**1.46**	1.43	3.6	21 of 22

Table A-6. Deer Island Influent Characterization (South System), FY04 (cont.)

Organochlorine Pesticides and PCBs (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
2,4'-DDD	~	~	~	0.0000591	~	0.000105	~	0.0000503	~	**0.00026**	~	**0.000703**	0.000242	0.00132	4 of 34
2,4'-DDE	~	~	~	0.0000591	~	0.000105	~	0.0000503	~	0.0000799	~	0.0000814	0.0000759	0.00013	0 of 34
2,4'-DDT	~	~	~	0.0000591	~	0.000105	~	0.0000503	~	0.0000799	~	0.0000814	0.0000759	0.00013	0 of 34
4,4'-DDD	~	0.00222	0.00223	**0.00102**	0.00217	**0.0013**	0.00233	**0.00219**	0.0021	**0.00102**	0.002	**0.000882**	0.00169	0.00248	27 of 57
4,4'-DDE	~	0.00222	0.00223	**0.00275**	0.00217	**0.00286**	0.00233	**0.00262**	0.0021	**0.00155**	0.002	**0.00238**	0.00223	0.00492	34 of 57
4,4'-DDT	~	0.00222	0.00223	**0.00163**	0.00217	**0.000789**	0.00233	**0.000914**	0.0021	**0.00203**	0.002	**0.00125**	0.00182	0.00247	23 of 57
ALDRIN	~	0.00222	0.00223	0.000533	0.00217	0.000537	0.00233	0.000643	0.0021	0.00056	0.002	0.000584	0.00137	0.00247	0 of 57
ALPHA-BHC	~	0.00222	0.00223	0.002	0.00217	0.00227	0.00233	0.00229	0.0021	0.00248	0.002	0.00259	0.00227	0.00263	0 of 23
ALPHA-CHLORDANE	~	0.00222	0.00223	**0.00525**	0.00217	**0.00526**	0.00233	**0.00353**	0.0021	**0.00506**	0.002	**0.00467**	0.00351	0.00632	34 of 57
AROCLOR-1016	~	0.0556	0.0558	0.05	0.0543	0.0567	0.0583	0.0573	0.0524	0.0621	0.05	0.0649	0.0568	0.0658	0 of 23
AROCLOR-1221	~	0.111	0.111	0.1	0.109	0.114	0.117	0.115	0.105	0.125	0.1	0.13	0.114	0.132	0 of 23
AROCLOR-1232	~	0.0556	0.0558	0.05	0.0543	0.0567	0.0583	0.0573	0.0524	0.0621	0.05	0.0649	0.0568	0.0658	0 of 23
AROCLOR-1242	~	0.0556	0.0558	0.05	0.0543	0.0567	0.0583	0.0573	0.0524	0.0621	0.05	0.0649	0.0568	0.0658	0 of 23
AROCLOR-1248	~	0.0556	0.0558	0.05	0.0543	0.0567	0.0583	0.0573	0.0524	0.0621	0.05	0.0649	0.0568	0.0658	0 of 23
AROCLOR-1254	~	0.0556	0.0558	0.05	0.0543	0.0567	0.0583	0.0573	0.0524	0.0621	0.05	0.0649	0.0568	0.0658	0 of 23
AROCLOR-1260	~	**0.259**	0.0558	0.05	0.0543	0.0567	0.0583	0.0573	0.0524	0.0621	0.05	0.0649	0.0699	0.269	4 of 23
BETA-BHC	~	0.00222	0.00223	0.002	0.00217	0.00227	0.00233	0.00229	0.0021	0.00248	0.002	0.00259	0.00227	0.00263	0 of 23
CHLORDANE (TECHNICAL)	~	0.0556	0.0558	0.05	0.0543	0.0567	0.0583	0.0573	0.0524	0.0621	0.05	0.0649	0.0568	0.0658	0 of 23
DDMU	~	~	~	0.0000591	~	0.000105	~	0.0000503	~	0.0000799	~	0.0000814	0.0000759	0.00013	0 of 34
DELTA-BHC	~	0.00222	0.00223	0.002	0.00217	0.00227	0.00233	0.00229	0.0021	0.00248	0.002	0.00259	0.00227	0.00263	0 of 23
DIELDRIN	~	0.00222	0.00223	0.000533	0.00217	0.000537	0.00233	0.000643	0.0021	0.00056	0.002	0.000584	0.00137	0.00247	0 of 57
ENDOSULFAN I	~	0.00222	0.00223	0.002	0.00217	0.00227	0.00233	0.00229	0.0021	0.00248	0.002	0.00259	0.00227	0.00263	0 of 23
ENDOSULFAN II	~	0.00222	0.00223	0.002	0.00217	0.00227	0.00233	0.00229	0.0021	0.00248	0.002	0.00259	0.00227	0.00263	0 of 23
ENDOSULFAN SULFATE	~	0.00222	0.00223	0.002	0.00217	0.00227	0.00233	0.00229	0.0021	0.00248	0.002	0.00259	0.00227	0.00263	0 of 23
ENDRIN	~	0.00222	0.00223	0.000533	0.00217	0.000537	0.00233	0.000643	0.0021	0.00056	0.002	0.000584	0.00137	0.00247	0 of 57
ENDRIN ALDEHYDE	~	0.00222	0.00223	0.002	0.00217	0.00227	0.00233	0.00229	0.0021	0.00248	0.002	0.00259	0.00227	0.00263	0 of 23
ENDRIN KETONE	~	0.00222	0.00223	0.002	0.00217	0.00227	0.00233	0.00229	0.0021	0.00248	0.002	0.00259	0.00227	0.00263	0 of 23
GAMMA-BHC (LINDANE)	~	0.00222	**0.00796**	**0.000998**	0.00217	0.000537	0.00233	0.000643	0.0021	0.00056	0.002	0.000584	0.00175	0.0135	3 of 57
GAMMA-CHLORDANE	~	0.00222	0.00223	**0.00557**	0.00217	**0.00531**	0.00233	**0.00344**	0.0021	**0.00503**	0.002	**0.00528**	0.00359	0.00676	34 of 57
HEPTACHLOR	~	0.00222	0.00223	0.000533	0.00217	0.000537	0.00233	0.000643	0.0021	0.00056	0.002	0.000584	0.00137	0.00247	0 of 57
HEPTACHLOR EPOXIDE	~	0.00222	0.00223	0.000533	0.00217	0.000537	0.00233	0.000643	0.0021	0.00056	0.002	0.000584	0.00137	0.00247	0 of 57
HEXACHLOROBENZENE	~	~	~	0.0000591	~	**0.00022**	~	**0.000254**	~	**0.00012**	~	**0.000128**	0.000145	0.000263	14 of 34
METHOXYCHLOR	~	0.0222	0.0223	0.02	0.0217	0.0227	0.0233	0.0229	0.021	0.0248	0.02	0.0259	0.0227	0.0263	0 of 23
MIREX	~	~	~	0.0000591	~	0.000105	~	0.0000503	~	0.0000799	~	0.0000814	0.0000759	0.00013	0 of 34
TOTAL CHLORDANE	~	~	~	**0.0173**	~	**0.0147**	~	**0.00934**	~	**0.0142**	~	**0.0134**	0.014	0.0174	34 of 34
TOTAL DDT	~	~	~	**0.00518**	~	**0.00438**	~	**0.00528**	~	**0.0041**	~	**0.00424**	0.00453	0.00762	34 of 34
TOXAPHENE	~	0.0556	0.0558	0.05	0.0543	0.0567	0.0583	0.0573	0.0524	0.0621	0.05	0.0649	0.0568	0.0658	0 of 23
TRANS-NONACHLOR	~	~	~	**0.00424**	~	**0.00259**	~	**0.0015**	~	**0.00286**	~	**0.00227**	0.00277	0.00443	34 of 34

Table A-6. Deer Island Influent Characterization (South System), FY04 (cont.)

Semivolatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,2,4-TRICHLOROBENZENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
1,2-DICHLOROBENZENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
1,2-DIPHENYLHYDRAZINE (AS AZOBENZENE)	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
1,3-DICHLOROBENZENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
1,4-DICHLOROBENZENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2,2'-OXYBIS(1-CHLOROPROPANE)	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2,4,5-TRICHLOROPHENOL	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2,4,6-TRICHLOROPHENOL	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2,4-DICHLOROPHENOL	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2,4-DIMETHYLPHENOL	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2,4-DINITROPHENOL	~	2.14	2.14	2.27	2.15	2.11	2.08	2.06	2.34	2.2	2	2.19	2.15	2.4	0 of 23
2,4-DINITROTOLUENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2,6-DINITROTOLUENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2-CHLORONAPHTHALENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2-CHLOROPHENOL	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2-METHYL-4,6-DINITROPHENOL	~	10.7	10.7	11.4	10.7	10.5	10.4	10.3	11.7	11	10	11	10.7	12	0 of 23
2-METHYLNAPHTHALENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2-METHYLPHENOL	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2-NITROANILINE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
2-NITROPHENOL	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
3,3'-DICHLOROBENZIDINE	~	2.14	2.14	2.27	2.15	2.11	2.08	2.06	2.34	2.2	2	2.19	2.15	2.4	0 of 23
3-NITROANILINE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
4-BROMOPHENYL PHENYL ETHER	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
4-CHLORO-3-METHYLPHENOL	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
4-CHLOROANILINE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
4-CHLOROPHENYL PHENYL ETHER	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
4-METHYLPHENOL (INCLUDES 3-METHYLPHENOL)	~	**10.7**	**24.5**	**14.8**	**4.71**	**22**	**9.37**	**19.7**	**26.9**	1.1	1	**23.9**	12	29.9	18 of 23
4-NITROANILINE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
4-NITROPHENOL	~	2.14	2.14	2.27	2.15	2.11	2.08	2.06	2.34	2.2	2	2.19	2.15	2.4	0 of 23
ACENAPHTHENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
ACENAPHTHYLENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
ANILINE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
ANTHRACENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
BENZIDINE	~	5.35	5.35	5.69	5.37	5.27	5.2	5.16	5.85	5.51	5	5.48	5.36	6	0 of 23
BENZO(A)ANTHRACENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
BENZO(A)PYRENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23

Table A-6. Deer Island Influent Characterization (South System), FY04 (cont.)

Semivolatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
BENZO(B)FLUORANTHENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
BENZO(GHI)PERYLENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
BENZO(K)FLUORANTHENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
BENZOIC ACID	~	2.14	**9.76**	**14.6**	2.15	2.11	2.08	2.06	**55.4**	2.2	2	2.19	7.31	74.5	4 of 23
BENZYL ALCOHOL	~	**3.26**	**14**	1.14	**8.3**	**7.89**	**7.17**	1.03	**12.3**	1.1	1	**13.7**	5.72	15.3	14 of 23
BIS(2-CHLOROETHOXY)METHANE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
BIS(2-CHLOROETHYL)ETHER	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
BIS(2-ETHYLHEXYL)PHTHALATE	~	**15.4**	**10.9**	**13.5**	**11.1**	**12.7**	**24.4**	**21.5**	**21.7**	**6.33**	**10.6**	**13.5**	14	28.3	23 of 23
BUTYL BENZYL PHTHALATE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
CARBAZOLE	~	~	~	~	~	~	~	~	1.17	1.1	1	1.1	1.08	1.2	0 of 8
CHRYSENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
DI-N-BUTYLPHTHALATE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
DI-N-OCTYLPHTHALATE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
DIBENZO(A,H)ANTHRACENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
DIBENZOFURAN	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
DIETHYL PHTHALATE	~	1.07	**7.67**	**3.59**	1.07	1.05	1.04	1.03	**7.87**	1.1	1	1.1	2.12	9.31	5 of 23
DIMETHYL PHTHALATE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
FLUORANTHENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
FLUORENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
HEXACHLOROBENZENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
HEXACHLOROBUTADIENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
HEXACHLOROCYCLOPENTADIENE	~	5.35	5.35	5.69	5.37	5.27	5.2	5.16	5.85	5.51	5	5.48	5.36	6	0 of 23
HEXACHLOROETHANE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
INDENO(1,2,3-CD)PYRENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
ISOPHORONE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
N-DECANE	~	~	~	~	~	~	~	~	~	~	~	1.1	1.1	1.19	0 of 2
N-NITROSODI-N-PROPYLAMINE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
N-NITROSODIMETHYLAMINE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
N-NITROSODIPHENYLAMINE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
N-OCTADECANE	~	~	~	~	~	~	~	~	~	~	~	**1.58**	1.58	1.97	1 of 2
NAPHTHALENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
NITROBENZENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23
PENTACHLOROPHENOL	~	3.21	3.21	3.41	3.22	3.16	3.12	3.09	3.51	3.3	3	3.29	3.22	3.6	0 of 23
PHENANTHRENE	~	**0.61**	0.107	0.114	0.107	0.105	**0.96**	0.103	1.17	1.1	1	1.1	0.695	1.23	5 of 23
PHENOL	~	2.14	**7.04**	2.27	2.15	2.11	2.08	2.06	2.34	2.2	2	**6.81**	2.83	11.8	2 of 23
PYRENE	~	1.07	1.07	1.14	1.07	1.05	1.04	1.03	1.17	1.1	1	1.1	1.07	1.2	0 of 23

Table A-6. Deer Island Influent Characterization (South System), FY04 (cont.)

Volatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,1,1-TRICHLOROETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
1,1,2,2-TETRACHLOROETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
1,1,2-TRICHLOROETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
1,1-DICHLOROETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
1,1-DICHLOROETHENE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
1,2-DICHLOROBENZENE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
1,2-DICHLOROETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
1,2-DICHLOROPROPANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
1,3-DICHLOROBENZENE	~	**2.41**	**1.73**	**2.69**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.843	3.96	4 of 22
1,4-DICHLOROBENZENE	~	**3.96**	**1.67**	**1.59**	0.5	0.5	0.5	**1.61**	0.5	0.5	0.5	**2.97**	1.17	4.14	7 of 22
2-BUTANONE	~	**10.9**	**10.8**	**6.56**	**8.24**	**8.2**	**5.71**	**13.3**	**9.1**	0.5	0.5	**7.16**	6.27	17.1	15 of 22
2-CHLOROETHYL VINYL ETHER	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
2-HEXANONE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
4-METHYL-2-PENTANONE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
ACETONE	~	**293**	**141**	**165**	**138**	**109**	**44.9**	**161**	**68.9**	**72.7**	**86.8**	**119**	115	405	22 of 22
ACROLEIN	~	1	1	1	1	1	1	1	1	1	1	1	1	1	0 of 22
ACRYLONITRILE	~	1	1	1	1	1	**2.14**	1	1	1	1	1	1.13	3.32	1 of 22
BENZENE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
BROMODICHLOROMETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
BROMOFORM	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
BROMOMETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
CARBON DISULFIDE	~	0.5	0.5	0.5	**2.11**	0.5	0.5	**5.3**	**2.5**	0.5	0.5	0.5	1.16	10.1	3 of 22
CARBON TETRACHLORIDE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
CHLOROBENZENE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
CHLOROETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
CHLOROFORM	~	**7.61**	**5.71**	**6.05**	**4.87**	**5.57**	**2.34**	**7.8**	**7.74**	**3.5**	**4.92**	**7.39**	5.38	8.1	21 of 22
CHLOROMETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
CIS-1,2-DICHLOROETHENE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
CIS-1,3-DICHLOROPROPENE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
DIBROMOCHLOROMETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
ETHYLBENZENE	~	**2.16**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.617	3.51	1 of 22
M,P-XYLENE	~	**7.95**	1	1	**2.84**	1	1	1	1	1	1	1	1.65	13.6	2 of 22
METHYLENE CHLORIDE	~	**1.95**	**1.56**	0.5	**2.84**	**5.47**	0.5	**1.9**	**3.3**	0.5	0.5	0.5	1.57	10.4	7 of 22
O-XYLENE	~	**4.02**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.749	6.88	1 of 22
STYRENE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**9.04**	0.5	0.5	0.5	1.12	18.2	1 of 22
TETRACHLOROETHENE	~	**3.2**	**1.81**	0.5	**4.58**	**1.91**	0.5	**5.75**	**3.65**	**2.71**	0.5	**4.43**	2.55	6.3	14 of 22
TOLUENE	~	**6.87**	**6.73**	**6.65**	**3.35**	**4.02**	0.5	**4.8**	**5.47**	0.5	**2.14**	**5.27**	3.53	7.25	17 of 22
TRANS-1,2-DICHLOROETHENE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
TRANS-1,3-DICHLOROPROPENE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
TRICHLOROETHENE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**1.67**	0.5	0.5	0.5	0.586	2.77	1 of 22
TRICHLOROFLUOROMETHANE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
VINYL ACETATE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22
VINYL CHLORIDE	~	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 22

Notes

~: No data or no samples taken

Results in **bold** indicate one or more detects that month

Yearly averages are calculated from individual results collected during the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Table A-7. Deer Island Influent Loadings (South System), FY04

Metals (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
ANTIMONY	~	6.87	8.43	7.76	11.4	10.6	16	10.1	10.3	24.5	18.2	11.3	12.3	26.2	0 of 22
ARSENIC	~	0.275	0.27	0.248	**0.608**	0.338	**2.37**	**0.622**	0.331	0.783	**2.16**	0.362	0.761	2.64	6 of 22
BERYLLIUM	~	0.172	0.169	0.155	0.229	0.211	0.321	0.203	0.207	0.489	0.364	0.226	0.25	0.523	0 of 22
BORON	~	**218**	**228**	**205**	**236**	106	160	101	**231**	245	182	**191**	191	270	11 of 22
CADMIUM	~	**0.298**	**0.199**	**0.237**	**0.364**	**0.382**	**1.24**	**0.453**	**0.25**	**0.636**	**0.773**	**0.288**	0.465	1.35	22 of 22
CHROMIUM	~	**3.04**	**1.23**	**13.8**	**3.16**	**3.1**	**10.3**	**4.86**	**2.02**	**3.21**	**7.41**	**2.19**	4.93	18.2	22 of 22
COPPER	~	**53.6**	**46.1**	**51.5**	**57.1**	**58.8**	**177**	**77**	**44.8**	**32.2**	**102**	**55.1**	68.7	203	22 of 22
HEXAVALENT CHROMIUM	~	1.92	1.69	1.63	2.33	2.1	3.15	2.11	1.99	4.42	3.63	2.25	2.47	4.55	0 of 22
IRON	~	**1660**	**1190**	**1050**	**1510**	**1680**	**5160**	**2220**	**1470**	**2130**	**3200**	**1570**	2080	5780	22 of 22
LEAD	~	**9.31**	**3.21**	**2.86**	**4.7**	**6.11**	**28.5**	**7.19**	**3.67**	**8.28**	**16.9**	**4.62**	8.67	30.2	22 of 22
MERCURY	~	**0.17**	**0.134**	**0.183**	**0.222**	**0.109**	**0.467**	**0.275**	**0.121**	**0.181**	**0.185**	**0.132**	0.198	0.507	23 of 23
MOLYBDENUM	~	**4.31**	**9.48**	**3.76**	**6.7**	**4.31**	**5.69**	**3.8**	**2.7**	**3.87**	**6.8**	**4.98**	5.13	9.53	22 of 22
NICKEL	~	**3.16**	**2.36**	**6.74**	**4.96**	**3.44**	**8.05**	**4.67**	**4.39**	**6.04**	**7.93**	**2.3**	4.91	10.5	22 of 22
SELENIUM	~	0.309	0.304	0.279	0.411	0.381	0.577	0.365	0.373	0.881	0.655	0.407	0.449	0.942	0 of 22
SILVER	~	**1.18**	**1.17**	**0.993**	**1.94**	**1.92**	**4.96**	**2.37**	**1.29**	**1.38**	**2.29**	**2.53**	2	5.19	22 of 22
THALLIUM	~	0.344	0.337	0.31	0.457	0.423	0.641	0.406	0.414	0.979	0.728	0.452	0.499	1.05	0 of 22
ZINC	~	**91.4**	**72.5**	**71.3**	**88.9**	**99.8**	**316**	**126**	**78.3**	**112**	**176**	**99.9**	121	357	22 of 22

Cyanide (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
CYANIDE	~	3.84	3.37	3.26	4.65	4.19	6.3	4.21	3.98	8.83	7.26	4.49	4.95	9.11	0 of 22

Oil and Grease, Surfactants, and Petroleum Hydrocarbons (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
FATS OIL AND GREASE	~	**50200**	**43500**	**44000**	**41500**	**43200**	**94700**	**59000**	**48200**	**33500**	**45900**	**44100**	49800	106000	22 of 22
MBAS	~	**3010**	**3300**	**3970**	**3290**	**3890**	**2490**	**4500**	**4510**	**4350**	**4430**	**4960**	3880	5750	22 of 22
PETROLEUM HYDROCARBON	~	**1050**	**580**	**629**	**703**	**1760**	**3290**	**2910**	**1860**	**245**	**1240**	**1310**	1420	3840	21 of 22

Table A-7. Deer Island Influent Loadings (South System), FY04 (cont.)

Organochlorine Pesticides and PCBs (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
2,4'-DDD	~	~	~	0.0000593	~	0.0000888	~	0.0000408	~	**0.000509**	~	**0.000636**	0.000267	0.0012	4 of 34
2,4'-DDE	~	~	~	0.0000593	~	0.0000888	~	0.0000408	~	0.000156	~	0.0000736	0.0000838	0.000164	0 of 34
2,4'-DDT	~	~	~	0.0000593	~	0.0000888	~	0.0000408	~	0.000156	~	0.0000736	0.0000838	0.000164	0 of 34
4,4'-DDD	~	0.00153	0.00151	**0.000906**	0.00198	**0.0011**	0.00299	**0.00178**	0.00173	**0.002**	0.00291	**0.000797**	0.00171	0.00316	27 of 57
4,4'-DDE	~	0.00153	0.00151	**0.00243**	0.00198	**0.00242**	0.00299	**0.00212**	0.00173	**0.00304**	0.00291	**0.00215**	0.00226	0.00321	34 of 57
4,4'-DDT	~	0.00153	0.00151	**0.00144**	0.00198	**0.000667**	0.00299	**0.000742**	0.00173	**0.00397**	0.00291	**0.00113**	0.00185	0.00437	23 of 57
ALDRIN	~	0.00153	0.00151	0.000471	0.00198	0.000454	0.00299	0.000522	0.00173	0.0011	0.00291	0.000528	0.00139	0.00316	0 of 57
ALPHA-BHC	~	0.00153	0.00151	0.00129	0.00198	0.00192	0.00299	0.00186	0.00173	0.00485	0.00291	0.00235	0.00231	0.00492	0 of 23
ALPHA-CHLORDANE	~	0.00153	0.00151	**0.00464**	0.00198	**0.00445**	0.00299	**0.00286**	0.00173	**0.00991**	0.00291	**0.00423**	0.00357	0.0112	34 of 57
AROCLOR-1016	~	0.0382	0.0377	0.0324	0.0496	0.0479	0.0748	0.0465	0.0433	0.121	0.0728	0.0587	0.0578	0.123	0 of 23
AROCLOR-1221	~	0.0763	0.0752	0.0647	0.0995	0.096	0.15	0.0931	0.0865	0.244	0.146	0.118	0.116	0.247	0 of 23
AROCLOR-1232	~	0.0382	0.0377	0.0324	0.0496	0.0479	0.0748	0.0465	0.0433	0.121	0.0728	0.0587	0.0578	0.123	0 of 23
AROCLOR-1242	~	0.0382	0.0377	0.0324	0.0496	0.0479	0.0748	0.0465	0.0433	0.121	0.0728	0.0587	0.0578	0.123	0 of 23
AROCLOR-1248	~	0.0382	0.0377	0.0324	0.0496	0.0479	0.0748	0.0465	0.0433	0.121	0.0728	0.0587	0.0578	0.123	0 of 23
AROCLOR-1254	~	0.0382	0.0377	0.0324	0.0496	0.0479	0.0748	0.0465	0.0433	0.121	0.0728	0.0587	0.0578	0.123	0 of 23
AROCLOR-1260	~	**0.178**	0.0377	0.0324	0.0496	0.0479	0.0748	0.0465	0.0433	0.121	0.0728	0.0587	0.0712	0.184	4 of 23
BETA-BHC	~	0.00153	0.00151	0.00129	0.00198	0.00192	0.00299	0.00186	0.00173	0.00485	0.00291	0.00235	0.00231	0.00492	0 of 23
CHLORDANE (TECHNICAL)	~	0.0382	0.0377	0.0324	0.0496	0.0479	0.0748	0.0465	0.0433	0.121	0.0728	0.0587	0.0578	0.123	0 of 23
DDMU	~	~	~	0.0000593	~	0.0000888	~	0.0000408	~	0.000156	~	0.0000736	0.0000838	0.000164	0 of 34
DELTA-BHC	~	0.00153	0.00151	0.00129	0.00198	0.00192	0.00299	0.00186	0.00173	0.00485	0.00291	0.00235	0.00231	0.00492	0 of 23
DIELDRIN	~	0.00153	0.00151	0.000471	0.00198	0.000454	0.00299	0.000522	0.00173	0.0011	0.00291	0.000528	0.00139	0.00316	0 of 57
ENDOSULFAN I	~	0.00153	0.00151	0.00129	0.00198	0.00192	0.00299	0.00186	0.00173	0.00485	0.00291	0.00235	0.00231	0.00492	0 of 23
ENDOSULFAN II	~	0.00153	0.00151	0.00129	0.00198	0.00192	0.00299	0.00186	0.00173	0.00485	0.00291	0.00235	0.00231	0.00492	0 of 23
ENDOSULFAN SULFATE	~	0.00153	0.00151	0.00129	0.00198	0.00192	0.00299	0.00186	0.00173	0.00485	0.00291	0.00235	0.00231	0.00492	0 of 23
ENDRIN	~	0.00153	0.00151	0.000471	0.00198	0.000454	0.00299	0.000522	0.00173	0.0011	0.00291	0.000528	0.00139	0.00316	0 of 57
ENDRIN ALDEHYDE	~	0.00153	0.00151	0.00129	0.00198	0.00192	0.00299	0.00186	0.00173	0.00485	0.00291	0.00235	0.00231	0.00492	0 of 23
ENDRIN KETONE	~	0.00153	0.00151	0.00129	0.00198	0.00192	0.00299	0.00186	0.00173	0.00485	0.00291	0.00235	0.00231	0.00492	0 of 23
GAMMA-BHC (LINDANE)	~	0.00153	**0.00537**	**0.000883**	0.00198	0.000454	0.00299	0.000522	0.00173	0.0011	0.00291	0.000528	0.00178	0.00912	3 of 57
GAMMA-CHLORDANE	~	0.00153	0.00151	**0.00492**	0.00198	**0.00449**	0.00299	**0.00279**	0.00173	**0.00984**	0.00291	**0.00478**	0.00365	0.0111	34 of 57
HEPTACHLOR	~	0.00153	0.00151	0.000471	0.00198	0.000454	0.00299	0.000522	0.00173	0.0011	0.00291	0.000528	0.00139	0.00316	0 of 57
HEPTACHLOR EPOXIDE	~	0.00153	0.00151	0.000471	0.00198	0.000454	0.00299	0.000522	0.00173	0.0011	0.00291	0.000528	0.00139	0.00316	0 of 57
HEXACHLOROBENZENE	~	~	~	0.0000593	~	**0.000186**	~	**0.000206**	~	**0.000235**	~	**0.000115**	0.00016	0.000321	14 of 34
METHOXYCHLOR	~	0.0153	0.0151	0.0129	0.0198	0.0192	0.0299	0.0186	0.0173	0.0485	0.0291	0.0235	0.0231	0.0492	0 of 23
MIREX	~	~	~	0.0000593	~	0.0000888	~	0.0000408	~	0.000156	~	0.0000736	0.0000838	0.000164	0 of 34
TOTAL CHLORDANE	~	~	~	**0.0173**	~	**0.0124**	~	**0.00758**	~	**0.0279**	~	**0.0121**	0.0155	0.0325	34 of 34
TOTAL DDT	~	~	~	**0.0052**	~	**0.0037**	~	**0.00429**	~	**0.00802**	~	**0.00383**	0.00501	0.0083	34 of 34
TOXAPHENE	~	0.0382	0.0377	0.0324	0.0496	0.0479	0.0748	0.0465	0.0433	0.121	0.0728	0.0587	0.0578	0.123	0 of 23
TRANS-NONACHLOR	~	~	~	**0.00425**	~	**0.00219**	~	**0.00122**	~	**0.00559**	~	**0.00206**	0.00306	0.00712	34 of 34

Table A-7. Deer Island Influent Loadings (South System), FY04 (cont.)

Semivolatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,2,4-TRICHLOROBENZENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
1,2-DICHLOROBENZENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
1,2-DIPHENYLHYDRAZINE (AS AZOBENZENE)	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
1,3-DICHLOROBENZENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
1,4-DICHLOROBENZENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2,2'-OXYBIS(1-CHLOROPROPANE)	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2,4,5-TRICHLOROPHENOL	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2,4,6-TRICHLOROPHENOL	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2,4-DICHLOROPHENOL	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2,4-DIMETHYLPHENOL	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2,4-DINITROPHENOL	~	1.47	1.44	1.41	1.96	1.78	2.67	1.67	1.94	4.31	2.91	1.98	2.14	4.69	0 of 23
2,4-DINITROTOLUENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2,6-DINITROTOLUENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2-CHLORONAPHTHALENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2-CHLOROPHENOL	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2-METHYL-4,6-DINITROPHENOL	~	7.36	7.22	7.06	9.82	8.92	13.3	8.37	9.69	21.6	14.6	9.91	10.7	23.4	0 of 23
2-METHYLNAPHTHALENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2-METHYLPHENOL	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2-NITROANILINE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
2-NITROPHENOL	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
3,3'-DICHLOROBENZIDINE	~	1.47	1.44	1.41	1.96	1.78	2.67	1.67	1.94	4.31	2.91	1.98	2.14	4.69	0 of 23
3-NITROANILINE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
4-BROMOPHENYL PHENYL ETHER	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
4-CHLORO-3-METHYLPHENOL	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
4-CHLOROANILINE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
4-CHLOROPHENYL PHENYL ETHER	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
4-METHYLPHENOL (INCLUDES 3-METHYLPHENOL)	~	**7.33**	**16.6**	**9.17**	**4.3**	**18.6**	**12**	**16**	**22.3**	2.16	1.46	**21.6**	12	25.5	18 of 23
4-NITROANILINE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
4-NITROPHENOL	~	1.47	1.44	1.41	1.96	1.78	2.67	1.67	1.94	4.31	2.91	1.98	2.14	4.69	0 of 23
ACENAPHTHENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
ACENAPHTHYLENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
ANILINE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
ANTHRACENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
BENZIDINE	~	3.68	3.61	3.53	4.91	4.46	6.67	4.18	4.84	10.8	7.28	4.95	5.35	11.7	0 of 23
BENZO(A)ANTHRACENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
BENZO(A)PYRENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23

Table A-7. Deer Island Influent Loadings (South System), FY04 (cont.)

Semivolatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
BENZO(B)FLUORANTHENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
BENZO(GHI)PERYLENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
BENZO(K)FLUORANTHENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
BENZOIC ACID	~	1.47	**6.59**	**9.06**	1.96	1.78	2.67	1.67	**45.9**	4.31	2.91	1.98	7.3	61.3	4 of 23
BENZYL ALCOHOL	~	**2.24**	**9.41**	0.706	**7.59**	**6.67**	**9.2**	0.837	**10.2**	2.16	1.46	**12.3**	5.71	13.9	14 of 23
BIS(2-CHLOROETHOXY)METHANE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
BIS(2-CHLOROETHYL)ETHER	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
BIS(2-ETHYLHEXYL)PHTHALATE	~	**10.6**	**7.36**	**8.39**	**10.1**	**10.8**	**31.2**	**17.5**	**18**	**12.4**	**15.5**	**12.2**	14	33.4	23 of 23
BUTYL BENZYL PHTHALATE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
CARBAZOLE	~	~	~	~	~	~	~	~	0.969	2.16	1.46	0.991	1.39	2.34	0 of 8
CHRYSENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
DI-N-BUTYLPHTHALATE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
DI-N-OCTYLPHTHALATE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
DIBENZO(A,H)ANTHRACENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
DIBENZOFURAN	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
DIETHYL PHTHALATE	~	0.736	**5.17**	**2.23**	0.982	0.892	1.33	0.837	**6.52**	2.16	1.46	0.991	2.12	7.76	5 of 23
DIMETHYL PHTHALATE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
FLUORANTHENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
FLUORENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
HEXACHLOROBENZENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
HEXACHLOROBUTADIENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
HEXACHLOROCYCLOPENTADIENE	~	3.68	3.61	3.53	4.91	4.46	6.67	4.18	4.84	10.8	7.28	4.95	5.35	11.7	0 of 23
HEXACHLOROETHANE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
INDENO(1,2,3-CD)PYRENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
ISOPHORONE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
N-DECANE	~	~	~	~	~	~	~	~	~	~	~	0.991	0.991	1.08	0 of 2
N-NITROSODI-N-PROPYLAMINE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
N-NITROSODIMETHYLAMINE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
N-NITROSODIPHENYLAMINE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
N-OCTADECANE	~	~	~	~	~	~	~	~	~	~	~	**1.43**	1.43	1.77	1 of 2
NAPHTHALENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
NITROBENZENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23
PENTACHLOROPHENOL	~	2.21	2.17	2.12	2.95	2.68	4	2.51	2.91	6.47	4.37	2.97	3.21	7.03	0 of 23
PHENANTHRENE	~	**0.419**	0.0722	0.0706	0.0982	0.0892	**1.23**	0.0837	0.969	2.16	1.46	0.991	0.694	2.34	5 of 23
PHENOL	~	1.47	**4.75**	1.41	1.96	1.78	2.67	1.67	1.94	4.31	2.91	**6.16**	2.82	10.2	2 of 23
PYRENE	~	0.736	0.722	0.706	0.982	0.892	1.33	0.837	0.969	2.16	1.46	0.991	1.07	2.34	0 of 23

Table A-7. Deer Island Influent Loadings (South System), FY04 (cont.)

Volatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,1,1-TRICHLOROETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
1,1,2,2-TETRACHLOROETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
1,1,2-TRICHLOROETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
1,1-DICHLOROETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
1,1-DICHLOROETHENE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
1,2-DICHLOROBENZENE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
1,2-DICHLOROETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
1,2-DICHLOROPROPANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
1,3-DICHLOROBENZENE	~	**1.85**	**1.17**	**1.75**	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.834	3.36	4 of 22
1,4-DICHLOROBENZENE	~	**3.04**	**1.13**	**1.04**	0.465	0.419	0.63	**1.36**	0.398	0.883	0.726	**2.66**	1.16	3.23	7 of 22
2-BUTANONE	~	**8.4**	**7.32**	**4.28**	**7.66**	**6.87**	**7.2**	**11.2**	**7.24**	0.883	0.726	**6.43**	6.21	14.1	15 of 22
2-CHLOROETHYL VINYL ETHER	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
2-HEXANONE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
4-METHYL-2-PENTANONE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
ACETONE	~	**225**	**94.9**	**108**	**128**	**91.7**	**56.6**	**136**	**54.8**	**128**	**126**	**107**	114	343	22 of 22
ACROLEIN	~	0.768	0.675	0.652	0.931	0.839	1.26	0.843	0.796	1.77	1.45	0.898	0.989	1.82	0 of 22
ACRYLONITRILE	~	0.768	0.675	0.652	0.931	0.839	**2.7**	0.843	0.796	1.77	1.45	0.898	1.12	4.12	1 of 22
BENZENE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
BROMODICHLOROMETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
BROMOFORM	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
BROMOMETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
CARBON DISULFIDE	~	0.384	0.337	0.326	**1.96**	0.419	0.63	**4.47**	**1.99**	0.883	0.726	0.449	1.14	8.52	3 of 22
CARBON TETRACHLORIDE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
CHLOROBENZENE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
CHLOROETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
CHLOROFORM	~	**5.85**	**3.85**	**3.95**	**4.53**	**4.67**	**2.95**	**6.58**	**6.16**	**6.18**	**7.15**	**6.64**	5.32	7.27	21 of 22
CHLOROMETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
CIS-1,2-DICHLOROETHENE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
CIS-1,3-DICHLOROPROPENE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
DIBROMOCHLOROMETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
ETHYLBENZENE	~	**1.66**	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.611	2.98	1 of 22
M,P-XYLENE	~	**6.11**	0.675	0.652	**2.65**	0.839	1.26	0.843	0.796	1.77	1.45	0.898	1.63	11.5	2 of 22
METHYLENE CHLORIDE	~	**1.5**	**1.06**	0.326	**2.64**	**4.59**	0.63	**1.61**	**2.63**	0.883	0.726	0.449	1.55	8.76	7 of 22
O-XYLENE	~	**3.09**	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.741	5.84	1 of 22
STYRENE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	**7.19**	0.883	0.726	0.449	1.11	14	1 of 22
TETRACHLOROETHENE	~	**2.46**	**1.22**	0.326	**4.26**	**1.61**	0.63	**4.84**	**2.9**	**4.79**	0.726	**3.97**	2.52	5.56	14 of 22
TOLUENE	~	**5.28**	**4.54**	**4.33**	**3.11**	**3.37**	0.63	**4.05**	**4.36**	0.883	**3.11**	**4.73**	3.49	6.06	17 of 22
TRANS-1,2-DICHLOROETHENE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
TRANS-1,3-DICHLOROPROPENE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
TRICHLOROETHENE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	**1.33**	0.883	0.726	0.449	0.579	2.28	1 of 22
TRICHLOROFLUOROMETHANE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
VINYL ACETATE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22
VINYL CHLORIDE	~	0.384	0.337	0.326	0.465	0.419	0.63	0.421	0.398	0.883	0.726	0.449	0.495	0.911	0 of 22

Notes

~: No data or no samples taken

Results in **bold** indicate one or more detects that month

Yearly averages are calculated from individual results collected during the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Table A-8. Deer Island Effluent Characterization, FY04

Metals (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
ARSENIC	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	**1.21**	0.4	0.498	1.24	2 of 24
COPPER	**7.35**	**9.51**	**8.33**	**17.3**	**9.26**	**20.9**	**14**	**16**	**12.3**	**13.9**	**16.7**	**10.8**	13.3	70	101 of 130
LEAD	**1.48**	**1.34**	**0.72**	**0.69**	**1.49**	**0.93**	**1.18**	**2.24**	**1.05**	**2**	**1.8**	0.5	1.38	2.24	11 of 12
MERCURY	**0.0202**	**0.0256**	**0.0148**	**0.0309**	**0.0121**	**0.0422**	**0.0199**	**0.0226**	**0.0217**	**0.0323**	**0.0181**	**0.012**	0.024	0.161	89 of 98

Cyanide (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
CYANIDE	5	5	5	5	5	5	5	5	5	5	5	5	5	5	0 of 23

Surfactants (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
MBAS	~	**0.216**	~	~	~	~	~	~	~	~	~	~	0.216	0.216	1 of 1

Organochlorine Pesticides and PCBs (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
4,4'-DDD	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
4,4'-DDE	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
4,4'-DDT	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
ALDRIN	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
ALPHA-BHC	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
ALPHA-CHLORDANE	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
AROCLOR-1016	0.0557	0.0512	0.055	0.0575	0.0543	0.0532	0.0562	0.0563	0.0541	0.0575	0.0581	0.055	0.0556	0.0641	0 of 24
AROCLOR-1221	0.111	0.102	0.11	0.115	0.108	0.106	0.113	0.113	0.108	0.115	0.116	0.11	0.111	0.128	0 of 24
AROCLOR-1232	0.0557	0.0512	0.055	0.0575	0.0543	0.0532	0.0538	0.0563	0.0541	0.0575	0.0581	0.055	0.0554	0.0641	0 of 24
AROCLOR-1242	0.0557	0.0512	0.055	0.0575	0.0543	0.0532	0.0538	0.0563	0.0541	0.0575	0.0581	0.055	0.0554	0.0641	0 of 24
AROCLOR-1248	0.0557	0.0512	0.055	0.0575	0.0543	0.0532	0.0538	0.0563	0.0541	0.0575	0.0581	0.055	0.0554	0.0641	0 of 24
AROCLOR-1254	0.0557	0.0512	0.055	0.0575	0.0543	0.0532	0.0538	0.0563	0.0541	0.0575	0.0581	0.055	0.0554	0.0641	0 of 24
AROCLOR-1260	0.0557	0.0512	0.055	0.0575	0.0543	0.0532	0.0538	0.0563	0.0541	0.0575	0.0581	0.055	0.0554	0.0641	0 of 24
BETA-BHC	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
CHLORDANE (TECHNICAL)	0.0557	0.0512	0.055	0.0575	0.0543	0.0532	0.0562	0.0563	0.0541	0.0575	0.0581	0.055	0.0556	0.0641	0 of 24
DELTA-BHC	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
DIELDRIN	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
ENDOSULFAN I	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
ENDOSULFAN II	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
ENDOSULFAN SULFATE	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
ENDRIN	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
ENDRIN ALDEHYDE	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
ENDRIN KETONE	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
GAMMA-BHC (LINDANE)	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
GAMMA-CHLORDANE	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
HEPTACHLOR	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
HEPTACHLOR EPOXIDE	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
HEXACHLOROBENZENE	0.00222	0.00204	0.0022	0.0023	0.00217	0.00212	0.00225	0.00225	0.00217	0.0023	0.00232	0.0022	0.00222	0.00256	0 of 24
METHOXYCHLOR	0.0222	0.0204	0.022	0.023	0.0217	0.0212	0.0225	0.0225	0.0217	0.023	0.0232	0.022	0.0222	0.0256	0 of 24
TOXAPHENE	0.0557	0.0512	0.055	0.0575	0.0543	0.0532	0.0562	0.0563	0.0541	0.0575	0.0581	0.055	0.0556	0.0641	0 of 24

Table A-8. Deer Island Effluent Characterization, FY04 (cont.)

Volatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,1,1-TRICHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
1,1,2,2-TETRACHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
1,1,2-TRICHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
1,1-DICHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
1,1-DICHLOROETHENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
1,2-DICHLOROBENZENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
1,2-DICHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
1,2-DICHLOROPROPANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
1,3-DICHLOROBENZENE	**1.51**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.576	2.52	1 of 23
1,4-DICHLOROBENZENE	0.5	**3.49**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.735	3.54	2 of 23
2-BUTANONE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
2-CHLOROETHYL VINYL ETHER	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
2-HEXANONE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
4-METHYL-2-PENTANONE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
ACETONE	**18.3**	**7.68**	**16**	**17.3**	1	**11.1**	1	**14.1**	**13.7**	**22.1**	**9.7**	**2.64**	11.7	32.8	18 of 23
ACROLEIN	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0 of 23
ACRYLONITRILE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0 of 23
BENZENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
BROMODICHLOROMETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
BROMOFORM	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
BROMOMETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
CARBON DISULFIDE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
CARBON TETRACHLORIDE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
CHLOROBENZENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
CHLOROETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
CHLOROFORM	**9.58**	**7.9**	**6.58**	**7.28**	**5.91**	**7.87**	**3.27**	**8.55**	**9.73**	**5.06**	**6.17**	**9.5**	6.9	11	22 of 23
CHLOROMETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
CIS-1,2-DICHLOROETHENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
CIS-1,3-DICHLOROPROPENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
DIBROMOCHLOROMETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
ETHYLBENZENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
M,P-XYLENE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0 of 23
METHYLENE CHLORIDE	**2.85**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**3.69**	0.5	0.5	0.5	0.902	4.18	4 of 23
O-XYLENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
STYRENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
TETRACHLOROETHENE	**2.95**	**2.98**	**8.06**	**5.47**	**2.61**	**2.76**	**1.76**	**4.4**	**5.25**	**1.56**	**1.54**	**2.95**	3.21	10.4	18 of 23
TOLUENE	**1.8**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.598	3.11	1 of 23
TRANS-1,2-DICHLOROETHENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
TRANS-1,3-DICHLOROPROPENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
TRICHLOROETHENE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
TRICHLOROFLUOROMETHANE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
VINYL ACETATE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23
VINYL CHLORIDE	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 23

Notes

Many of the compounds previously found in this Appendix have moved to the low-detection limit studies found in Appendix A-10.

~: No data or no samples taken

Results in **bold** indicate one or more detects that month

Yearly averages are calculated from individual results collected during the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Table A-9. Deer Island Effluent Loadings, FY04

Metals (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
ARSENIC	1.03	1.22	0.886	0.865	1.14	1.03	1.44	1.1	1	2.11	**5.36**	1.04	1.52	5.7	2 of 24
COPPER	**19**	**28.1**	**19.3**	**41.7**	**25.7**	**83.9**	**44.4**	**40.1**	**31.3**	**76.6**	**59.1**	**27.8**	41.1	233	101 of 130
LEAD	**3.8**	**3.59**	**1.6**	**1.5**	**4.07**	**2.39**	**4.05**	**6.95**	**2.61**	**9.98**	**7.3**	1.3	4.09	9.98	11 of 12
MERCURY	**0.052**	**0.0757**	**0.0343**	**0.0744**	**0.0333**	**0.17**	**0.0631**	**0.0567**	**0.0553**	**0.179**	**0.064**	**0.0309**	0.074	0.586	89 of 98

Cyanide (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
CYANIDE	12.8	13.4	11	11.2	16.2	13.3	16.9	14.3	12.1	24	19.5	13	14.9	24.9	0 of 23

Surfactants (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
MBAS	~	**489**	~	~	~	~	~	~	~	~	~	~	489	489	1 of 1

Organochlorine Pesticides and PCBs (lbs/day)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
4,4'-DDD	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
4,4'-DDE	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
4,4'-DDT	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
ALDRIN	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
ALPHA-BHC	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
ALPHA-CHLORDANE	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
AROCLOR-1016	0.144	0.156	0.122	0.124	0.155	0.136	0.202	0.155	0.136	0.304	0.257	0.143	0.17	0.324	0 of 24
AROCLOR-1221	0.288	0.312	0.244	0.249	0.309	0.273	0.405	0.311	0.271	0.608	0.513	0.287	0.339	0.646	0 of 24
AROCLOR-1232	0.144	0.156	0.122	0.124	0.155	0.136	0.193	0.155	0.136	0.304	0.257	0.143	0.169	0.324	0 of 24
AROCLOR-1242	0.144	0.156	0.122	0.124	0.155	0.136	0.193	0.155	0.136	0.304	0.257	0.143	0.169	0.324	0 of 24
AROCLOR-1248	0.144	0.156	0.122	0.124	0.155	0.136	0.193	0.155	0.136	0.304	0.257	0.143	0.169	0.324	0 of 24
AROCLOR-1254	0.144	0.156	0.122	0.124	0.155	0.136	0.193	0.155	0.136	0.304	0.257	0.143	0.169	0.324	0 of 24
AROCLOR-1260	0.144	0.156	0.122	0.124	0.155	0.136	0.193	0.155	0.136	0.304	0.257	0.143	0.169	0.324	0 of 24
BETA-BHC	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
CHLORDANE (TECHNICAL)	0.144	0.156	0.122	0.124	0.155	0.136	0.202	0.155	0.136	0.304	0.257	0.143	0.17	0.324	0 of 24
DELTA-BHC	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
DIELDRIN	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
ENDOSULFAN I	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
ENDOSULFAN II	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
ENDOSULFAN SULFATE	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
ENDRIN	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
ENDRIN ALDEHYDE	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
ENDRIN KETONE	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
GAMMA-BHC (LINDANE)	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
GAMMA-CHLORDANE	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
HEPTACHLOR	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
HEPTACHLOR EPOXIDE	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
HEXACHLOROBENZENE	0.00574	0.00625	0.00488	0.00498	0.0062	0.00545	0.00806	0.00621	0.00543	0.0122	0.0103	0.00573	0.00678	0.013	0 of 24
METHOXYCHLOR	0.0574	0.0625	0.0488	0.0498	0.062	0.0545	0.0806	0.0621	0.0543	0.122	0.103	0.0573	0.0678	0.13	0 of 24
TOXAPHENE	0.144	0.156	0.122	0.124	0.155	0.136	0.202	0.155	0.136	0.304	0.257	0.143	0.17	0.324	0 of 24

Table A-9. Deer Island Effluent Loadings, FY04 (cont.)

Volatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,1,1-TRICHLOROETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
1,1,2,2-TETRACHLOROETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
1,1,2-TRICHLOROETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
1,1-DICHLOROETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
1,1-DICHLOROETHENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
1,2-DICHLOROBENZENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
1,2-DICHLOROETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
1,2-DICHLOROPROPANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
1,3-DICHLOROBENZENE	**3.88**	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.71	6.47	1 of 23
1,4-DICHLOROBENZENE	1.28	**9.38**	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	2.19	9.48	2 of 23
2-BUTANONE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
2-CHLOROETHYL VINYL ETHER	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
2-HEXANONE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
4-METHYL-2-PENTANONE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
ACETONE	**47.1**	**20.6**	**35.2**	**38.7**	3.23	**29.5**	3.38	**40.4**	**33.3**	**106**	**37.8**	**6.87**	34.7	122	18 of 23
ACROLEIN	2.57	2.68	2.2	2.23	3.23	2.65	3.38	2.86	2.42	4.81	3.9	2.6	2.98	4.99	0 of 23
ACRYLONITRILE	2.57	2.68	2.2	2.23	3.23	2.65	3.38	2.86	2.42	4.81	3.9	2.6	2.98	4.99	0 of 23
BENZENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
BROMODICHLOROMETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
BROMOFORM	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
BROMOMETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
CARBON DISULFIDE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
CARBON TETRACHLORIDE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
CHLOROBENZENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
CHLOROETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
CHLOROFORM	**24.6**	**21.2**	**14.5**	**16.2**	**19.1**	**20.9**	**11.1**	**24.5**	**23.6**	**24.3**	**24.1**	**24.7**	20.6	30.6	22 of 23
CHLOROMETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
CIS-1,2-DICHLOROETHENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
CIS-1,3-DICHLOROPROPENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
DIBROMOCHLOROMETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
ETHYLBENZENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
M,P-XYLENE	2.57	2.68	2.2	2.23	3.23	2.65	3.38	2.86	2.42	4.81	3.9	2.6	2.98	4.99	0 of 23
METHYLENE CHLORIDE	**7.31**	1.34	1.1	1.12	1.62	1.33	1.69	1.43	**8.95**	2.4	1.95	1.3	2.69	10.4	4 of 23
O-XYLENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
STYRENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
TETRACHLOROETHENE	**7.57**	**8**	**17.7**	**12.2**	**8.45**	**7.33**	**5.94**	**12.6**	**12.7**	**7.52**	**6.01**	**7.68**	9.56	23.3	18 of 23
TOLUENE	**4.63**	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.78	7.98	1 of 23
TRANS-1,2-DICHLOROETHENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
TRANS-1,3-DICHLOROPROPENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
TRICHLOROETHENE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
TRICHLOROFLUOROMETHANE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
VINYL ACETATE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23
VINYL CHLORIDE	1.28	1.34	1.1	1.12	1.62	1.33	1.69	1.43	1.21	2.4	1.95	1.3	1.49	2.49	0 of 23

Notes

Many of the compounds previously found in this Appendix have moved to the low-detection limit studies found in Appendix A-10.

~: No data or no samples taken

Results in **bold** indicate one or more detects that month

Yearly averages are calculated from individual results collected during the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Table A-10. Deer Island Efffluent Characterization (DEC), FY04

Metals (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
ANTIMONY	10	10	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.1	12.5	0 of 25
BERYLLIUM	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0 of 25
BORON	262	188	337	191	125	125	125	125	273	196	125	251	184	362	11 of 25
CADMIUM	0.0957	0.129	0.133	0.173	0.116	0.242	0.134	0.132	0.129	0.232	0.1	0.079	0.151	0.425	88 of 88
CHROMIUM	1.32	1.03	0.651	1.7	0.95	2.13	0.884	1.11	1.69	2.25	1.28	0.689	1.4	4.66	83 of 88
HEXAVALENT CHROMIUM	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	0 of 24
IRON	859	252	221	368	463	465	421	499	307	586	455	244	441	1090	25 of 25
LEAD	1.2	1.2	1.2	2.45	1.2	3.71	1.2	1.2	1.46	3.53	1.42	1.2	1.93	12.1	6 of 88
MOLYBDENUM	9.28	10.1	14.2	9.35	6.92	4.6	5.49	7.2	8.62	5.71	10.2	10.5	8.05	27.6	64 of 64
NICKEL	3.97	3.66	3.46	4.01	3.69	3.66	2.33	2.97	4.68	3.05	2.47	2.36	3.3	7.28	88 of 88
SELENIUM	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0 of 25
SILVER	0.284	0.278	0.244	0.459	0.375	0.777	0.444	0.569	0.383	0.426	0.42	0.248	0.422	1.87	88 of 88
THALLIUM	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0 of 25
ZINC	20.8	28.4	19.6	31.2	18.9	56.5	27.5	29.6	27.3	51.7	30.2	21	32.6	116	88 of 88

Oil and Grease, Surfactants, and Petroleum Hydrocarbons (mg/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
FATS OIL AND GREASE	0.7	0.7	0.7	15.4	0.7	6.47	0.7	0.7	0.7	0.7	0.7	0.7	2.36	54	4 of 65
MBAS	0.269	0.448	0.248	0.381	0.266	0.687	0.208	0.6	0.434	0.95	0.212	0.231	0.455	1.6	33 of 33
PETROLEUM HYDROCARBON	0.0202	0.052	0.0694	0.487	0.0439	0.249	0.119	0.297	0.687	0.0198	0.186	0.0196	0.186	1.6	21 of 64

Organochlorine Pesticides and PCBs (ug/L)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
2,4'-DDD	0.000054	0.000051	0.0000541	0.0000625	0.0000576	0.0000797	0.0000874	0.0000748	0.0000827	0.0000814	0.0000829	0.0000829	0.0000731	0.000114	0 of 217
2,4'-DDE	0.000054	0.000051	0.0000541	0.0000625	0.0000576	0.0000797	0.0000874	0.0000748	0.0000827	0.0000814	0.0000829	0.0000829	0.0000731	0.000114	0 of 217
2,4'-DDT	0.0000778	0.000051	0.0000541	0.0000625	0.0000576	0.0000797	0.0000874	0.0000748	0.0000827	0.0000814	0.0000829	0.0000829	0.0000746	0.000133	1 of 217
4,4'-DDD	0.000319	0.000121	0.000164	0.000216	0.000182	0.000349	0.000301	0.000548	0.000257	0.000659	0.00023	0.000206	0.000342	0.00113	156 of 217
4,4'-DDE	0.000427	0.000395	0.00025	0.000515	0.000488	0.000945	0.000733	0.000793	0.000715	0.00109	0.000442	0.000345	0.000661	0.00206	205 of 217
4,4'-DDT	0.000094	0.000175	0.000103	0.000278	0.000117	0.000125	0.000164	0.000132	0.000111	0.00275	0.000526	0.000114	0.000656	0.00711	108 of 215
ALDRIN	0.000054	0.000051	0.0000541	0.0000625	0.0000576	0.0000797	0.0000874	0.0000748	0.0000827	0.0000814	0.0000829	0.0000829	0.0000732	0.000114	0 of 217
ALPHA-CHLORDANE	0.00206	0.000883	0.00102	0.00116	0.000862	0.00297	0.00109	0.000812	0.000631	0.00265	0.00177	0.00091	0.00157	0.00434	217 of 217
DDMU	0.000054	0.000051	0.0000541	0.0000625	0.0000576	0.0000797	0.0000874	0.0000748	0.0000827	0.0000814	0.0000829	0.0000829	0.0000731	0.000114	0 of 217
DIELDRIN	5.4E-05	0.000051	0.0000541	0.0000625	0.0000576	0.0000797	0.0000874	0.0000748	0.0000827	0.0000814	0.0000829	0.0000829	0.0000731	0.000114	0 of 217
ENDRIN	0.000054	0.000051	0.0000541	0.0000625	0.0000576	0.0000797	0.0000874	0.0000748	0.0000827	0.0000814	0.0000829	0.0000829	0.0000731	0.000114	0 of 217
GAMMA-BHC (LINDANE)	0.00316	0.00104	0.00106	0.001	0.000888	0.0000797	0.000161	0.000075	0.0000827	0.0000814	0.000111	0.00106	0.000596	0.00572	58 of 217
GAMMA-CHLORDANE	0.00217	0.000849	0.00127	0.00129	0.00138	0.00286	0.00113	0.000881	0.000676	0.00265	0.00169	0.00099	0.00165	0.00395	217 of 217
HEPTACHLOR	0.000054	0.000051	0.000712	0.0000625	0.000462	0.0000797	0.0000874	0.000075	0.0000827	0.0000814	0.0000829	0.0000829	0.000151	0.00273	4 of 217
HEPTACHLOR EPOXIDE	0.000149	0.000051	0.0000541	0.0000625	0.0000576	0.0000797	0.0000874	0.000075	0.0000827	0.0000814	0.0000829	0.0000829	0.0000788	0.000302	4 of 217
HEXACHLOROBENZENE	0.0000602	0.000051	0.0000706	0.0000625	0.0000576	0.0000797	0.000114	0.0000835	0.0000827	0.0000862	0.000117	0.000119	0.0000842	0.000262	32 of 217
MIREX	0.000054	0.000051	0.0000541	0.0000625	0.0000576	0.0000797	0.0000874	0.0000748	0.0000827	0.0000814	0.0000829	0.0000829	0.0000731	0.000114	0 of 217
TOTAL CHLORDANE	0.00457	0.00205	0.00274	0.00332	0.00262	0.00703	0.00279	0.00204	0.00163	0.00651	0.00401	0.00231	0.00389	0.00997	217 of 217
TOTAL DDT	0.00127	0.000765	0.00047	0.000991	0.000751	0.00132	0.00108	0.00142	0.000974	0.00447	0.00109	0.000548	0.00163	0.00885	208 of 216
TRANS-NONACHLOR	0.000781	0.000428	0.000448	0.000866	0.000387	0.0012	0.000573	0.000342	0.000319	0.0012	0.000584	0.000386	0.000703	0.00171	213 of 217

Table A-10. Deer Island Effluent Characterization (DEC), FY04 (cont.)

Semivolatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,2,4-TRICHLOROBENZENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
1,2-DICHLOROBENZENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
1,2-DIPHENYLHYDRAZINE (AS AZOBENZENE)	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
1,3-DICHLOROBENZENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
1,4-DICHLOROBENZENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2,2'-OXYBIS(1-CHLOROPROPANE)	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2,4,5-TRICHLOROPHENOL	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2,4,6-TRICHLOROPHENOL	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2,4-DICHLOROPHENOL	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2,4-DIMETHYLPHENOL	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2,4-DINITROPHENOL	2.25	2.04	2.1	2.36	2.43	2.19	2.45	2.26	2.26	2.12	2.09	2.26	2.22	2.64	0 of 24
2,4-DINITROTOLUENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2,6-DINITROTOLUENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2-CHLORONAPHTHALENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2-CHLOROPHENOL	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2-METHYL-4,6-DINITROPHENOL	11.2	10.2	10.5	11.8	12.1	10.9	12.2	11.3	11.3	10.6	10.4	11.3	11.1	13.2	0 of 24
2-METHYLNAPHTHALENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2-METHYLPHENOL	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2-NITROANILINE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
2-NITROPHENOL	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
3,3'-DICHLOROBENZIDINE	2.25	2.04	2.1	2.36	2.43	2.19	2.45	2.26	2.26	2.12	2.09	2.26	2.22	2.64	0 of 24
3-NITROANILINE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
4-BROMOPHENYL PHENYL ETHER	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
4-CHLORO-3-METHYLPHENOL	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
4-CHLOROANILINE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
4-CHLOROPHENYL PHENYL ETHER	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
4-METHYLPHENOL (INCLUDES 3-METHYLPHENOL)	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
4-NITROANILINE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
4-NITROPHENOL	2.25	2.04	2.1	2.36	2.43	2.19	2.45	2.26	2.26	2.12	2.09	2.26	2.22	2.64	0 of 24
ACENAPHTHENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
ACENAPHTHYLENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
ANILINE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
ANTHRACENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
BENZIDINE	5.62	5.11	5.25	5.9	6.07	5.47	6.12	5.64	5.65	5.29	5.22	5.65	5.56	6.6	0 of 24
BENZO(A)ANTHRACENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
BENZO(A)PYRENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24

Table A-10. Deer Island Effluent Characterization (DEC), FY04 (cont.)

Semivolatile Organics (ug/L)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
BENZO(B)FLUORANTHENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
BENZO(GHI)PERYLENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
BENZO(K)FLUORANTHENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
BENZOIC ACID	2.25	2.04	2.1	2.36	2.43	2.19	2.45	2.26	2.26	2.12	2.09	2.26	2.22	2.64	0 of 24
BENZYL ALCOHOL	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
BIS(2-CHLOROETHOXY)METHANE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
BIS(2-CHLOROETHYL)ETHER	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
BIS(2-ETHYLHEXYL)PHTHALATE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
BUTYL BENZYL PHTHALATE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
CARBAZOLE	~	~	~	~	~	~	~	~	~	1.06	1.04	1.13	1.07	1.16	0 of 6
CHRYSENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
DI-N-BUTYLPHTHALATE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
DI-N-OCTYLPHTHALATE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
DIBENZO(A,H)ANTHRACENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
DIBENZOFURAN	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
DIETHYL PHTHALATE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
DIMETHYL PHTHALATE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
FLUORANTHENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
FLUORENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
HEXACHLOROBENZENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
HEXACHLOROBUTADIENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
HEXACHLOROCYCLOPENTADIENE	5.62	5.11	5.25	5.9	6.07	5.47	6.12	5.64	5.65	5.29	5.22	5.65	5.56	6.6	0 of 24
HEXACHLOROETHANE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
INDENO(1,2,3-CD)PYRENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
ISOPHORONE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
N-DECANE	~	~	~	~	~	~	~	~	~	~	~	**2.1**	2.1	3.05	1 of 2
N-NITROSODI-N-PROPYLAMINE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
N-NITROSODIMETHYLAMINE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
N-NITROSODIPHENYLAMINE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
N-OCTADECANE	~	~	~	~	~	~	~	~	~	~	~	1.13	1.13	1.16	0 of 2
NAPHTHALENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
NITROBENZENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24
PENTACHLOROPHENOL	3.37	3.07	3.15	3.54	3.64	3.28	3.67	3.39	3.39	3.17	3.13	3.39	3.33	3.96	0 of 24
PHENANTHRENE	0.112	0.102	0.105	0.118	0.121	0.109	0.122	0.113	1.13	1.06	1.04	1.13	0.504	1.16	0 of 24
PHENOL	2.25	2.04	2.1	2.36	2.43	2.19	2.45	2.26	2.26	2.12	2.09	2.26	2.22	2.64	0 of 24
PYRENE	1.12	1.02	1.05	1.18	1.21	1.09	1.22	1.13	1.13	1.06	1.04	1.13	1.11	1.32	0 of 24

Notes

DEC is the now-defunct Detailed Effluent Characterization project, which includes low-detection limit methods not approved by the EPA. DEC sampling is now carried out under the NP-EM project.

~: No data or no samples taken

Results in **bold** indicate one or more detects that month

Yearly averages are calculated from individual results collected during the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Table A-11. Deer Island Effluent Loadings (DEC), FY04

Metals (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
ANTIMONY	25.8	30.5	27.7	27	35.7	32.1	41.9	34.5	31.3	66	55.3	32.6	36.9	69.7	0 of 25
BERYLLIUM	0.646	0.764	0.554	0.541	0.714	0.641	0.838	0.69	0.627	1.32	1.11	0.652	0.761	1.39	0 of 25
BORON	**677**	**573**	**746**	**414**	357	321	419	345	**685**	**1030**	553	**654**	559	1370	11 of 25
CADMIUM	**0.247**	**0.381**	**0.307**	**0.416**	**0.323**	**0.975**	**0.425**	**0.332**	**0.33**	**1.28**	**0.354**	**0.203**	0.465	2.95	88 of 88
CHROMIUM	**3.42**	**3.06**	**1.5**	**4.1**	**2.64**	**8.58**	**2.8**	**2.79**	**4.32**	**12.4**	**4.5**	**1.77**	4.31	37.9	83 of 88
HEXAVALENT CHROMIUM	6.42	6.71	5.5	5.58	8.08	6.63	8.45	7.16	6.06	12	9.74	6.8	7.43	12.5	0 of 24
IRON	**2220**	**771**	**491**	**796**	**1320**	**1190**	**1410**	**1380**	**769**	**3090**	**2010**	**637**	1340	3400	25 of 25
LEAD	3.1	3.55	2.77	**5.91**	3.34	**14.9**	3.8	3.01	**3.72**	**19.5**	**5**	3.09	5.94	114	6 of 88
MOLYBDENUM	**24.3**	**27.9**	**33.4**	**23.2**	**18.4**	**18**	**17.1**	**18.2**	**22.7**	**31.9**	**35.7**	**27.1**	24.7	61.2	64 of 64
NICKEL	**10.2**	**10.8**	**8**	**9.65**	**10.3**	**14.7**	**7.37**	**7.45**	**11.9**	**16.8**	**8.72**	**6.06**	10.2	31.2	88 of 88
SELENIUM	1.16	1.37	0.997	0.973	1.28	1.15	1.51	1.24	1.13	2.38	1.99	1.17	1.37	2.51	0 of 25
SILVER	**0.734**	**0.824**	**0.565**	**1.1**	**1.04**	**3.12**	**1.41**	**1.43**	**0.976**	**2.35**	**1.48**	**0.637**	1.3	9.29	88 of 88
THALLIUM	1.29	1.53	1.11	1.08	1.43	1.28	1.68	1.38	1.25	2.64	2.21	1.3	1.52	2.79	0 of 25
ZINC	**53.7**	**84.1**	**45.3**	**75**	**52.6**	**227**	**87.1**	**74.4**	**69.7**	**285**	**106**	**53.9**	100	633	88 of 88

Oil and Grease, Surfactants, and Petroleum Hydrocarbons (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
FATS OIL AND GREASE	1720	1820	1630	**39200**	2010	**23700**	2130	1860	1740	3150	2320	1750	6860	189000	4 of 65
MBAS	**679**	**1730**	**549**	**829**	**771**	**2530**	**698**	**1600**	**1050**	**4960**	**792**	**597**	1400	10200	33 of 33
PETROLEUM HYDROCARBON	49.7	**136**	**162**	**1240**	**126**	**914**	**363**	**787**	**1720**	89.1	**617**	48.9	542	5610	21 of 64

Organochlorine Pesticides and PCBs (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
2,4'-DDD	0.000147	0.000131	0.000127	0.000169	0.000153	0.000312	0.000275	0.000189	0.000218	0.000454	0.000291	0.000213	0.000228	0.000751	0 of 217
2,4'-DDE	0.000147	0.000131	0.000127	0.000169	0.000153	0.000312	0.000275	0.000189	0.000218	0.000454	0.000291	0.000213	0.000228	0.000751	0 of 217
2,4'-DDT	**0.000212**	0.000131	0.000127	0.000169	0.000153	0.000312	0.000275	0.000189	0.000218	0.000454	0.000291	0.000213	0.000232	0.000751	1 of 217
4,4'-DDD	**0.00087**	**0.000312**	**0.000387**	**0.000583**	**0.000484**	**0.00137**	**0.000948**	**0.00139**	**0.000678**	**0.00368**	**0.000808**	**0.00053**	0.00106	0.0107	156 of 217
4,4'-DDE	**0.00116**	**0.00102**	**0.000588**	**0.00139**	**0.0013**	**0.0037**	**0.00231**	**0.00201**	**0.00188**	**0.00607**	**0.00155**	**0.000886**	0.00206	0.0194	205 of 217
4,4'-DDT	**0.000256**	**0.00045**	**0.000241**	**0.000751**	**0.000312**	**0.000491**	**0.000517**	**0.000334**	**0.000292**	**0.0154**	**0.00185**	**0.000292**	0.00204	0.0396	108 of 215
ALDRIN	0.000147	0.000131	0.000127	0.000169	0.000153	0.000312	0.000275	0.000189	0.000218	0.000454	0.000291	0.000213	0.000228	0.000751	0 of 217
ALPHA-CHLORDANE	**0.00563**	**0.00227**	**0.00241**	**0.00314**	**0.0023**	**0.0116**	**0.00342**	**0.00206**	**0.00166**	**0.0148**	**0.0062**	**0.00234**	0.00488	0.0269	217 of 217
DDMU	0.000147	0.000131	0.000127	0.000169	0.000153	0.000312	0.000275	0.000189	0.000218	0.000454	0.000291	0.000213	0.000228	0.000751	0 of 217
DIELDRIN	1.5E-04	0.000131	0.000127	0.000169	0.000153	0.000312	0.000275	0.000189	0.000218	0.000454	0.000291	0.000213	0.000228	0.000751	0 of 217
ENDRIN	0.000147	0.000131	0.000127	0.000169	0.000153	0.000312	0.000275	0.000189	0.000218	0.000454	0.000291	0.000213	0.000228	0.000751	0 of 217
GAMMA-BHC (LINDANE)	**0.00861**	**0.00268**	**0.00248**	**0.00271**	**0.00237**	0.000312	**0.000506**	0.00019	0.000218	0.000454	0.000391	**0.00272**	0.00186	0.0168	58 of 217
GAMMA-CHLORDANE	**0.00591**	**0.00219**	**0.00299**	**0.00348**	**0.00367**	**0.0112**	**0.00357**	**0.00223**	**0.00178**	**0.0148**	**0.00593**	**0.00254**	0.00513	0.0252	217 of 217
HEPTACHLOR	0.000147	0.000131	**0.00167**	0.000169	**0.00123**	0.000312	0.000275	0.00019	0.000218	0.000454	0.000291	0.000213	0.000468	0.00663	4 of 217
HEPTACHLOR EPOXIDE	**0.000407**	0.000131	0.000127	0.000169	0.000153	0.000312	0.000275	0.00019	0.000218	0.000454	0.000291	0.000213	0.000245	0.000751	4 of 217
HEXACHLOROBENZENE	**0.000164**	0.000131	**0.000166**	0.000169	0.000153	0.000312	**0.000359**	**0.000211**	0.000218	**0.000482**	**0.00041**	**0.000307**	0.000262	0.000751	32 of 217
MIREX	0.000147	0.000131	0.000127	0.000169	0.000153	0.000312	0.000275	0.000189	0.000218	0.000454	0.000291	0.000213	0.000228	0.000751	0 of 217
TOTAL CHLORDANE	**0.0125**	**0.00528**	**0.00645**	**0.00896**	**0.007**	**0.0275**	**0.00879**	**0.00515**	**0.00428**	**0.0363**	**0.0141**	**0.00595**	0.0121	0.0638	217 of 217
TOTAL DDT	**0.00346**	**0.00197**	**0.0011**	**0.00268**	**0.002**	**0.00518**	**0.00341**	**0.00359**	**0.00257**	**0.025**	**0.00384**	**0.00141**	0.00507	0.0665	208 of 216
TRANS-NONACHLOR	**0.00213**	**0.0011**	**0.00105**	**0.00234**	**0.00103**	**0.00468**	**0.0018**	**0.000866**	**0.00084**	**0.00672**	**0.00205**	**0.000993**	0.00219	0.0144	213 of 217

Table A-11. Deer Island Efffluent Loadings (DEC), FY04 (cont.)

Semivolatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
1,2,4-TRICHLOROBENZENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
1,2-DICHLOROBENZENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
1,2-DIPHENYLHYDRAZINE (AS AZOBENZENE)	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
1,3-DICHLOROBENZENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
1,4-DICHLOROBENZENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2,2'-OXYBIS(1-CHLOROPROPANE)	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2,4,5-TRICHLOROPHENOL	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2,4,6-TRICHLOROPHENOL	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2,4-DICHLOROPHENOL	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2,4-DIMETHYLPHENOL	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2,4-DINITROPHENOL	5.81	6.24	4.65	5.1	6.93	5.61	8.79	6.23	5.67	11.2	9.23	5.89	6.78	12.4	0 of 24
2,4-DINITROTOLUENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2,6-DINITROTOLUENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2-CHLORONAPHTHALENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2-CHLOROPHENOL	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2-METHYL-4,6-DINITROPHENOL	29.1	31.2	23.3	25.5	34.6	28.1	43.9	31.2	28.3	55.9	46.1	29.5	33.9	61.9	0 of 24
2-METHYLNAPHTHALENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2-METHYLPHENOL	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2-NITROANILINE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
2-NITROPHENOL	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
3,3'-DICHLOROBENZIDINE	5.81	6.24	4.65	5.1	6.93	5.61	8.79	6.23	5.67	11.2	9.23	5.89	6.78	12.4	0 of 24
3-NITROANILINE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
4-BROMOPHENYL PHENYL ETHER	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
4-CHLORO-3-METHYLPHENOL	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
4-CHLOROANILINE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
4-CHLOROPHENYL PHENYL ETHER	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
4-METHYLPHENOL (INCLUDES 3-METHYLPHENOL)	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
4-NITROANILINE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
4-NITROPHENOL	5.81	6.24	4.65	5.1	6.93	5.61	8.79	6.23	5.67	11.2	9.23	5.89	6.78	12.4	0 of 24
ACENAPHTHENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
ACENAPHTHYLENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
ANILINE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
ANTHRACENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
BENZIDINE	14.5	15.6	11.6	12.8	17.3	14	22	15.6	14.2	27.9	23.1	14.7	16.9	30.9	0 of 24
BENZO(A)ANTHRACENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
BENZO(A)PYRENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24

Table A-11. Deer Island Efffluent Loadings (DEC), FY04 (cont.)

Semivolatile Organics (lbs/day)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
BENZO(B)FLUORANTHENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
BENZO(GHI)PERYLENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
BENZO(K)FLUORANTHENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
BENZOIC ACID	5.81	6.24	4.65	5.1	6.93	5.61	8.79	6.23	5.67	11.2	9.23	5.89	6.78	12.4	0 of 24
BENZYL ALCOHOL	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
BIS(2-CHLOROETHOXY)METHANE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
BIS(2-CHLOROETHYL)ETHER	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
BIS(2-ETHYLHEXYL)PHTHALATE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
BUTYL BENZYL PHTHALATE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
CARBAZOLE	~	~	~	~	~	~	~	~	~	5.59	4.61	2.95	4.38	6.19	0 of 6
CHRYSENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
DI-N-BUTYLPHTHALATE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
DI-N-OCTYLPHTHALATE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
DIBENZO(A,H)ANTHRACENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
DIBENZOFURAN	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
DIETHYL PHTHALATE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
DIMETHYL PHTHALATE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
FLUORANTHENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
FLUORENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
HEXACHLOROBENZENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
HEXACHLOROBUTADIENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
HEXACHLOROCYCLOPENTADIENE	14.5	15.6	11.6	12.8	17.3	14	22	15.6	14.2	27.9	23.1	14.7	16.9	30.9	0 of 24
HEXACHLOROETHANE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
INDENO(1,2,3-CD)PYRENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
ISOPHORONE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
N-DECANE	~	~	~	~	~	~	~	~	~	~	~	**5.48**	5.48	7.94	1 of 2
N-NITROSODI-N-PROPYLAMINE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
N-NITROSODIMETHYLAMINE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
N-NITROSODIPHENYLAMINE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
N-OCTADECANE	~	~	~	~	~	~	~	~	~	~	~	2.95	2.95	3.03	0 of 2
NAPHTHALENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
NITROBENZENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24
PENTACHLOROPHENOL	8.72	9.36	6.98	7.66	10.4	8.42	13.2	9.35	8.5	16.8	13.8	8.84	10.2	18.6	0 of 24
PHENANTHRENE	0.291	0.312	0.233	0.255	0.346	0.281	0.439	0.312	2.83	5.59	4.61	2.95	1.54	6.19	0 of 24
PHENOL	5.81	6.24	4.65	5.1	6.93	5.61	8.79	6.23	5.67	11.2	9.23	5.89	6.78	12.4	0 of 24
PYRENE	2.91	3.12	2.33	2.55	3.46	2.81	4.39	3.12	2.83	5.59	4.61	2.95	3.39	6.19	0 of 24

Notes

DEC is the now-defunct Detailed Effluent Loadings project, which includes low-detection limit methods not approved by the EPA. DEC sampling is now carried out under the NP-EM project.

~: No data or no samples taken

Results in **bold** indicate one or more detects that month

Yearly averages are calculated from individual results collected during the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Appendix B

Table B-1. Cottage Farm CSO Facility Operations Summary, FY04

Date	Rainfall (inches)	Discharge Duration (hours)	Total Volume (MG)	Peak Flow (MG)	pH (SU)	BOD Effluent (mg/L)	TSS Effluent (mg/L)	Fecal coliform (col/100 ml)	Chlorine Residual (mg/L)
July									
23	0.63	1.83	2.82	38.50					
September									
23	1.05	2.50	1.37	18.10					
October									
12	2.00	3.50	8.00	48.00					
15	1.40	5.08	18.33	61.00	5.9	31.6	30.7	10	0.0
					6.6		41.3	10	0.0
					6.6		62.0	10	0.0
					6.0		38.0	10	0.0
29	1.49	5.00	8.47	37.30	6.6	48.8	50.0	20	0.0
					6.6		45.3	10	0.0
					6.6		105.0	20	0.0
					6.4		65.0	10	0.0
November									
	NA								
December									
11	0.69	5.25	11.57	61.40					
15	0.83	7.50	16.93	61.00					
17	0.35	2.00	0.93	60.00					
18*	0.00	1.83	0.85	60.00					
January									
	NA								
February									
	NA								
March									
31	1.32	1.08	0.61						
April									
1	4.29	11.75	38.61	179.00	6.6	94.6	70.7	160	0.0
2*	0.42	19.00	62.47						
3	0.00	6.08	22.33	158.90					
13	1.97	4.00	9.42	130.00					
14	0.26	2.75	6.48						
May									
	NA								
June									
	NA								
Total			209.19						
Average		5.28	13.95			58.3	60.0	28	0.0
Minimum		1.08	0.61	18.10	5.9	31.6	43.0	10	0.0
Maximum**		19.00	62.47	179.00	6.6	94.6	70.7	160	0.0

No. of Times CSO Activated	13
No. of Days CSO Activated	15

* = continued from previous day; ** = per the NPDES permit, maximum chlorine residual is the highest single sample; NA = no activatio

Table B-2. Cottage Farm CSO Facility Effluent Characterization, FY04

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
Metals (ug/L)															
ALUMINUM	~	~	~	**739.00**	NA	~	NA	NA	**1200.00**	~	NA	NA	969.50	1200.00	3 of 3
CADMIUM	~	~	~	**0.33**	NA	~	NA	NA	**0.42**	~	NA	NA	0.37	0.42	3 of 6
CALCIUM	~	~	~	**11000.00**	NA	~	NA	NA	**13700.00**	~	NA	NA	12350.00	13700.00	3 of 3
CHROMIUM	~	~	~	**4.30**	NA	~	NA	NA	**7.19**	~	NA	NA	5.75	7.19	3 of 4
COPPER	~	~	~	**31.45**	NA	~	NA	NA	**48.30**	~	NA	NA	39.88	48.30	3 of 3
LEAD	~	~	~	**18.20**	NA	~	NA	NA	**40.40**	~	NA	NA	29.30	40.40	3 of 3
MAGNESIUM	~	~	~	**2300.00**	NA	~	NA	NA	**3210.00**	~	NA	NA	2755.00	3210.00	3 of 3
MERCURY	~	~	~	**0.07**	NA	~	NA	NA	**0.08**	~	NA	NA	0.08	0.08	3 of 3
NICKEL	~	~	~	**3.37**	NA	~	NA	NA	**4.61**	~	NA	NA	3.99	4.61	3 of 5
ZINC	~	~	~	**71.90**	NA	~	NA	NA	**119.00**	~	NA	NA	95.45	119.00	3 of 3
Surfactants and Total Organic Carbon (mg/L)															
SURFACTANTS	~	~	~	**0.57**	NA	~	NA	NA	**2.02**	~	NA	NA	1.29	2.02	3 of 3
TOTAL ORGANIC CARBON	~	~	~	**18.80**	NA	~	NA	NA	**50.90**	~	NA	NA	34.85	50.90	2 of 2

Table B-3. Cottage Farm CSO Facility Effluent Loadings, FY04

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
Metals (ug/L)															
ALUMINUM	~	~	~	**82.88**	NA	~	NA	NA	**6.10**	~	NA	NA	44.49	114.04	3 of 3
CADMIUM	~	~	~	**0.04**	NA	~	NA	NA	**0.00**	~	NA	NA	0.02	0.06	3 of 6
CALCIUM	~	~	~	**1171.75**	NA	~	NA	NA	**69.70**	~	NA	NA	620.73	1467.57	3 of 3
CHROMIUM	~	~	~	**0.48**	NA	~	NA	NA	**0.04**	~	NA	NA	0.26	0.65	3 of 4
COPPER	~	~	~	**3.47**	NA	~	NA	NA	**0.25**	~	NA	NA	1.86	4.63	3 of 3
LEAD	~	~	~	**2.16**	NA	~	NA	NA	**0.21**	~	NA	NA	1.18	3.26	3 of 3
MAGNESIUM	~	~	~	**247.99**	NA	~	NA	NA	**16.33**	~	NA	NA	132.16	317.97	3 of 3
MERCURY	~	~	~	**0.01**	NA	~	NA	NA	**0.00**	~	NA	NA	0.00	0.01	3 of 3
NICKEL	~	~	~	**0.40**	NA	~	NA	NA	**0.02**	~	NA	NA	0.21	0.59	3 of 5
ZINC	~	~	~	**7.95**	NA	~	NA	NA	**0.61**	~	NA	NA	4.28	10.67	3 of 3
Surfactants and Total Organic Carbon (mg/L)															
SURFACTANTS	~	~	~	**0.40**	NA	~	NA	NA	**10.28**	~	NA	NA	5.34	86.37	3 of 3
TOTAL ORGANIC CARBON	~	~	~	**7.95**	NA	~	NA	NA	**258.95**	~	NA	NA	133.45	2874.00	2 of 2

NA: No activation

~: Activation that month, but no data or no sample taken

Results in **bold** indicate one or more detects in the month.

Yearly averages are calculated from individual results collected in the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Appendix C

Table C-1. Prison Point CSO Facility Operations Summary, FY04

Date	Rainfall (inches)	Discharge Duration (hours)	Total Volume (MG)	Peak Flow (MG)	pH (SU)	BOD Effluent (mg/L)	TSS Effluent (mg/L)	Fecal coliform (col/100 ml)	Chlorine Residual (mg/L)
July									
22	0.32	2.17	6.07	61					
23	0.63	2.92	6.60	91.84					
August									
2	0.05								
3	0.16	2.28	10.39	200.00					
4	0.24	2.17	6.57	150.00					
8	0.89	4.25	8.35	112.00					
September									
16	0.53	1.25	4.10	177.00					
23	1.05	3.28	*15.00*	210.00					
October									
12	2.00	4.83	22.62	250.00					
15	1.40	4.67	26.66	245.00					
29	1.49	8.33	19.64	150.00					
November									
5	0.69	1.25	1.52	117.14					
December									
11	0.69	6.75	21.14	235.00					
15	0.83	7.33	33.84	250.00					
17	0.35	3.08	5.16	108.70	6.3	22.1	108.0	100	0.0
							72.0	40	0.0
							72.0	30	
18*	0.00	0.75	1.26	108.70					
January									
	NA								
February									
3	0.44	0.50	1.01	97.00					
4*	0.00	0.33	0.79	97.00					
March									
	NA								
April									
1	4.29	14.25	97.55	332.00	5.8	17.4	185.0	10	0.0
							196.0	20	0.0
							142.0	20	0.0
							122.0	20	0.0
							75.0	10	0.0
							60.0	10	0.0
							61.0	30	0.0
							45.0	20	0.0
							55.0	10	0.0
							42.0	10	0.0
							31.0	10	0.0
							26.0	10	0.0
							55.0	10	0.0
							188.0	1800	0.0
							194.0	400	0.0
							110.0	500	0.0
							80.0	30	0.0
							100.0	180	0.0
							56.0	40	0.0
13	1.97	4.50	22.56	165.00					
14*	0.26	2.83	0.88	110.00					
23	0.99	1.08	3.08	105.00					
May									
	NA								
June									
	NA								
Total			314.79						
Average		3.75	14.99			19.8	90.0	40	0.00
Minimum		0.33	0.79	61.00	5.8	17.4	84.0	32	0.00
Maximum**		14.25	97.55	332.00	6.3	22.1	95.9	49	0.00

No. of Times CSO Activated 18 Figures in *italics* are estimates.
No. of Days CSO Activated 21
* = continued from previous day; ** = per the NPDES permit, maximum chlorine residual is the highest single sample; NA = no activation

Table C-2. Prison Point CSO Facility Effluent Characterization, FY04

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
Metals (ug/L)															
ALUMINUM	~	~	~	~	~	**2270.00**	~	~	NA	**2160.00**	NA	NA	2215.00	2270.00	2 of 2
CADMIUM	~	~	~	~	~	**0.77**	~	~	NA	**0.56**	NA	NA	0.66	0.77	2 of 4
CALCIUM	~	~	~	~	~	~	~	~	NA	~	NA	NA			
CHROMIUM	~	~	~	~	~	**11.70**	~	~	NA	**13.90**	NA	NA	12.80	13.90	2 of 2
COPPER	~	~	~	~	~	**53.70**	~	~	NA	**49.60**	NA	NA	51.65	53.70	2 of 2
LEAD	~	~	~	~	~	**80.50**	~	~	NA	**72.60**	NA	NA	76.55	80.50	2 of 2
MAGNESIUM	~	~	~	~	~	~	~	~	NA	~	NA	NA			
MERCURY	~	~	~	~	~	**0.12**	~	~	NA	**0.09**	NA	NA	0.10	0.12	2 of 2
NICKEL	~	~	~	~	~	**7.03**	~	~	NA	**4.85**	NA	NA	5.94	7.03	3 of 3
ZINC	~	~	~	~	~	**205.00**	~	~	NA	**197.00**	NA	NA	201.00	205.00	2 of 2
Surfactants and Total Organic Carbon (mg/L)															
SURFACTANTS	~	~	~	~	~	**0.82**	~	~	NA	**0.52**	NA	NA	0.67	0.82	2 of 2
TOTAL ORGANIC CARBON	~	~	~	~	~	**25.40**	~	~	NA	**17.50**	NA	NA	21.45	25.40	2 of 2

Table C-3. Prison Point CSO Facility Effluent Loadings, FY04

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
Metals (ug/L)															
ALUMINUM	~	~	~	~	~	**97.69**	~	~	NA	**1757.30**	NA	NA	927.50	1757.30	2 of 2
CADMIUM	~	~	~	~	~	**0.03**	~	~	NA	**0.45**	NA	NA	0.24	0.45	2 of 4
CALCIUM	~	~	~	~	~	~	~	~	NA	~	NA	NA			
CHROMIUM	~	~	~	~	~	**0.50**	~	~	NA	**11.31**	NA	NA	5.91	11.31	2 of 2
COPPER	~	~	~	~	~	**2.31**	~	~	NA	**40.35**	NA	NA	21.33	40.35	2 of 2
LEAD	~	~	~	~	~	**3.46**	~	~	NA	**59.06**	NA	NA	31.26	59.06	2 of 2
MAGNESIUM	~	~	~	~	~	~	~	~	NA	~	NA	NA			
MERCURY	~	~	~	~	~	**0.01**	~	~	NA	**0.07**	NA	NA	0.04	0.07	2 of 2
NICKEL	~	~	~	~	~	**0.30**	~	~	NA	**3.95**	NA	NA	2.12	3.95	3 of 3
ZINC	~	~	~	~	~	**8.82**	~	~	NA	**160.27**	NA	NA	84.55	160.27	2 of 2
Surfactants and Total Organic Carbon (mg/L)															
SURFACTANTS	~	~	~	~	~	**35.07**	~	~	NA	**424.68**	NA	NA	229.88	424.68	2 of 2
TOTAL ORGANIC CARBON	~	~	~	~	~	**1093.07**	~	~	NA	**14237.42**	NA	NA	7665.25	14237.42	2 of 2

NA: No activation
~: Activation that month, but no data or no sample taken
Results in **bold** indicate one or more detects in the month.
Yearly averages are calculated from individual results collected in the fiscal year.
Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Appendix D

Table D-1. Somerville Marginal CSO Facility Operations Summary, FY04

Date	Rainfall (inches)	Discharge Duration (hours)	Total Volume (MG)	Peak Flow (MG)	pH (SU)	BOD Effluent (mg/L)	TSS Effluent (mg/L)	Fecal coliform (col/100 ml)	Chlorine Residual (mg/L)
July									
22	0.32	0.5	0.51	54.64					
23	0.63	0.50	0.710	56.40					
August									
1	0.85								
2	0.05								
3	0.16	1.20	3.34	*0.13*					
4	0.24	2.82	2.82	61.00					
8	0.89	1.00	1.12	32.00					
12	0.04	0.60	0.51	37.80					
September									
16	0.53	1.00	1.31	86.40					
23	1.05	1.83	5.38	70.00	7.1	15.8	149.0	760	0.0
October									
12	2.00	3.68	7.46	104.80					
15	1.40	4.55	6.51	70.00	7.5	7.1	29.3	10	0.0
					7.9		21.3	10	0.0
					7.0		26.5	10	0.0
					6.9		31.5	10	0.0
29	1.49	5.17	4.84	60.10	6.8	12.4	72.5	17000	0.0
					6.7		42.0	10	0.0
					6.7		37.5	10	0.0
November									
	NA								
December									
11	0.69	4.18	4.54	54.00					
15	0.83	6.00	6.94	70.00					
17	0.35	1.38	1.38	31.30					
January									
	NA								
February									
	NA								
March									
	NA								
April									
1	4.29	21.13	26.68						
2	0.42	5.33	12.96						
13	1.97	3.58	6.12	73.00					
May									
	NA								
June									
	NA								
Total			93.13						
Average		3.79	5.48			11.8	93.1	148	0.0
Minimum		0.50	0.51	0.13	6.7	7.1	37.2	29	0.0
Maximum**		21.13	26.68	104.80	7.9	15.8	149.0	760	0.0

No. of Times CSO Activated 17 Figures in *italics* are estimates.
No. of Days CSO Activated 17
* = continued from previous day; ** = per the NPDES permit, maximum chlorine residual is the highest single sample; NA = no activation

Table D-2. Somerville Marginal CSO Facility Effluent Characterization, FY04

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
Metals (ug/L)															
ALUMINUM	~	~	~	**618.00**	NA	~	NA	NA	NA	~	~	~	618.00	618.00	1 of 1
CADMIUM	~	~	~	**0.18**	NA	~	NA	NA	NA	~	~	~	0.18	0.18	1 of 2
CALCIUM	~	~	~	**3690.00**	NA	~	NA	NA	NA	~	~	~	3690.00	3690.00	1 of 1
CHROMIUM	~	~	~	**4.25**	NA	~	NA	NA	NA	~	~	~	4.25	4.25	1 of 1
COPPER	~	~	~	**10.80**	NA	~	NA	NA	NA	~	~	~	10.80	10.80	1 of 1
LEAD	~	~	~	**18.70**	NA	~	NA	NA	NA	~	~	~	18.70	18.70	1 of 1
MAGNESIUM	~	~	~	**818.00**	NA	~	NA	NA	NA	~	~	~	818.00	818.00	1 of 1
MERCURY	~	~	~	**0.04**	NA	~	NA	NA	NA	~	~	~	0.04	0.04	1 of 1
NICKEL	~	~	~	**1.90**	NA	~	NA	NA	NA	~	~	~	1.90	1.90	1 of 2
ZINC	~	~	~	**52.60**	NA	~	NA	NA	NA	~	~	~	52.60	52.60	1 of 1
Surfactants and Total Organic Carbon (mg/L)															
SURFACTANTS	~	~	~	**0.21**	NA	~	NA	NA	NA	~	~	~	0.21	0.21	1 of 1
TOTAL ORGANIC CARBON	~	~	~	**6.62**	NA	~	NA	NA	NA	~	~	~	6.62	6.62	1 of 1

Table D-3. Somerville Marginal CSO Facility Effluent Loadings, FY04

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
Metals (ug/L)															
ALUMINUM	~	~	~	**33.55**	NA	~	NA	NA	NA	~	~	~	33.55	33.55	1 of 1
CADMIUM	~	~	~	**0.01**	NA	~	NA	NA	NA	~	~	~	0.01	0.01	1 of 2
CALCIUM	~	~	~	**200.34**	NA	~	NA	NA	NA	~	~	~	200.34	200.34	1 of 1
CHROMIUM	~	~	~	**0.23**	NA	~	NA	NA	NA	~	~	~	0.23	0.23	1 of 1
COPPER	~	~	~	**0.59**	NA	~	NA	NA	NA	~	~	~	0.59	0.59	1 of 1
LEAD	~	~	~	**1.02**	NA	~	NA	NA	NA	~	~	~	1.02	1.02	1 of 1
MAGNESIUM	~	~	~	**44.41**	NA	~	NA	NA	NA	~	~	~	44.41	44.41	1 of 1
MERCURY	~	~	~	**0.00**	NA	~	NA	NA	NA	~	~	~	0.00	0.00	1 of 1
NICKEL	~	~	~	**0.10**	NA	~	NA	NA	NA	~	~	~	0.10	0.10	1 of 2
ZINC	~	~	~	**2.86**	NA	~	NA	NA	NA	~	~	~	2.86	2.86	1 of 1
Surfactants and Total Organic Carbon (mg/L)															
SURFACTANTS	~	~	~	**11.40**	NA	~	NA	NA	NA	~	~	~	11.40	11.40	1 of 1
TOTAL ORGANIC CARBON	~	~	~	**359.42**	NA	~	NA	NA	NA	~	~	~	359.42	359.42	1 of 1

NA: No activation

~: Activation that month, but no data or no sample taken

Results in **bold** indicate one or more detects in the month.

Yearly averages are calculated from individual results collected in the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Appendix E

Table E-1. Fox Point CSO Facility Operations Summary, FY04

Date	Rainfall (inches)	Discahrge Duration (hours)	Total Volume (MG)	Peak Flow (MG)	pH (SU)	BOD Effluent (mg/L)	TSS Effluent (mg/L)	Fecal coliform (col/100 ml)	Chlorine Residual (mg/L)
July									
23	0.63	3.05	2.20	60.00					
August									
8	0.89	4.48	1.68	46.90					
September									
16	0.53	1.70	1.37	38.42					
23	1.05	0.95	2.87	168.00					
October									
12	2.00	4.90	3.98	40.0					
15	1.40	5.45	5.07	87.00	7.6	11.5	138.0	10	0.0
					7.5		34.7	10	2.2
27	1.00	3.23	1.49	28.00					
29	1.49	4.12	3.66	65.60	6.1	5.7	92.5	200	0.0
					4.2		73.5	100	0.6
					5.4		21.0	10	0.0
					6.6		73.0	10	1.7
					6.3		168.0	10	0.0
November									
5	0.69	0.33	0.35	9.80					
20	0.49	1.62	1.51	35.00					
22	0.00	1.00	0.47	18.00					
December									
11	0.69	5.33	4.46	42.00					
15	0.83	6.73	5.04	27.00					
17	0.35	2.72	2.35	30.20					
January									
	NA								
February									
	NA								
March									
	NA								
April									
1	4.29	15.78	20.40	74.00	6.6		490.0	80	0.0
							265.0	40	0.0
					6.8		84.0	10	0.0
					7.0		325.0	10	0.0
					7.6		78.0	10	0.0
					6.8		57.0	10	0.0
					7.2		46.0	10	0.0
					7.0		40.0	20	0.0
					6.9		36.0	10	0.0
					6.9		38.0	10	0.0
							95.0	10	1.9
2	0.42	3.83	5.61			14.7	57.3	20	1.7
							64.7	30	0.0
							34.7	10	0.0
							26.0	10	0.0
13	1.97	7.20	5.37	95.00					
14*	0.26	1.50	1.12						
23	0.99	2.67	2.05	23.00					
26	0.82	1.65	1.19	18.00					
May									
4	0.2	1.57	1.51	42.00					
June									
25	0.20	1.13	0.95	30.00					
26	0.48	0.32	0.54	59.30					
Total			73.76						
Average		3.80	3.51			10.6	95.9	16	0.6
Minimum		0.33	0.35	9.80	4.2	5.7	85.6	10	0.2
Maximum**		15.78	20.40	168.00	7.6	14.7	115.8	29	2.2

No. of Times CSO Activated 22

No. of Days CSO Activated 23

* = continued from previous day; ** = per the NPDES permit, maximum chlorine residual is the highest single sample; NA = no activation

Table E-2. Fox Point CSO Facility Effluent Characterization, FY04

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
Metals (ug/L)															
ALUMINUM	~	~	~	**695.00**	~	~	NA	NA	NA	**2060.00**	~	~	1377.50	2060.00	2 of 2
CADMIUM	~	~	~	**0.22**	~	~	NA	NA	NA	**0.49**	~	~	0.35	0.49	2 of 4
CALCIUM	~	~	~	~	~	~	NA	NA	NA	~	~	~			
CHROMIUM	~	~	~	**4.10**	~	~	NA	NA	NA	**7.04**	~	~	5.57	7.04	2 of 3
COPPER	~	~	~	**13.80**	~	~	NA	NA	NA	**17.20**	~	~	15.50	17.20	2 of 2
LEAD	~	~	~	**37.20**	~	~	NA	NA	NA	**79.00**	~	~	58.10	79.00	2 of 2
MAGNESIUM	~	~	~	~	~	~	NA	NA	NA	~	~	~			
MERCURY	~	~	~	**0.07**	~	~	NA	NA	NA	**0.12**	~	~	0.09	0.12	2 of 2
NICKEL	~	~	~	**1.58**	~	~	NA	NA	NA	**7.62**	~	~	4.60	7.62	2 of 3
ZINC	~	~	~	**58.60**	~	~	NA	NA	NA	**152.00**	~	~	105.30	152.00	2 of 2
Surfactants and Total Organic Carbon (mg/L)															
SURFACTANTS	~	~	~	**0.35**	~	~	NA	NA	NA	**0.96**	~	~	0.66	0.96	2 of 2
TOTAL ORGANIC CARBON	~	~	~	**9.57**	~	~	NA	NA	NA	**17.80**	~	~	13.69	17.80	2 of 2

Table E-3. Fox Point CSO Facility Effluent Loadings, FY04

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
Metals (ug/L)															
ALUMINUM	~	~	~	**29.39**	~	~	NA	NA	NA	**350.48**	~	~	189.93	350.48	2 of 2
CADMIUM	~	~	~	**0.01**	~	~	NA	NA	NA	**0.08**	~	~	0.05	0.08	2 of 4
CALCIUM	~	~	~	~	~	~	NA	NA	NA	~	~	~			
CHROMIUM	~	~	~	**0.17**	~	~	NA	NA	NA	**1.20**	~	~	0.69	1.20	2 of 3
COPPER	~	~	~	**0.58**	~	~	NA	NA	NA	**2.93**	~	~	1.75	2.93	2 of 2
LEAD	~	~	~	**1.57**	~	~	NA	NA	NA	**13.44**	~	~	7.51	13.44	2 of 2
MAGNESIUM	~	~	~	~	~	~	NA	NA	NA	~	~	~			
MERCURY	~	~	~	**0.00**	~	~	NA	NA	NA	**0.02**	~	~	0.01	0.02	2 of 2
NICKEL	~	~	~	**0.07**	~	~	NA	NA	NA	**1.30**	~	~	0.68	1.30	2 of 3
ZINC	~	~	~	**2.48**	~	~	NA	NA	NA	**25.86**	~	~	14.17	25.86	2 of 2
Surfactants and Total Organic Carbon (mg/L)															
SURFACTANTS	~	~	~	**14.97**	~	~	NA	NA	NA	**163.84**	~	~	89.40	163.84	2 of 2
TOTAL ORGANIC CARBON	~	~	~	**404.66**	~	~	NA	NA	NA	**3028.42**	~	~	1716.54	3028.42	2 of 2

NA: No activation

~: Activation that month, but no data or no sample taken

Results in **bold** indicate one or more detects in the month.

Yearly averages are calculated from individual results collected in the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Appendix F

Table F-1. Commercial Point CSO Facility Operations Summary, FY04

Date	Rainfall (inches)	Discharge Duration (hours)	Total Volume (MG)	Peak Flow (MG)	pH (SU)	BOD Effluent (mg/L)	TSS Effluent (mg/L)	Fecal coliform (col/100 ml)	Chlorine Residual (mg/L)
July									
23	0.63	0.63	1.35	117.74					
August									
1	0.85								
2	0.05								
3	0.16								
4	0.24	0.37	0.60	20.00					
8	0.89	5.00	6.58	85.00					
September									
16	0.53	2.23	2.38	27.00					
18	0.00								
19	0.20	0.20	0.03	23.80					
23	1.05	1.02	*3.00*	ND	7.4	24.9	281.0	10	0.0
October									
12	2.00	3.02	5.68	100.00					
15	1.40	6.00	8.51	85.00					
27	1.00	3.82	3.35	38.00					
29	1.49	6.98	7.89	91.90					
November									
5	0.69	0.33	0.22	5.20					
20	0.49	1.38	1.21	15.90					
21	0.07	1.00	0.52	24.00					
22*	0.00	2.00	1.03	24.00					
December									
11	0.69	4.03	6.90	58.20					
15	0.83	7.95	8.93	57.90					
17	0.35	4.22	4.32	40.00					
January									
	NA								
February									
	NA								
March									
21	0.30	1.67	1.00	20.70					
April									
1	4.29	13.58	35.85	55.00	6.8	8.7	70.0	10	0.00
					7.0		66.0	30	0.00
					7.5		151.0	50	0.00
					7.8		63.0	10	0.00
2	0.42	5.45	7.55	84.60					
13	1.97	6.23	11.36	98.00					
23	0.99	1.23	1.43	24.00					
26	0.82	1.63	2.00	30.20					
May									
4	0.20	1.57	1.51	42.00					
June									
25	0.20	1.50	1.08	24.00					
26	0.48	0.47	0.64	32.90					
Total			124.92						
Average		3.21	4.80	49.00		16.80	184.25	14	0.00
Minimum		0.20	0.03	5.20	6.80	8.70	87.50	10	0.00
Maximum**		13.58	35.85	117.74	7.80	24.90	281.00	20	0.00

No. of Times CSO Activated 25 Figures in *italics* are estimates.
No. of Days CSO Activated 26

* = continued from previous day; ** = per the NPDES permit, maximum chlorine residual is the highest single sample; NA = no activation; ND = no data

Table F-2. Commercial Point CSO Facility Effluent Characterization, FY04

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
Metals (ug/L)															
ALUMINUM	~	~	~	~	~	~	NA	NA	**827.00**	~	~	~	827.00	827.00	1 of 1
CADMIUM	~	~	~	~	~	~	NA	NA	**1.16**	~	~	~	1.16	2.16	2 of 2
CALCIUM	~	~	~	~	~	~	NA	NA	~	~	~	~			
CHROMIUM	~	~	~	~	~	~	NA	NA	**4.64**	~	~	~	4.64	4.64	1 of 1
COPPER	~	~	~	~	~	~	NA	NA	**10.70**	~	~	~	10.70	10.70	1 of 1
LEAD	~	~	~	~	~	~	NA	NA	**28.70**	~	~	~	28.70	28.70	1 of 1
MAGNESIUM	~	~	~	~	~	~	NA	NA	~	~	~	~			
MERCURY	~	~	~	~	~	~	NA	NA	**0.21**	~	~	~	0.21	0.21	1 of 1
NICKEL	~	~	~	~	~	~	NA	NA	**1.62**	~	~	~	1.62	1.62	1 of 2
ZINC	~	~	~	~	~	~	NA	NA	**82.00**	~	~	~	82.00	82.00	1 of 1
Surfactants and Total Organic Carbon (mg/L)															
SURFACTANTS	~	~	~	~	~	~	NA	NA	**0.36**	~	~	~	0.36	0.36	1 of 1
TOTAL ORGANIC CARBON	~	~	~	~	~	~	NA	NA	**8.87**	~	~	~	8.87	8.87	1 of 1

Table F-3. Commercial Point CSO Facility Effluent Loadings, FY04

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Average	Maximum	Times Detected
Metals (ug/L)															
ALUMINUM	~	~	~	~	~	~	NA	NA	**247.26**	~	~	~	247.26	247.26	1 of 1
CADMIUM	~	~	~	~	~	~	NA	NA	**0.35**	~	~	~	0.35	0.35	2 of 2
CALCIUM	~	~	~	~	~	~	NA	NA	~	~	~	~			
CHROMIUM	~	~	~	~	~	~	NA	NA	**1.39**	~	~	~	1.39	1.39	1 of 1
COPPER	~	~	~	~	~	~	NA	NA	**3.20**	~	~	~	3.20	3.20	1 of 1
LEAD	~	~	~	~	~	~	NA	NA	**8.58**	~	~	~	8.58	8.58	1 of 1
MAGNESIUM	~	~	~	~	~	~	NA	NA	~	~	~	~			
MERCURY	~	~	~	~	~	~	NA	NA	**0.06**	~	~	~	0.06	0.06	1 of 1
NICKEL	~	~	~	~	~	~	NA	NA	**0.48**	~	~	~	0.48	0.48	1 of 2
ZINC	~	~	~	~	~	~	NA	NA	**24.52**	~	~	~	24.52	24.52	1 of 1
Surfactants and Total Organic Carbon (mg/L)															
SURFACTANTS	~	~	~	~	~	~	NA	NA	**107.34**	~	~	~	107.34	107.34	1 of 1
TOTAL ORGANIC CARBON	~	~	~	~	~	~	NA	NA	**2652.03**	~	~	~	2652.03	2652.03	1 of 1

NA: No activation

~: Activation that month, but no data or no sample taken

Results in **bold** indicate one or more detects in the month.

Yearly averages are calculated from individual results collected in the fiscal year.

Non-detected compounds are assumed to equal one half of the detection limit for metals and inorganics and one tenth of the reporting limit for organic compounds.

Appendix G: NPDES Monitoring Requirements

Overview

The Environmental Protection Agency (EPA) mandates that any discharge to a body of water must be permitted through the National Pollutant Discharge Elimination System (NPDES). The EPA and the Massachusetts Department of Environmental Protection (DEP) jointly issued a NPDES permit to MWRA for the Deer Island treatment plant and six CSO treatment facilities: Cottage Farm, Prison Point, Somerville Marginal, Constitution Beach, Fox Point, and Commercial Point.

The limits set in the MWRA NPDES permit are limitations for secondary treatment plants. In March 2001, secondary Battery C underwent start-up at Deer Island, substantially finishing the construction process at the plant. Before the completion of Battery C, though, plant effluent was already largely in compliance with the new permit. Additionally, in September of 2000, Constitution Beach, one of the six permitted CSO facilities, shut down, leaving five permitted and operational CSO facilities.

In addition, MWRA monitors the influent quality of wastewater. Those monitoring results provide the basis for determining the adequacy of existing local limits to protect the treatment plants and Boston Harbor. Local Limits, enforced by MWRA's Toxic Reduction and Control (TRAC) department, allow the discharge of toxic chemicals from industrial sources to be regulated. The MWRA submitted proposed local limits in FY00 reflecting the new secondary treatment requirements. Regulators approved the new local limits and they became effective in June 2003, at the end of FY03. Under the pretreatment program requirements, local limits must be re-evaluated every five years.

MWRA not only monitors to comply with the NPDES effluent requirements, but also has its own monitoring programs, including monitoring at DITP, Boston Harbor, and Massachusetts Bay. These monitoring programs serve to assure appropriate control of discharges to the system, to assure the most cost-effective wastewater treatment while meeting water quality standards, and to assure the quality of life of the organisms and health of the animal communities living in the receiving waters.

G.1
NPDES Permit

Under the NPDES permit, "in compliance with the provisions of the Clean Water Act, as amended, 33 U.S.C. §§ 1251 et seq., and the Massachusetts Clean Water Act, as amended, Mass. Gen. Laws, ch. 21, §§ 26-53, Massachusetts Water Resources Authority is authorized to discharge from MWRA Publicly Owned Treatment Works, Deer Island Treatment Plant, Deer Island, Boston, MA 02152 (Discharge serial number T01), which discharges to receiving waters located in Massachusetts Bay, which is adjacent to Cape Cod Bay, and a part of the Gulf of Maine; and from Combined Sewer Overflow Outfalls, which discharge to the Charles River, Inner Harbor, Mystic River, Boston Harbor, Dorchester Bay, Alewife Brook; in accordance with effluent limitations, monitoring requirements and other conditions set in the permit…"

G.1.a Monitoring Requirements and Effluent Limitations

The NPDES permit establishes monitoring requirements for the new Deer Island outfall tunnel (T01). The permit also regulates CSO treatment facility outfalls at Cottage Farm (MWR201), Prison Point (MWR203), Somerville Marginal (which has two outfalls from a single facility, the primary outfall, MWR205, and the relief outfall, MWR205A), Constitution Beach (MWR207, now closed), Fox Point (MWR209), and Commercial Point (MWR211). The permit also establishes a comprehensive receiving water monitoring plan, the Ambient Monitoring Plan, in Massachusetts Bay.

G.1.b Reporting Requirements

In addition to Deer Island and CSO monitoring requirements, the NPDES permit requires numerous reports on the state of MWRA sewerage and operational systems. These include reports on infiltration/inflow, CSO facilities and collection systems maintenance and inspection, operational upsets, dry weather and sanitary sewer overflows, operational bypasses, monthly Discharge Monitoring Reports (DMRs), and reporting on the effects of discharges through the Ambient Monitoring Plan. In addition, the Contingency Plan mandates a number of additional thresholds and stipulates actions needed if they are exceeded. Table G-1 presents a summary of the permit limits and monitoring requirements for Deer Island and Table G-2 does the same for the CSOs.

Table G-1. Effluent Limitations and Monitoring Requirements for DITP Outfall T01			
	Discharge Limitation		
Effluent Characteristic	Average Monthly	Average Weekly	Maximum Daily
Flow	Report*	N/A	Report
Dry Day Flow	436 MGD	N/A	Report
cBOD	25 mg/L	40 mg/L	Report
TSS	30 mg/L	45 mg/L	Report
pH	Not less than 6.0 nor greater than 9.0 at any time.		
Fecal Coliform[a]	N/A	14,000 colonies/100mL	14,000 colonies/100mL
Chlorine, Total Residual	456 μg/L	N/A	631 μg/L
PCBs, Arochlors: 1016, 1221, 1232, 122, 1248, 1254, 1260	0.000045 μg/L	N/A	Report
Settleable Solids	N/A	Report	Report
Chlorides, Influent	N/A	N/A	Report
Mercury	Report	N/A	Report
Chlordane	Report	N/A	Report
4,4-DDT	Report	N/A	Report
Dieldrin	Report	N/A	Report
Heptachlor	Report	N/A	Report
Ammonia-Nitrogen	Report	N/A	N/A
Total Kjeldahl Nitrogen	Report	N/A	N/A
Total Nitrate	Report	N/A	N/A
Total Nitrite	Report	N/A	N/A
Cyanide, Total	Report	N/A	Report
Copper, Total	Report	N/A	Report
Arsenic, Total	Report	N/A	Report
Hexachlorobenzene	Report	N/A	Report
Aldrin	Report	N/A	Report
Heptachlor Epoxide	Report	N/A	Report
PCBs, Total	Report	N/A	Report
Volatile Organic Compounds	Report	N/A	Report
LC50[b]	Tests involve using mysid shrimp (*Mysidopsis bahia*) and inland silverside (*Menidia beryllina*) in 48 hour acute toxicity tests. LC50 must be achieved in a solution that is 50% effluent.		
C-NOEC[c]	C-NOEC tests involve larval inland silverside (*Menidia beryllina*) and sea urchin (*Arbacia punctulata*). *Menidia* tests involve a week's worth of exposure to various effluent concentrations. The *Arbacia* toxicity test tests fertilization in the test organism. In both cases, no chronic effects must be observed in a solution composed of 1.5% effluent.		
Footnotes *, a, b, and c are listed underneath Table G-2 on the next page.			

Table G-2. Effluent Limitations and Monitoring Requirements for CSO Outfalls		
	Discharge Limitation	
Effluent Characteristic	Average Monthly	Average Weekly
Rainfall	Report*	Report
Flow	Report	Report
TSS	Report	Report
BOD	Report	Report
Chlorine, Total Residual	0.1 mg/L	0.25 mg/L max hourly
pH	Not less than 6.5 nor greater than 8.5	
Fecal Coliform	Must meet Massachusetts Water Quality Standards	
LC50[b]	Since Cottage Farm and Somerville Marginal's relief outfall both discharge in freshwater, acute toxicity tests are required with daphnids (*Ceriodaphnia dubia*) and fathead minnows (*Pimpephales promelas*). There is no limit to effluent concentration used to determine LC50, but results are reportable.	
	All other CSO facilities discharge to marine waters, so the acute test organisms are mysid shrimp (*Mysidopsis bahia*) and inland silverside (*Menidia beryllina*). LC50 results are reportable.	

* No limit, but values reported to EPA and DEP.
[a] There are two other fecal coliform limits. The first is that not more than 10% of the individual samples collected in a month can have a count higher than 14,000 colonies/100mL. Typically, given 3 samples a day, this means no more than 9 samples can have a count higher than 14,000 in a given month. The second limit is that no more than 3 consecutive samples can exceed 14,000 colonies/100mL.
[b] LC50: the concentration of effluent in a sample that causes mortality in 50% of the test population at a specific time of observation.
[c] C-NOEC: Chronic No Observed Effect Concentration is the highest concentration of effluent to which organisms are exposed in a life cycle or partial life cycle test which has no adverse effects (on growth, survival and reproduction).

G.2 Monitoring Programs

In FY04, MWRA conducted several monitoring programs. However, this report presents only the influent and effluent monitoring programs. The receiving water monitoring programs are too complex to cover in a single document. More information on monitoring in Massachusetts Bay and Boston Harbor can be found at:
http://www.mwra.com/harbor/html/bhrecov.htm

G.2.a Treatment Plant Monitoring

Monitoring at DITP has two main components: influent monitoring and effluent monitoring.

Influent monitoring characterizes the influent to the Deer Island Treatment Plant. Monitoring for conventional parameters is necessary for some parameters to meet NPDES reporting requirements, but monitoring many other parameters is critical for process control to ensure optimal plant functioning. Influent monitoring data provides influent loading rates and the basis for determining treatment plant efficiency. Influent monitoring for non-conventional parameters is an important part of MWRA's source reduction and Local Limits program run by TRAC.

Effluent monitoring characterizes the quality of the effluent discharged to Massachusetts Bay. With the addition of whole effluent toxicity (WET) testing, the parameters measured in the effluent are similar to those measured in the influent. The NPDES permit requires effluent monitoring and imposes permit limits on both conventional and priority pollutants to ensure the health of the receiving water. Additionally, the permit also requires the reporting of non-priority pollutants such as nutrients, although no limits are set on them.

Table G-3 lists the treatment plant monitoring program parameters, including sample type, sampling frequency and analytical procedures used.

G.2.b Combined Sewer Overflow Facilities Monitoring Program

The CSO Monitoring Program includes influent and effluent monitoring at the five CSO facilities (the sixth, Constitution Beach, was closed in early FY01). Influent and effluent samples are collected and tested for conventional parameters at all five CSO facilities. Selected priority pollutants and metals are also analyzed in the effluent. Table G-4 lists the CSO monitoring program parameters, including sample type, sampling frequency and analytical procedures used.

G.2.c Sewer System Monitoring Program

The sewer system monitoring program, which attempts to identify Sanitary Sewer Overflows (SSOs), involves conducting visual inspections of areas in the separate sewer system that have a history of discharging during or shortly after a heavy rainfall event. Because of the hydraulics of the South System, discharges occur in manholes or other low-lying areas, while discharges in the North System are the result of combined sewage overwhelming sewage system capacity.

G.3 Treatment of Results

It can be difficult to interpret laboratory results to ensure that they are representative of the sample, especially when the results are at or below method detection levels. For the conventional parameters measured in these monitoring programs, calculating the average concentration of a particular parameter is straightforward: the arithmetic average is used. However, the concentrations of metals, pesticides and organics are frequently below method detection levels, and data are manipulated. Appendix J gives a brief description of method detection limits and how measurements below detection limits are treated in this report.

Daily loadings (in lbs/day) were calculated using the formula:

$$Loading = Q \times C \times 8.34$$

Q = flow (mgd)
C = concentration (mg/L)
8.34 = unit conversion factor

To calculate monthly average concentrations for priority pollutants (metals, cyanide, pesticides/PCBs and organic compounds), the loadings of the pollutant during each sampling event for that month were added and then divided by the total flow during those events.

Average annual concentrations were calculated using the same method, taking each individual sampling event into account in the calculation.

It should be kept in mind that with the large flows going through the Deer Island Treatment Plant, taking one small sample might not always be truly representative. It is also important to keep in mind that certain parameters (conventional) were analyzed daily while other parameters (priority pollutants) were analyzed only two or three times per month.

Table G-3. POTW Monitoring Program

Parameter	Sample Type[1]	Sampling Frequency Influent	Effluent	Analytical Method[2]
Metals				
Aluminum	Composite	2 x month	Weekly	200.7
Antimony	Composite	2 x month	2 x month	200.7
Arsenic	Composite	2 x month	2 x month	200.7, 206.2
Beryllium	Composite	2 x month	2 x month	200.7
Boron	Composite	2 x month	2 x month	200.7
Cadmium	Composite	2 x month	Weekly	200.7, 213.2
Chromium	Composite	2 x month	Weekly	200.7, 218.2
Chromium (Hexavalent)	Composite	2 x month	2 x month	3500-CRD[3]
Copper	Composite	2 x month	Weekly	200.7, 200.8, 220.2
Iron	Composite	2 x month	2 x month	200.7
Lead	Composite	2 x month	Weekly	200.7, 239.2
Mercury	Composite	2 x month	Weekly	245.2, 1631
Molybdenum	Composite	2 x month	Weekly	200.7, 246.2
Nickel	Composite	2 x month	Weekly	200.7, 249.2
Selenium	Composite	2 x month	2 x month	200.7, 270.2
Silver	Composite	2 x month	Weekly	200.7, 272.2
Thallium	Composite	2 x month	2 x month	200.7, 279.2
Zinc	Composite	2 x month	Weekly	200.7
Organics and Other Compounds				
Cyanide	Grab	2 x month	4 x month	335.2
Fats, Oils, and Grease	Grab	2 x month	Weekly	1664
MBAS	Composite	2 x month	2 x month	425.1
PAHs	Composite	2 x month	Weekly	
PCBs	Composite	2 x month	Weekly	8080 MOD
Pesticides	Composite	2 x month	Weekly	608
Petroleum Hydrocarbons	Grab	2 x month	Weekly	418.1
Phenol	Composite	2 x month	Weekly	420.2 MO
Semi-volatile Organics	Composite	2 x month	2 x month	625
Sulfate	Composite	2 x month	*	300.0
Total Organic Carbon	Composite	*	2 x month	415.1
Volatile Organics	Grab	2 x month	2 x month	624
Whole Effluent Toxicity	Composite	*	1 x month	WET Test Protocols
Conventional				
Biochemical O_2 Demand	Composite	Daily	Daily	5210 B[3]
Carbonaceous BOD	Composite	Daily	Daily	5210 B[3]
Chemical O_2 Demand	Composite	Daily	Daily	HACH 8000
Chlorides	Composite	Daily	Daily	300.0
Enterococci	Grab	*	Daily	9230 C[3]
Fecal Coliform	Grab	*	3 x Daily	9222 D[3]
pH	Grab	Daily	Daily	150.1
Settleable Solids	Grab	Daily	Daily	160.5
Temperature	Grab	Daily	Daily	170.1
Total Chlorine Residual	Grab	*	3 x Daily	330.5
Total Coliform	Grab	*	3 x Daily	9222 B[3]
Total Suspended Solids	Composite	Daily	Daily	160.2
Nutrients				
Alkalinity	Composite	Weekly	*	310.1
Ammonia	Composite	Weekly	Weekly	350.1
Nitrates	Composite	Weekly	Weekly	353.2
Nitrate/Nitrite	Composite	*	Weekly	353.2
Nitrites	Composite	Weekly	Weekly	353.2
Orthophosphorus	Composite	Weekly	*	365.1
Total Kjeldahl Nitrogen	Composite	Weekly	Weekly	351.2
Total Phosphorus	Composite	Weekly	*	365.1

* No sampling.
[1] Influent and effluent composite samples are 24-hour time composite samples.
[2] EPA Methods.
[3] Standard Methods.

Table G-4. CSO Monitoring Program			
Parameter	Sample Type	Sampling Frequency	Analytical Method[1]
Biochemical O_2 Demand	Grab/Composite[3]	4 x year	5210 B[2]
Fecal Coliform	Grab[4]	4 x year	9222 D[2]
pH	Grab	4 x year	150.1
Total Chlorine Residual	Grab[3]	4 x year	330.5
Total Suspended Solids	Grab[3]	4 x year	160.2
Whole Effluent Toxicity	Composite[5]	2 x year	WET Test Protocols

[1] EPA Methods.
[2] Standard Methods.
[3] A grab sample must be collected within the first 2 hours of activation (30 minutes for Somerville Marginal in the first permit year) and then hourly samples are to be taken for the duration of the overflow, for not longer than 24 hours. All BOD samples are then composited.
[4] A grab sample must be collected within the first 2 hours of activation (30 minutes for Somerville Marginal in the first permit year) and then hourly samples are to be taken for the duration of the overflow, for not longer than 24 hours. During the first permit year, the first sample is held and subsampled hourly for fecal coliforms.
[5] Cottage Farm and the Somerville Marginal relief outfall discharge to freshwater so the organisms used for toxicity testing are the daphnid *Ceriodaphnia dubia* and the fathead minnow *Pimpephales promelas*. The other facilities discharge to marine waters, so the test organisms are the inland silverside *Menidia beryllina* and the mysid shrimp *Mysidopsis bahia*.

Appendix H: An Overview of the MWRA Sewerage System and Facilities

Overview

The MWRA is responsible for the collection, transport, pumping, treatment, and disposal of sewage in Boston and the greater Boston area. In addition to the Deer Island Treatment Plant, the MWRA operates another treatment plant, serving the town of Clinton and the Lancaster Sewer District, under special arrangements that originated when the Metropolitan District Commission (MDC) acquired land in Clinton for the Wachusett Reservoir. The Clinton Treatment Plant operates under a separate permit from the Boston NPDES permit and is not discussed in this report.

The MWRA serves 43 communities with a total population of about two million people, 5,500 businesses, and 1,400 industries. More than 5,400 miles of town- and city-owned local sewers connect at over 1,800 points to over 230 miles of MWRA interceptor sewers. Also included in the vast sewerage system are twelve pumping stations, five headworks, over 80 combined sewer relief overflows and five CSO treatment facilities. Table H-1 lists the MWRA treatment facilities and relevant information pertaining to each facility.

The Deer Island Treatment Plant in Winthrop serves the 43 communities in the metropolitan Boston sewerage system and is allowed to discharge under the Boston NPDES Permit. The sewerage system is divided into two major regions: the North and the South Systems. Table H-2 lists the sewerage service area population by community.

Table 1-3 List of Treatment Facilities and Discharge Locations

Facility	Location	First Year of Operation	Treatment Process	Design Flow (mgd)	Conduit Size In	Conduit Size Out	Outfall Number	Receiving Water
Combined Sewer Overflow (CSO) Facilities								
Cottage Farm	Memorial Dr. near Boston University bridge, Cambridge, MA	1971	Screening	233	72" N. Charles Relief	96" outfall	MWR201	Charles River
			Settling		42" S. Charles Relief			
			Chlorination		54" Brookline			
		2001	Dechlorination					
Prison Point	Near Museum of Science bridge, Cambridge, MA	1980	Screening	385	10' diameter	8' diameter	MWR203	Boston Inner Harbor
			Settling					
			Chlorination					
		2001	Dechlorination					
Somerville Marginal	McGrath Highway under I-93, Somerville, MA	1973†	Screening	245	7' x 7.5'	6' x 8'	MWR205	Mystic River
			Chlorination		84" diameter			
		2001	Dechlorination					
Fox Point	Freeport St., Dorchester, MA	1989	Screening	119	10' x 12'	10' x 12'	MWR209	Dorchester Bay, Boston Harbor
			Chlorination					
		2003	Dechlorination					
Commercial Point	Victory Rd., Dorchester, MA	1991	Screening	194	15' x 11'	15' x 11'	MWR211	Dorchester Bay, Boston Harbor
			Chlorination					
		2003	Dechlorination					

† Rehabilitated in 1988

Table H-2. Sewerage Service Area Population By Community						
	Population[1]		MWRA Sewerage System		Population Served By	
Town	Total Community	Sewered	North	South	North System[2]	South System[2]
Arlington	42,140	42,098	x		42,098	
Ashland	15,392	10,774		x		10,774
Bedford	12,647	11,256	x		11,256	
Belmont	24,045	23,540	x		23,540	
Boston	589,281	588,692	x	x	418,056	136,836
Braintree	33,917	33,883		x		33,883
Brookline	57,032	56,462	x	x	29,381	23,991
Burlington	22,923	22,510	x		22,510	
Cambridge	101,807	101,705	x		101,705	
Canton	21,341	15,579		x		15,579
Chelsea	34,913	34,913	x		34,913	
Dedham	23,378	21,975		x		21,975
Everett	37,772	37,734	x		37,734	
Framingham	66,827	62,817		x		62,817
Hingham	6,782	6,126		x		6,126
Holbrook	10,877	8,484		x		8,484
Lexington	30,663	29,130	x		29,130	
Malden	56,155	56,099	x		56,099	
Medford	55,137	55,082	x		55,082	
Melrose	26,963	26,936	x		26,936	
Milton	26,010	24,449	x	x	1,843	22,279
Natick	32,384	27,332		x		27,332
Needham	29,197	27,854		x		27,854
Newton	83,880	82,202	x	x	42,786	35,390
Norwood	28,844	28,815		x		28,815
Quincy	89,187	89,098		x		89,098
Randolph	31,044	30,858		x		30,858
Reading	23,680	22,330	x		22,330	
Revere	47,496	47,449	x		47,449	
Somerville	76,922	76,845	x		76,845	
Stoneham	22,165	21,700	x		21,700	
Stoughton	27,227	17,698		x		17,698
Wakefield	24,817	23,757	x		23,757	
Walpole	23,199	15,079		x		15,079
Waltham	59,073	58,482	x		58,482	
Watertown	32,857	32,857	x		32,857	
Wellesley	26,671	25,684		x		25,684
Westwood	14,181	13,472		x		13,472
Weymouth	54,754	51,852		x		51,852
Wilmington	21,629	3,699	x		3,699	
Winchester	21,093	21,072	x		21,072	
Winthrop	18,235	18,235	x		18,235	
Woburn	38,003	36,103	x		36,103	
TOTAL	**2,122,540**	**2,042,717**			**1,295,598**	**705,876**

[1] Community population data are from MWRA's I/I program, August 2004 report.

[2] Boston, Brookline, Milton, and Newton are in both the North and South Systems. Sewered population data for these communities estimated by MWRA's I/I Program; this is the last estimate available (from the *FY00 NPDES Compliance Summary Report* , ENQUAD 2001-04).

H.1 North System

The North System serves a population of about 1.3 million and is located to the north and west of Boston. It covers an area of about 168 square miles. Most of the North System is a separate system – different conduits carry sanitary wastewater and storm water. However, portions of Boston, Cambridge, Somerville, and Chelsea still have combined sewers, where the same conduits carry sanitary and storm water. Combined sewers serve about 20 percent of the North System service area. Community sewer lines tie into the MWRA system through interceptor lines that feed into the four headworks facilities in the North System.

Two deep rock tunnels, the Boston Main Drainage Tunnel (BMDT) and the North Facilities Metropolitan Relief Tunnel (North Metro Relief), connect the three remote headworks to the North Main Pump Station (NMPS) on Deer Island. The seven-mile BMDT originates at the Ward Street Headworks, continues to the Columbus Park Headworks, and runs under Boston Harbor to the NMPS. The four-mile North Metro Relief Tunnel connects the Chelsea Creek Headworks to the NMPS. The two tunnels combined can handle approximately 800 mgd, matching the combined peak flow capacity of 788 mgd from the three remote headworks.

A fourth headworks facility, the Winthrop Terminal, is located on Deer Island and receives flows from the city of Winthrop and the East Boston (Caruso) Pump Station through the North Metro Trunk Sewer. Figure H-1 on the next page shows the North System schematics.

H.1.a North System Pump Stations

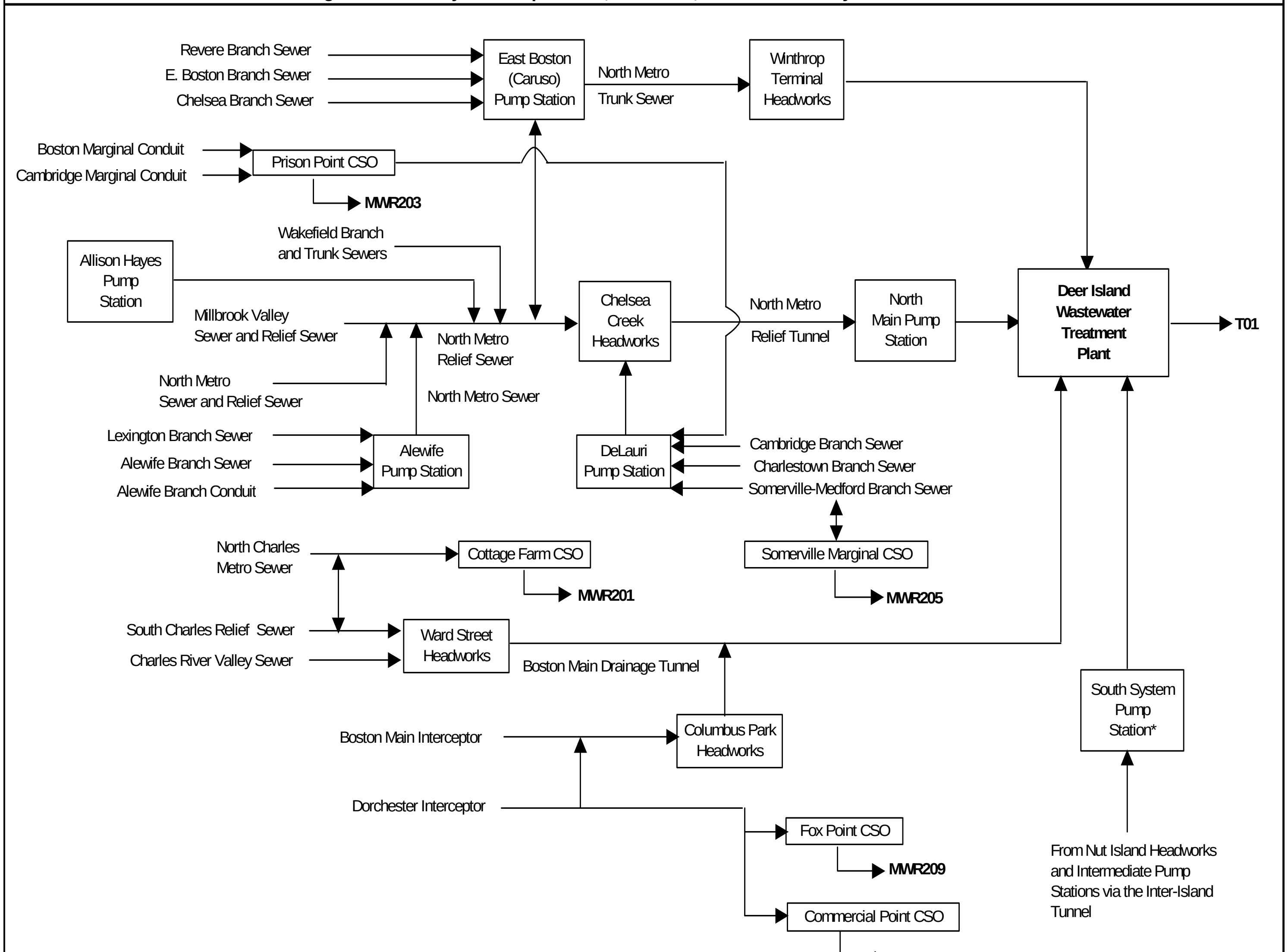
The MWRA North System has four pump stations. The Alewife Brook (64 mgd), Caruso (110 mgd), DeLauri (90 mgd), and Allison Hayes (11 mgd) pump stations convey wastewater to the headworks facilities. The four pump stations receive flow from interceptor lines as follows:

Alewife Brook Pump Station	Lexington Branch Sewer
	Alewife Branch Sewer
	Alewife Branch Conduit
Caruso Pump Station	Revere Branch Sewer
	East Boston Branch Sewer
	North Metro Relief Sewer*
DeLauri Pump Station	Cambridge Branch Sewer
	Charlestown Branch Sewer
	Medford-Somerville Branch Sewer
	Prison Point Pump Station
	Somerville Marginal CSO Overflow**
Allison Hayes Pump Station	Wakefield Branch Sewer

*: When flow to the Chelsea Creek Headworks is held back, wastewater is diverted to the Caruso Pump Station.

**: During low-intensity rainfall when line capacity is not exceeded, the combined wastewater is pumped back to the trunk sewers and ultimately to the DeLauri station.

Figure H-1. North System Pump Stations, Headworks, CSOs and Tunnel Hydraulic Schematic



* See Figure H-4 for South System hydraulics.

H.1.b North System Headworks

The Deer Island Treatment Plant receives North System flow from three remote headworks and the Winthrop Terminal headworks. The three remote headworks: Ward Street Headworks (256 mgd) located in Roxbury, Columbus Park Headworks (182 mgd) in South Boston, and Chelsea Creek Headworks (350 mgd) in Chelsea, have a combined pumping capacity of 788 mgd. The Winthrop Terminal Headworks (125 mgd) is located on Deer Island. The four North System headworks receive flows from interceptor lines or pump stations as follows:

Ward Street Headworks	South Charles Relief Sewer
	Charles River Valley Sewer
	North Charles Metro Sewer*
	Cottage Farm CSO*
Columbus Park Headworks	Boston Main Interceptor
	Dorchester Interceptor
Chelsea Creek Headworks	Alewife Pump Station
	North Metro Relief Sewer
	DeLauri Pump Station
	Caruso Pump Station Overflow
Winthrop Terminal Headworks	Winthrop Sewer
	Caruso Pump Station**

*: During low intensity rainfall when line or holding capacity is not exceeded, the combined wastewater is pumped back to the trunk sewers and ultimately to the Ward Street Headworks.
**: Overflow from the Caruso Pump Station.

H.1.c Combined Sewer Overflow Facilities

The conditions for discharge of effluent from six CSO chlorination facilities are also included in MWRA's Boston NPDES permit. One of these facilities, Constitution Beach in East Boston, was closed in September 2000, leaving five active permitted CSO facilities. These five facilities, Cottage Farm and Prison Point in Cambridge, Somerville Marginal in Somerville, and Fox Point and Commercial Point in Dorchester, discharge to the Charles River, the Inner Harbor, the Mystic River, Dorchester Bay and Dorchester Bay, respectively.

Discharge of combined wastewater from a CSO treatment facility outfall to a receiving body of water is defined in this report as a CSO activation. Discharge of combined wastewater to a non-facility CSO outfall pipe is defined as a CSO overflow. CSO overflows will not be discussed in this report. In general, CSO activations occur as a result of heavy rain, snowmelt, or choking at the headworks.

Choking is the process by which the headworks restrict the flow to Deer Island. During wet weather, when the wastewater volume exceeds the hydraulic capacity of the treatment plant, the headworks “choke” the flow and hold the wastewater in the lines. As a result, the combined wastewater backs up into the system, forcing the combined wastewater to overflow to CSO treatment facilities and non-facility CSO outfall pipes, resulting in potential CSO activations and overflow as well as potential SSOs. In addition to choking in response to hydraulic demand on the system, the headworks may choke so that emergency repairs, system testing, or maintenance work can be performed at the treatment plant. Choking at Ward Street and Columbus Park Headworks influences Cottage Farm activations. Choking at the Columbus Park Headworks can influence activations at Fox Point and Commercial Point CSOs. Backups at the DeLauri Pumping Station brought about by choking at the Chelsea Headworks can activate the Somerville Marginal CSO.

At the CSO facilities, the combined wastewater is screened and chlorinated prior to discharge. Of the five CSO facilities, only Cottage Farm and Prison Point have tank storage capacity. This allows the chlorinated wastewater to be held at these facilities. The facility only discharges when the storage capacity is exceeded; when that happens, the treated wastewater overflows and is discharged to the river. The three other CSO facilities are gravity CSO facilities, which means that combined wastewater arrives and leaves the CSO facility by gravity. This type of facility provides disinfection and allows the chlorinated combined wastewater to overflow to the receiving water as quickly as the wastewater arrives at the facility.

The five CSO facilities provide treatment for approximately 50% of the CSO volume while the other half overflows in any of 80-plus permitted CSO overflow structures of the sewerage system without the benefit of any type of treatment. Of the more than 80 permitted CSO overflow structures, 53 are located in Boston, 15 in Cambridge, 5 in Chelsea, and 12 in Somerville. These outfalls discharge into Boston Harbor, the Alewife Brook, the Mystic River, the Charles River, and the Neponset River.

Cottage Farm CSO Facility

During dry weather conditions, wastewater arrives at the Ward Street Headworks where it is pumped to the Deer Island Plant. Under storm conditions, wastewater backs up into sewer lines and into the Cottage Farm CSO facility. Cottage Farm detains wastewater up to a volume of 1.3 MG. Any excess flow is screened, settled, chlorinated, and discharged to the Charles River through outfall MWR201. Combined wastewater that is held back is pumped back to the Ward Street Headworks. This facility, on-line since 1971, has a design pumping capacity of 233 mgd. An upgrade completed in FY01 added a dechlorination system for the effluent.

Prison Point CSO Facility
Prison Point is both a dry weather and storm water pumping station. The dry weather phase is a five-mgd capacity sewer pumping station that receives flow from the Boston Marginal Conduit and the Cambridge Marginal Conduit. Prison Point feeds into the DeLauri Pumping Station.

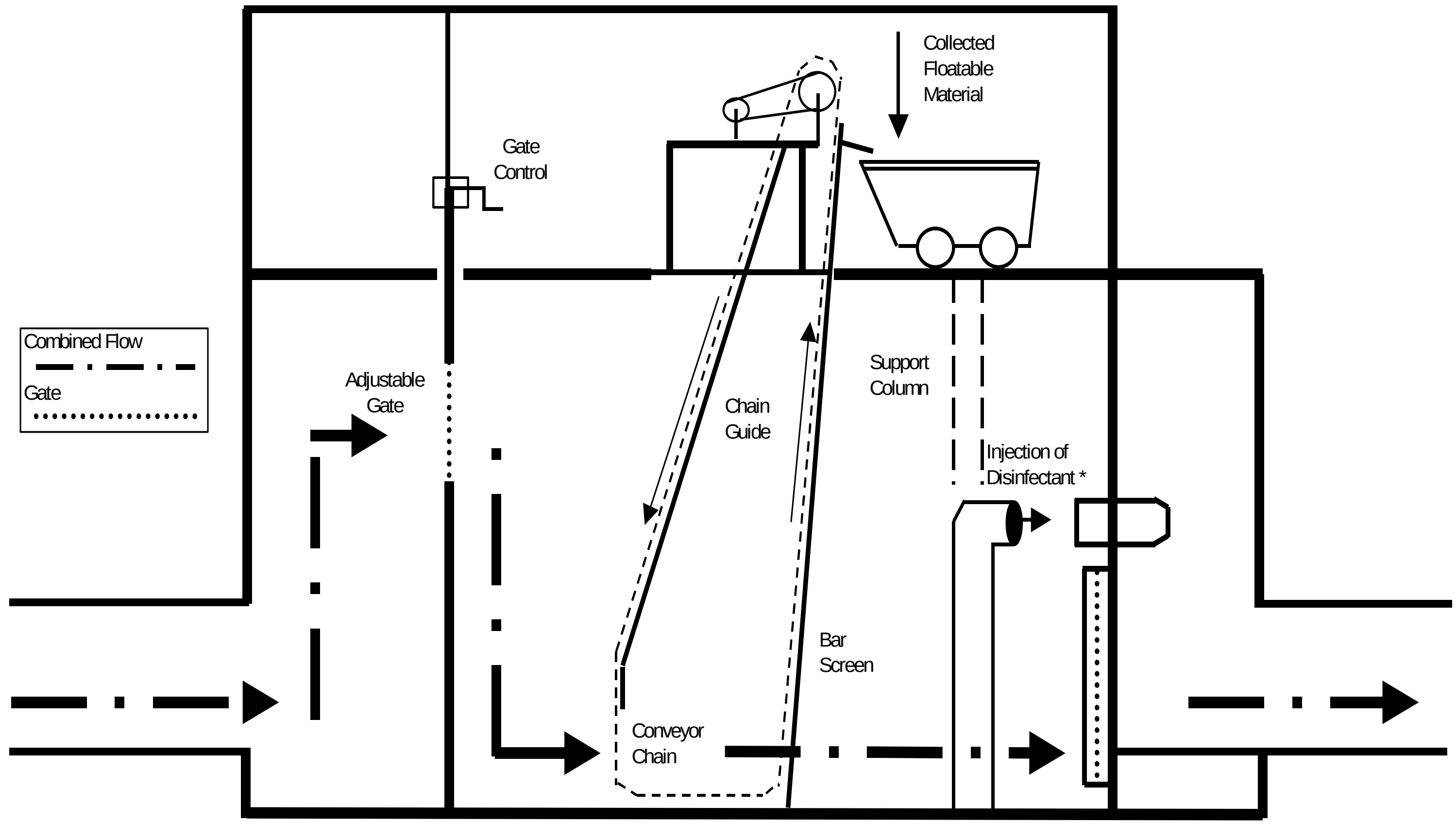
The storm water phase has a maximum pumping capacity of 385 mgd. Treatment includes screening, disinfection, and detention. During wet weather, if the dry pumping capacity is exceeded, the combined flow is screened, chlorinated, and held in detention basins. Once the basins fill, treated flow is discharged downstream below the new Charles River Dam at outfall MWR203. Combined wastewater volume that is held back, up to 1.2 MG, is pumped back to the DeLauri Station. This facility came on-line in 1980 and was upgraded with a dechlorination system in 2001.

Somerville Marginal CSO Facility
Somerville Marginal CSO is an unmanned gravity facility with a design capacity of 245 mgd. It receives wet weather flow from the northeast portion of Somerville and part of Medford. Normally, dry weather flow from these areas arrives at the DeLauri Station via the Somerville-Medford trunk sewers. During wet weather, combined sewer flow backs up to the Somerville CSO facility. Unlike Cottage Farm or Prison Point, this facility does not provide any large-scale detention capacity during storm conditions. Treatment consists of screening and chlorination. Effluent is discharged to the lower Mystic River basin at outfall numbers MWR205. The relief outfall, MWR205A, discharges to freshwater above the dam. MWR205A only activates under specific conditions and the vast majority of discharges are released through MWR205. During low-intensity rainfall when line capacity is not exceeded, the combined wastewater is pumped back from a wet well to the DeLauri Station. This facility came on-line in 1973 and was upgraded in 2001 with a dechlorination system.

Figure H-2 on the following page shows a representative gravity CSO schematic applicable to Somerville Marginal as well as the Fox Point and Commercial Point facilities.

Fox Point CSO Facility
Fox Point is an unmanned gravity facility with a design capacity of 119 mgd. It receives wet weather flows from the Dorchester Interceptor sewer line. Operation of this facility parallels that of the Constitution Beach CSO; treatment includes screening and disinfection. Effluent is discharged to Dorchester Bay through outfall number MWR209. This facility came on-line in 1989, and a dechlorination system was added in 2001.

Figure H-2. Typical Gravity Combined Sewer Overflow Treatment Facility



* At Somerville Marginal, injection occurs at the influent gate.

Commercial Point CSO Facility

Commercial Point is an unmanned gravity CSO with a design capacity of 194 mgd. This facility also receives wet weather backups from the Dorchester Interceptor. Treatment includes screening and disinfection. Effluent is discharged to Dorchester Bay through outfall number MWR211. This facility came on-line in 1991 and was upgraded in 2001 with a dechlorination system.

H.2 South System

The South System serves a population of about 700,000 people and is located to the south and southwest of Boston. The South System covers an area of approximately 237 square miles. Figure H-3 on the following page illustrates the South System hydraulic schematic. Community sewer lines tie into the South System through MWRA interceptor lines. The Framingham Extension Sewer, Wellesley Extension Sewer, Upper Neponset Valley Sewer, Wellesley Extension Relief Sewer, Neponset Valley Sewer, Walpole Extension Sewer, Stoughton Extension Sewer, Braintree-Randolph Trunk Sewer, and several other branch sewers discharge to the South System High Level Sewer. The High Level Sewer has a capacity of 360 mgd. Pump stations move the wastewater through the High Level Sewer to the Nut Island Headworks for preliminary treatment and grit removal. The South System flows are then conveyed to the South System Pump Station at Deer Island through the 4.7-mile Inter-Island Tunnel for treatment at the Deer Island Treatment Plant.

In 2004 the MWRA completed the Braintree-Weymouth Intermediate Pump Station (IPS) in North Weymouth. The IPS pumps sewage from the North Weymouth Relief Interceptor directly into the Inter-Island Tunnel, bypassing Nut Island. The IPS also acts as a headworks with bar screens and grit collectors. The IPS was designed to increase South System capacity, helping to alleviate some of the overflows in the South System. Additionally, the IPS will pump by-products between the fertilizer palletizing plant in Quincy and Deer Island. Sewage sludge will flow from Deer Island to Quincy for conversion to fertilizer and centrate from the fertilizer production process will return to Deer Island for treatment through two pipelines associated with the IPS.

Once at Deer Island, two force mains deliver the South System flow to one of two locations. The South System flow is normally discharged to the effluent channel of the Grit Facility, where it is combined with the North System and recycle flows, then split between Primary Clarifier Batteries A through D. The alternate discharge location is directly to the Primary Clarifier Battery D influent channel, which allows the South System flow to be isolated.

H.2.a South System Pump Stations

Eight MWRA pump stations move wastewater from low-lying areas to the High Level Sewer: Hingham Pump Station (16.5 mgd), Braintree-Weymouth Pump Station (60 mgd), Braintree-Weymouth IPS (45 mgd), Squantum Pump Station (12 mgd), Houghs Neck Lift Station (2.8 mgd), Neponset Pump Station (90 mgd), Framingham Pump Station (48 mgd) and Quincy Pump Station (52 mgd).

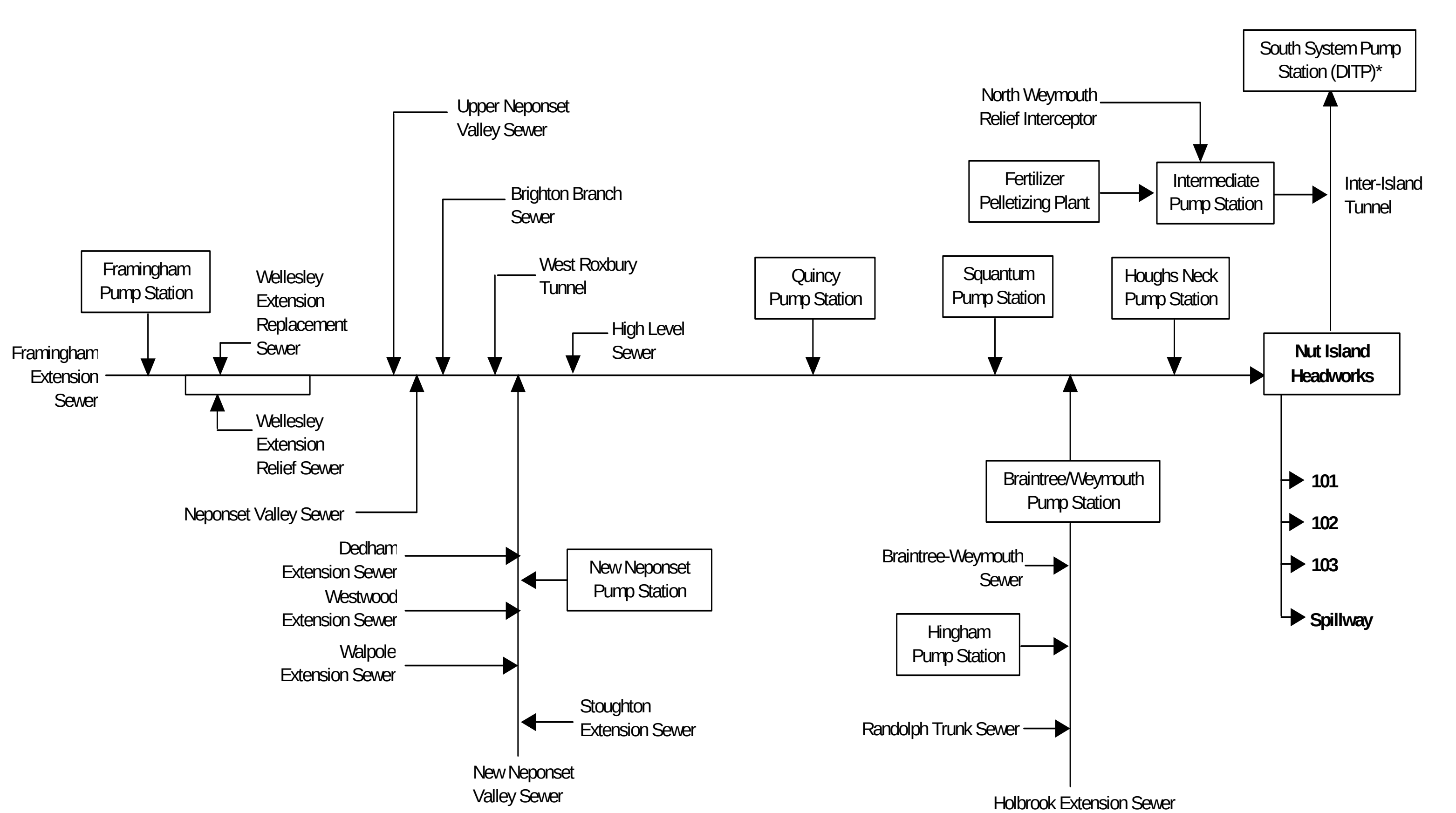
The seven pumping stations receive flow from interceptor or community lines as follows:

Hingham Pump Station	Weymouth-Hingham Sewer Lines
Braintree-Weymouth Pump Station	Braintree-Randolph Trunk Sewer
	Braintree-Weymouth Extension Sewer
	Holbrook Extension Sewer
	Hingham Pump Station
Braintree-Weymouth IPS	North Weymouth Relief Interceptor
	Quincy Pelletizing Plant (see Chapter 4)
Squantum Pump Station	Squantum Sewers
Houghs Neck Lift Station	Houghs Neck Sewer
Neponset Pump Station	Neponset Valley Sewer
Framingham Pump Station	Framingham Sewers
Quincy Pump Station	Quincy and Upstream Sewers

H.2.b South System Headworks

The Deer Island Treatment Plant receives South System flow from the new Nut Island Headworks. The Nut Island Headworks went on-line on July 7, 1998. It is located in Quincy and has a capacity of 360 mgd. Vortex grit separators similar to those used on Deer Island in the North System Grit Facility provide grit removal for South System flows.

Figure H-3. South System Pump Station, Headworks, and Tunnel Hydraulic Schematic



* See Figure H-2

H.3 Deer Island Treatment Plant

Until July 8, 1998, wastewater flows from the North System were treated at the Deer Island Treatment Plant and flows from the South System were treated at the Nut Island Treatment Plant. In July 1998, the Nut Island Treatment Plant was decommissioned and all flows were treated at Deer Island.

Four lines convey sewage to the Deer Island Treatment Plant. North System wastewater is delivered to the plant via the Boston Main Drainage Tunnel (from the Ward Street and Columbus Park Headworks), the North Metropolitan Relief Tunnel (from the Chelsea Creek Headworks), and the North Metropolitan Trunk Sewer. South System wastewater is transferred to the plant from the Nut Island Headworks and Braintree-Weymouth Intermediate Pump Station via the Inter-Island Tunnel.

The Deer Island Treatment Plant receives wastewater at the North Main Pump Station (NMPS), the Winthrop Terminal, and the South System Pump Station (SSPS). The North Metro Relief Tunnel and the Boston Main Drainage Tunnel connect to the NMPS, which consists of ten pumps, each rated at 110 mgd, for a total pumping capacity of 1,100 mgd. The North Metro Trunk Sewer connects to the Winthrop Terminal. The Inter-Island Tunnel connects to the SSPS, which consists of eight pumps, each rated at 66.7 mgd, for a total capacity of 534 mgd.

Grit removal and screening (preliminary treatment), which remove heavy particles and debris, is provided at the remote headworks and on-site at Deer Island. Flow from the South System receives preliminary treatment at the Nut Island Headworks. Grit and screenings are landfilled off-site.

The upgraded primary treatment plant came on-line on January 21, 1995. The first battery of secondary treatment was initiated at Deer Island on August 1, 1997. Battery B came on-line on March 1, 1998, and the third and final secondary treatment battery, Battery C, started up on March 8, 2001.

Wastewater from the North System flows through the grit chambers for additional grit removal. It, along with South System wastewater, then flows to the primary settling tanks where floatables, consisting mainly of oil, grease, and plastics rise to the surface while the sludge of heavy solid particles settles to the bottom. The majority of the primary effluent (the allowable capacity for secondary treatment) is sent to secondary treatment, while any remaining portion from high flow conditions due to rainfall bypasses secondary and is sent directly to the disinfection basins to be treated with sodium hypochlorite. Effluent from secondary treatment is then, if necessary, blended with primary effluent that bypassed secondary, and then sent to the disinfection basins, where it is chlorinated, detained, and then dechlorinated before discharge.

The scum (floatables) is skimmed off the top of the primary and secondary settling tanks while the sludge (settled solids) is scraped from the bottom of the tanks. Primary scum is pumped to the scum concentrator while the primary sludge is pumped to the gravity sludge thickeners. Scum and sludge from the secondary batteries are concentrated using centrifuges. After the scum and sludge are concentrated and thickened, they are conveyed to the anaerobic digesters for further treatment. The digested sludge/scum is barged to the Fore

River Pelletizing Plant, where it is converted into fertilizer (refer to Chapter IV). Methane from the digestion process is stored and used to generate power and heat for DITP.

Figure H-4 on the following page presents the Deer Island plant process flow diagram.

H.3.a Deer Island Treatment Plant Outfalls

On September 6, 2000, effluent from Deer Island was diverted to the new 9.5 mile outfall tunnel into Massachusetts Bay. Effluent is discharged through 53 operational risers over the last 1.25 miles of the tunnel. The tunnel has a capacity of 1,270 mgd, slightly greater than the old harbor outfall system. Before the effluent enters the outfall it is used to run a hydroelectric facility linked to the Deer Island power grid. Although sealed and non-operational, the old Deer Island harbor outfalls are subject to periodic inspections and remain available for emergency use. Effluent is channeled through a common conduit to four potential outfall pipes: 001, 002, 004, and 005

H.3.b Nut Island Outfalls

The former Nut Island Treatment Plant discharged treated wastewater through four outfalls. Although the Nut Island Treatment Plant no longer exists, outfalls 101, 102 and 103 remain operational in case of emergency at the Nut Island Headworks. These outfalls discharge to Boston Harbor; the new emergency spillway built concurrently with the new headworks discharges to Hingham Bay.

H.4 Collection and Transport System

An issue of concern in both the North System and the South System is the occurrence of Sanitary Sewer Overflows (SSOs). These occur during extreme rainfall events, when inflow and infiltration from heavy rains exceeds the capacity of the pipes, causing certain areas to become inundated. Whenever there is a high amount of rainfall, a crew from the Transport Department investigates a number of critical areas to visually monitor potential overflow sites. While some of these critical areas are the MWRA's responsibility, most of them are the responsibility of the local communities. A list of these areas belonging to the MWRA is included in Table H-4 on page H-15. Not all of these areas are checked during every rainfall, and some are monitored by the MWRA only during extreme storm events. Table H-5 shows areas identified by MWRA staff as having the potential to overflow under certain conditions. SSOs have not, as of yet, occurred in these areas.

Figure H-4. Deer Island Treatment Plant Process Flow

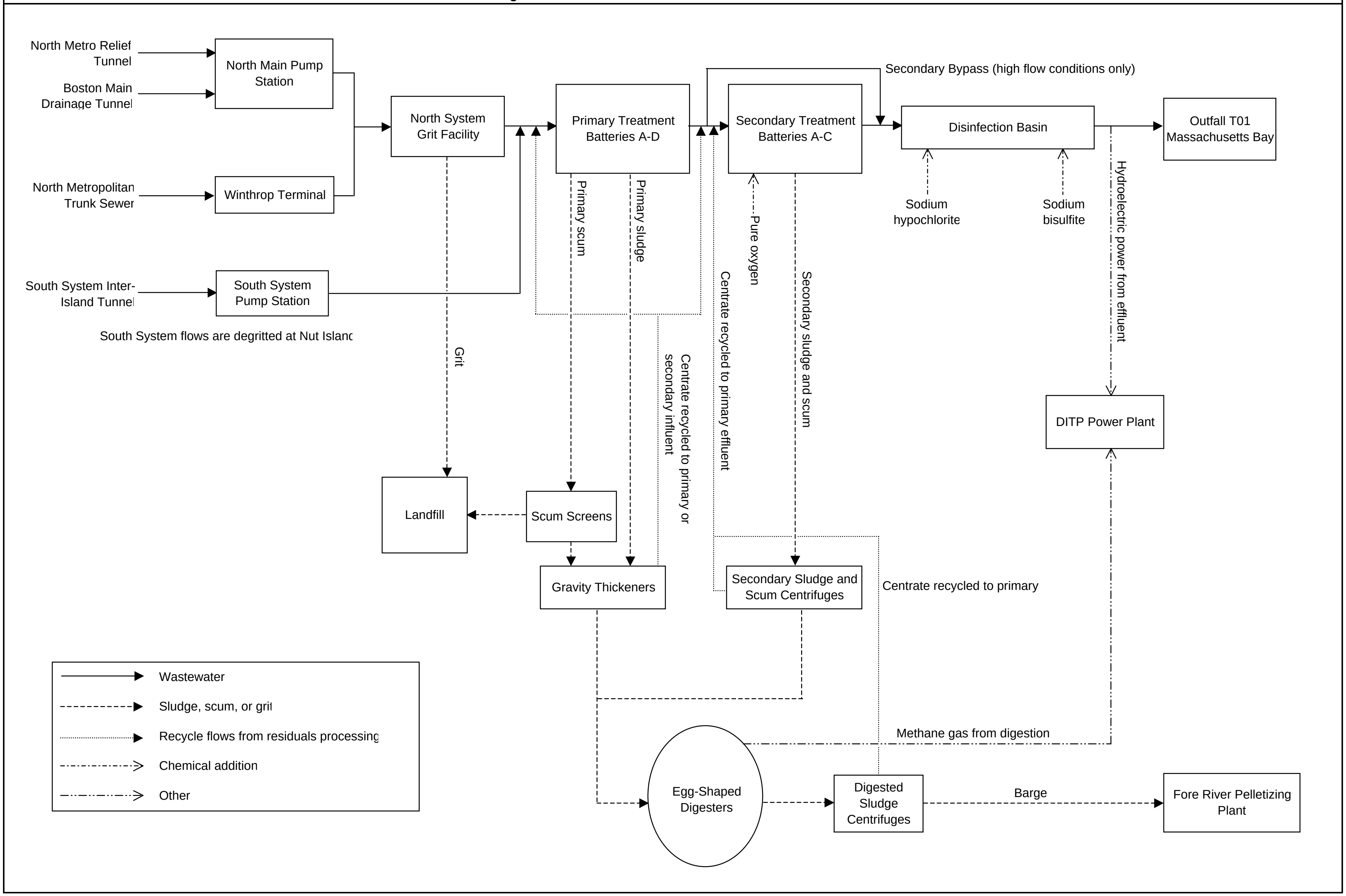


Table H-4. Known MWRA Sanitary Sewer Overflow Locations*		
System	Location	Description
North	Arlington, Section 80	Dudley St., Brattle Ct. manual plugs
	Arlington/Medford, Section 91B	Headhouse, manholes, siphon
	Cambridge, Cottage Farm CSO	Cottage Farm CSO facility
	Cambridge, Section B	Near MBTA garage
	Cambridge, Section 43/B	Alewife Brook Pump Station, influent yard manhole
	Framingham, Section 133B	Framingham Extension Sewer
	Malden, Section 41	
	Malden, Section 95	
	Medford, Section C	Auburn St./Rt. 16 overflow relief point
	Medford, Section 20	Pearl St.
	Medford, Section 107	Rt. 16 on-ramp, overflow weir
	Melrose, Section 50	Tremont St.
	Melrose, Section 51	Brunswick Park
	Wakefield, Section 204	Allison Hayes Pump Station influent
	Waltham, Section 212 (old 4A)	
	Winchester, Section 47	Cummingsville Branch at Wedge Pond
	Winchester, Section 113	Ginn Field, Wedgemere siphons
	Winchester, Section 114	
South	Boston, Section 519	Neponset Valley Sewer, Business St.
	Boston, Section 571	High Level Sewer, Arboretum
	Braintree, Section 628	Pearl St. siphon
	Braintree/Weymouth, Section 626	Smelt Brook siphon headhouses
	Canton, Section 616	New Neponset Valley Relief Sewer, siphon near Bell Mouth
	Dedham, Section 526	Neponset Valley Sewer, Rt. 1
	Holbrook, Section 628B	Holbrook Extension Sewer
	Milton, Section 561	Brook Rd. at Pine Tree Brook
	Newton, Section 529	Upper Neponset Valley Sewer, VFW Parkway
	Newton, Section 530	Upper Neponset Valley Sewer, Vine St. area
	Norwood, Section 616	Walpole Extension Sewer, Overlook Dr.
	Norwood, Section 617	Walpole Extension Sewer, Meadow Brook siphon
	Randolph, Section 628A	Randolph siphon
	Roslindale, Section 570	High Level Sewer, manholes overland onto street
	Roslindale, Section 570	High Level Sewer, Roslindale emergency gates
	Westwood, Section 636	Westwood Extension Sewer, siphon or lowest point

* Known SSOs occurring in MWRA lines from January 1, 1996 onwards.

Table H-5. Potential MWRA Sanitary Sewer Overflow Locations		
System	Location	Description
South	Boston, Section 564	High Level Sewer, Neponset River at Monponset St.
	Canton, Section 614	New Neponset Valley Relief Sewer Pump Station
	Hingham, Section 562	Hingham Pump Station
	Quincy, Section 543	Nut Island emergency outfall
	Quincy, Section 543	Nut Island emergency spillway
	Quincy, Section 551B	Quincy Pump Station
	Quincy, Section 621	Braintree-Weymouth Pump Station influent
	Squantum, Section 550B	Squantum Pump Station
	West Roxbury, Section 637A	West Roxbury Tunnel and High Level Sewer junction

Appendix I: Instrument Detection Limits, Method Detection Limits, and Quantitation Limits

Overview

An understanding of the detection limits of analysis is essential to reviewing the data from chemical analyses. There are three different types of detection limits that are most often encountered:

- Instrument Detection Limits
- Method Detection Limits
- Quantitation Limits, also known as Reporting Limits.

I.1 Instrument Detection Limits

Instrument detection limits (IDL) reflect the capability of the instrument. This limit will be the lowest of the three detection limits. The IDL will not take into account the losses of the pollutant associated with the matrix (soil or wastewater) and extraction procedure. This discrepancy is known as matrix interference.

I.2 Method Detection Limits

Method detection limits (MDL) are the smallest amount of a substance that can be detected above background noise using a particular method. The MDL is statistically determined by running a series of analyses using various low concentrations of a pollutant. Using a Student's "T" test, the smallest concentration that has a 99% probability of being detected above the background is designated the MDL for that pollutant. The EPA, using several private laboratories, has determined what the MDLs are for most priority pollutants using their approved methods. These are published in the 40 CFR.

I.3 Quantitation Limits

In general, if a plot is made of pollutant concentration versus instrument response, it will show a linear relationship. As the pollutant concentration approaches zero, the linearity of the relationship is lost. At the point where the linearity is lost is called the Quantitation Limit (QL) or sometimes the Reporting Limit. In other words, the smallest concentration where the linear relationship holds is the smallest concentration that can be quantified. Generally, the QL is about five times the MDL. Quantitative limits are relevant to GC/MS analyses, that is, methods 608 (for pesticides), 624 (for volatile organics), and 625 (for semi-volatile organics). Specific limits are highly matrix-dependent.

I.4 Detection Limits, Non-Detects, and Reporting

In short, the IDL is the lowest concentration that a particular instrument can detect. The MDL is the lowest concentration that can be detected using a particular method. The QL is the smallest concentration that can be confidently considered to be accurate.

Reported concentrations that are between the MDL and the QL indicate that a pollutant is present, but at a concentration too low to be accurately quantified. For example, using EPA method 624, chloroform has an MDL of 1.6 μg/L and a QL of 10 μg/L. If the concentration from an analysis is reported as 5 μg/L then it can be inferred that although the actual chloroform concentration in the wastewater is uncertain, 5 μg/L is a best guess. The EPA requires that these intermediate values be flagged with a “J” on any reports submitted to them. Therefore, these are sometimes simply called “J-values.”

For non-detects in analyses of metals, cyanide, petroleum hydrocarbons, etc., it is customary for “less than the MDL” to be listed as a result. For a non-detect in the 608, 624, and 625 analyses, “less than the QL” is typically listed.

Often it becomes necessary to estimate a concentration for below detection limit values, specifically when calculating the average yearly concentration of a pollutant. A well-established method is to assume the actual concentration of a non-detected pollutant is simply one half of the MDL. While no scientific theory supports this assumption, it is more reasonable than assuming that the concentration is zero, or the MDL itself. The EPA and DEP also accept it as a standard practice that can be applied to any series of tests.

This technique is utilized in this report. For the organic compounds – methods 608, 624, and 625 – one tenth of the QL, or half the MDL, was assumed for all non-detects (i.e. values below QL). For all metals, cyanide, petroleum hydrocarbons, etc., half the MDL was assumed for all non-detects (i.e. values below MDL).

In Table I-1 is a list of the parameters regularly tested for in MWRA effluent. The required EPA method number, and the MDLs and reporting limits attained by the MWRA’s Central Laboratory are included.

Table I-1. List of Parameters Tested			
Parameter	EPA Method Number	MWRA MDL (µg/L)	MWRA QL (µg/L)
Metals			
Aluminum	200.7	90	<90
Antimony	200.7	0.8	<0.9
Arsenic	206.2	0.8	<0.8
	200.7	43.8	<45
Beryllium	200.7	0.3	<0.5
Boron	200.7	9.5	<250
Cadmium	200.7	1.1	<2
	213.2	.03	<0.03
Chromium	200.7	4.0	<4
	218.2	0.7	<0.7
Copper	200.7	10.5	<10
	220.2	0.6	<1
	200.8	[1]	[1]
Hexavalent Chromium	SM 3500-CR D[2]	1.8	<5
Iron	200.7	[3]	<30
Lead	200.7	12.0	<15
	239.2	2.4	<2.4
Mercury	245.2	0.01	<0.01
	1631	[1]	[1]
Molybdenum	200.7	3.4	<5
	246.2	1.2	<1
Nickel	200.7	3.0	<3
	249.2	0.7	<0.7
Selenium	200.7	48.2	<50
	270.2	0.9	<0.9
Silver	200.7	1.4	<2
	272.2	0.09	<0.09
Thallium	200.7	58.3	<60
	279.2	1.0	<1
Zinc	200.7	5.7	<6
Other Inorganic Chemicals[4]			
Cyanide	335.2	0.004	<0.01
Fats, Oil, and Grease (mg/L)	1664A	2.0	<7
Petroleum hydrocarbons (mg/L)		[1]	[1]
Phenol (mg/L)	420.2 MO	0.003	<0.01
Sulfate (mg/L)	300.0	0.2	<1
Total Organic Carbon (mg/L)	415.1	0.06	<0.3
Surfactants (mg/L)	425.1	0.03	<0.03
Pesticides (ng/L)			
4,4'-DDD	608	6.8	<20
4-4'-DDE	608	8.8	<20
4-4'-DDT	608	15.8	<20
Aldrin	608	3.5	<20
alpha-BHC	608	6.3	<20
alpha-Chlordane	608	3.6	<20
beta-BHC	608	6.3	<20
Chlordane (Technical)	608	[1]	[1]
delta-BHC	608	6.7	<20
Dieldrin	608	5.5	<20
Endosulfan I	608	5.3	<20
Endosulfan II	608	4.0	<20
Endosulfan sulfate	608	16.7	<20
Endrin	608	13.7	<20
Endrin aldehyde	608	9.1	<20
Endrin ketone	608	5.4	<20
gamma-BHC (Lindane)	608	4.2	<20
Heptachlor	608	9.7	<20
Heptachlor epoxide	608	8.8	<20
Hexachlorobenzene	612	[1]	[1]
Methoxychlor	608	52.0	<200
Toxaphene	608	[1]	[1]

Table I-1. List of Parameters Tested (cont.)

PCBs (all in ng/L)			
Arochlor-1016	608	31.0	<500
Arochlor-1221	608	21.0	<1000
Arochlor-1232	608	14.0	<500
Arochlor-1242	608	[1]	[1]
Arochlor-1248	608	[1]	[1]
Arochlor-1254	608	10.0	<500
Arochlor-1260	608	32.0	<500
Volatile Organics			
1,1,1-trichloroethane	624	1.0	<5
1,1,2,2-tetrachloroethane	624	1.3	<5
1,1,2-trichloroethane	624	0.6	<5
1,1-dichloroethane	624	0.8	<5
1,1-dichloroethene	624	1.3	<5
1,2-dichlorobenzene	624	0.4	<5
1,2-dichloroethane	624	0.6	<5
1,2-dichloropropane	624	0.4	<5
1,3-dichlorobenzene	624	0.5	<5
1,4-dichlorobenzene	624	0.4	<5
2-butanone	624	1.8	<5
2-chloroethylvinylether	624	0.8	<5
2-hexanone	624	1.5	<5
4-methyl-2-pentanone	624	1.3	<5
Acetone	624	16	<5
Acrolein	624	5.4	<5
Acrylonitrile	624	4.2	<5
Benzene	624	0.5	<5
Bromodichloromethane	624	0.4	<5
Bromoform	624	0.4	<5
Bromomethane	624	1.1	<5
Carbon disulfide	624	1.4	<5
Carbon tetrachloride	624	1.0	<5
Chlorobenzene	624	0.4	<5
Chloroethane	624	1.0	<5
Chloroform	624	0.5	<5
Chloromethane	624	0.7	<5
cis-1,2-dichloroethene	624	0.5	<5
cis-1,3-dichloropropane	624	0.3	<5
Dibromochloromethane	624	0.6	<5
Ethylbenzene	624	0.5	<5
m,p-xylene	624	1.4	<5
Methylene chloride	624	0.6	<5
o-xylene	624	0.5	<5
Styrene	624	0.4	<5
Tetrachloroethene	624	0.8	<5
Toluene	624	0.5	<5
trans-1,2-dichloroethene	624	1.1	<5
trans-1,3-dichloropropene	624	0.3	<5
Trichloroethene	624	1.0	<5
Trichlorofluoromethane	624	0.8	<5
Vinyl acetate	624	0.8	<5
Vinyl chloride	624	1.0	<5
Semi-Volatiles			
1,2,4-trichlorobenzene	625	6.1	<10
1,2-dichlorobenzene	625	3.7	<10
1,2-diphenylhydrazine	625	8.7	<10
1,3-dichlorobenzene	625	2.9	<10
1,4-dichlorobenzene	625	3.2	<10
2,2'-oxybis(1-chloropropane)	625	3.9	<10
2,4,5-trichlorophenol	625	8.4	<10
2,4,6-trichlorophenol	625	9.6	<10
2,4-dichlorophenol	625	9.0	<10
2,4-dimethylphenol	625	8.1	<10
2,4-dinitrophenol	625	12.4	<20

Table I-1. List of Parameters Tested (cont.)			
Semi-Volatiles (cont.)			
2,4-dinitrotoluene	625	7.6	<10
2,6-dinitrotoluene	625	10.0	<10
2-chloronaphthalene	625	9.2	<10
2-chlorophenol	625	4.2	<10
2-methyl-4,6-dinitrophenol	625	7.9	<100
2-methylnaphthalene	625	4.5	<10
2-methylphenol	625	7.5	<10
2-nitroaniline	625	6.9	<10
2-nitrophenol	625	6.2	<10
3-3'-dichlorobenzidine	625	8.4	<20
3-nitroaniline	625	8.6	<10
4-bromophenyl phenyl ether	625	7.8	<10
4-chloro-3-methylphenol	625	7.4	<10
4-chloroaniline	625	8.2	<10
4-chlorophenyl phenyl ether	625	9.0	<10
4-methylohenol (includes 3-methylphenol)	625	7.2	<10
4-nitroaniline	625	8.0	<10
4-nitrophenol	625	6.3	<20
Acenaphthene	625	6.8	<10
Acenaphthylene	625	7.2	<10
Aniline	625	6.6	<10
Anthracene	625	5.8	<10
Benzindine	625	0.5	<10
Benzo(a)anthracene	625	5.4	<10
Benzo(a)pyrene	625	5.4	<10
Benzo(b)fluoranthene	625	7.8	<10
Benzo(ghi)perylene	625	5.2	<10
Benzo(k)fluoranthene	625	4.1	<10
Benzoic acid	625	7.2	<20
Benzyl alcohol	625	5.8	<10
bis(2-chloroethoxy) methane	625	6.7	<10
bis(2-chloroethyl) ether	625	4.1	<10
bis(2-ethylhexyl) phthalate	625	4.9	<10
Butyl benzyl phthalate	625	6.6	<10
Chrysene	625	6.2	<10
di-n-butylphthalate	625	5.4	<10
di-n-octylphthalate	625	4.6	<10
Dibenzo(a,h)anthracene	625	5.2	<10
Dibenzofuran	625	6.8	<10
Diethyl phthalate	625	9.1	<10
Dimethyl phthalate	625	9.9	<10
Fluoranthene	625	5.1	<10
Fluorene	625	8.1	<10
Hexachlorobenzene	625	8.8	<10
Hexachlorobutadiene	625	6.2	<10
Hexachlorocyclopentadiene	625	10.7	<50
Hexachoroethane	625	3.5	<10
Indeno(1,2,3-cd) pyrene	625	6.4	<10
Isophrone	625	7.5	<10
n-nitroso-di-n-propylamine	625	3.1	<10
n-nitrosodimethylamine	625	4.3	<10
n-nitrosodiphenylamine	625	7.9	<10
Naphthalene	625	5.7	<10
Nitrobenzene	625	6.3	<10
Pentachlorophenol	625	6.9	<30
Phenanthrene	625	5.8	<1
Phenol	625	2.2	<20
Pyrene	625	6.0	<10

[1] Data unavailable.
[2] Standard Methods.
[3] Native concentration too high for MDL determination.
[4] Some expressed in mg/L as noted.

Appendix J: Priority Pollutants List and Other Parameters

Table J-1. EPA List of 126 Priority Pollutants

Chlorinated Benzenes Chlorobenzene 1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-dichlorobenzene 1,2,4-trichlorobenzene Hexachlorobenzene	**Chlorinated Ethanes** Chloroethane 1,1-dichloroethane 1,2-dichloroethane 1,1,1-trichloroethane 1,1,2,2-tetrachloroethane Hexachloroethane	**Chlorinated Phenols** 2-chlorophenol 2,4-dichlorophenol 2,4,6-trichlorophenol Parametachlorocresol (4-chloro-3-methyl phenol)
DDT and Metabolites 4,4-DDT 4,4-DDE (p,p-DDX) 4,4-DDD (p,p-DDE)	**Haloethers** 4-chlorophenyl phenyl ether 2-bromophenyl phenyl ether Bis(2-chloroisopropyl) ether	**Halomethanes** Methylene chloride (dichloromethane) Methyl chloride (chloromethane) Methyl bromide (bromomethane) Bromoform (tribromomethane) Dichlorobromomethane Chlorodibromomethane
Inorganics Antimony Arsenic Asbestos Beryllium Cadmium Chromium (III) Chromium (VI) Copper Cyanide, total Lead Mercury Nickel Selenium Silver Thallium Zinc	**Nitroamines** N-nitrosodimethylamine N-nitrosodiphenylamine N-nitrosodi-n-propylamine	**Pesticides and Metabolites** Aldrin Dieldrin Chlordane (technical mixture and metabolites) Alpha-endosulfan Beta-endosulfan Endosulfan sulfate Endrin Endrin aldehyde Heptachlor Heptachlor epoxide (BHC-hexachlorocyclohexane) Alpha-BHC Beta-BHC Gamma-BHC (Lindane) Delta-BHC Toxaphene
Phenols (other than chlorinated) 2-nitrophenol 4-nitrophenol 2,4-dinitrophenol 4,6-dinitro-o-cresol (4,6-dinitro-2-methylphenol) Pentachlorophenol Phenol 2,4-dimethylphenol	**Phthalate Esters** Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Di-n-butyl phthalate Di-n-octyl phthalate Diethyl phthalate Dimethyl phthalate	**Polychlorinated Biphenyls (PCBs)** PCB-1242 (Aroclor 1242) PCB-1254 (Aroclor 1254) PCB-1221 (Aroclor 1221) PCB-1232 (Aroclor 1232) PCB-1248 (Aroclor 1248) PCB-1260 (Aroclor 1260) PCB-1016 (Aroclor 1016)
Polynuclear Aromatic Hydrocarbons (PAHs) Acenaphthene 1,2-benzanthracene (benzo(a)anthracene) Benzo(a)pyrene (3,4-benzo-pyrene) 3,4-benzofluoranthene (benzo(b)fluoranthene) 11,12-benzofluoranthene (benzo(k)fluoranthene) Chrysene Acenaphthylene Anthracene 1,12-benzoperylene (benzo(ghi)perylene) Fluorene Fluoranthene Phenanthrene 1,2,5,6-dibenzanthracene (dibenzo(a,h)anthracene) Indeno (1,2,3-cd) pyrene (2,3-o-phenylene pyrene) Pyrene	**Other Chlorinated Organics** Chloroform (trichloromethane) Carbon tetrachloride (tetrachloromethane) Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether 2-chloroethyl vinyl ether (mixed) 2-chloronaphthalene 3,3'-dichlorobenzidine 1,1-dichlorethylene 1,2-trans-dichloroethylene 1,2-dichloropropane 1,2-dichloropropylene (1,3-dichloropropene) Tetrachloroethylene Trichloroethylene Vinyl chloride (chloroethylene) Hexachlorobutadiene Hexachlorocyclopentadiene 2,3,7,8-tetrachloro-dibenzo-p-dioxin (TCDD)	**Other Organics** Acrolein Acrylonitrile Benzene Benzidine 2,4-dinitrotolulene 2,6-dinitrotolulene Ethylbenzene Isophrone Naphthalene Nitrobenzene Tolulene

Table J-2. NPDES Permit Application Testing Requirements
40 CFR 122, Appendix D, Tables II and III

Volatile Organics	Organic Pesticides	Organic Base/Neutrals
acrolein	aldrin	acenaphthene
acrylonitrile	alpha-BHC	acenaphthylene
benzene	beta-BHC	anthracene
bromoform	gamma-BHC	benzidine
carbon tetrachloride	delta-BHC	benzo(a)anthracene
chlorobenzene	chlordane	benzo(a)pyrene
chlorodibromomethane	4,4'-DDT	3,4-benzofluoranthracene
chloroethane	4,4'-DDE	benzo(ghi)perylene
2-chloroethylvinyl ether	4,4'-DDD	benzo(k)fluoranthene
chloroform	dieldrin	bis(2-chloroethoxy)methane
dichlorobromomethane	alpha-endosulfan	bis(2-chloroethyl)ether
1,1-dichloroethane	beta-endosulfan	bis(2-ethylhexyl)phthalate
1,2-dichloroethane	endosulfan sulfate	4-bromophenyl phenyl ether
1,1-dichloroethylene	endrin	butylbenzyl phthalate
1,2-dichloropropane	endrin aldehyde	2-chloronaphthalene
1,3-dichloropropylene	heptachlor	4-chlorophenyl phenyl ether
ethyl benzene	heptachlor epoxide	chrysene
methyl bromide	PCB-1242	dibenzo(a,h)anthracene
methyl chloride	PCB-1254	1,2-dichlorobenzene
methylene chloride	PCB-1221	1,3-dichlorobenzene
1,1,2,2-tetrachloroethane	PCB-1232	1,4-dichlorobenzene
tetrachloroethylene	PCB-1248	3-3'-dichlorobenzidine
toluene	PCB-1260	diethyl phthalate
1,2-trans-dichloroethylene	PCB-1016	dimethyl phthalate
1,1,1-trichloroethane	toxaphene	di-n-butyl phthalate
1,1,2-trichloroethane		2,4-dinitrotoluene
trichloroethylene		2,6-dinitrotoluene
vinyl chloride		di-n-octyl phthalate
		1,2-diphenylhydrazine
		fluoranthene
		fluorene
		hexachlorobenzene
		hexachlorobutadiene
		hexachlorocyclopentadiene
		hexachloroethane
		indeno(1,2,3-cd)pyrene
		isophorone
		napthalene
		nitrobenzene
		N-nitrosodimethylamine
		N-nitrosodi-n-propylamine
		N-nitrosodiphenylamine
		phenanthrene
		pyrene
		1,2,4-trichlorobenzene

Organic Acids	Metals	Cyanide and Phenols
2-chlorophenol	antimony, total	cyanide, total
2,4-dichlorophenol	arsenic, total	phenol, total
2,4-dimethylphenol	beryllium, total	
4,6-dinitro-o-cresol (2-methyl-4,6-dinitrophenol)	cadmium, total	
2,4-dinitrophenol	chromium, total	
2-nitrophenol	copper, total	
4-nitrophenol	lead, total	
p-chloro-m-cresol (4-chloro-m-cresol)	mercury, total	
pentachlorophenol	nickel, total	
phenol	selenium, total	
2,4,6-trichlorophenol	silver, total	
	thallium, total	
	zinc, total	
	cyanide, total	
	phenols, total	

Appendix K: Glossary, Abbreviations/Acronyms, and Units

K.1 Glossary

40 CFR Part 122 - Code of Federal Regulations: Protection of the Environment. Part 122 is Administered Permit Programs: The National Pollutant Discharge Elimination System. (Appendix D of 40 CFR 122 lists the Permit Application Requirements.)

Acid Base Neutrals (ABNs) - A category of organic chemical pollutants also called semi-volatile organics. See Appendix K.

Acute - A stimulus severe enough to rapidly induce an effect; in aquatic toxicity tests, an effect observed in 96 hours or less is typically considered acute. When referring to aquatic toxicology or human health, an acute effect is not always measured in terms of lethality.

Acute Criteria- The maximum concentration of a constituent in water that an organism may be exposed to for a total of one hour, once over three years, without dying.

Acute Static Toxicity Test - Test designed to measure water quality effect on mortality. It measures the effect of the whole effluent sample on an organism. Animals are put in a vial with effluent, and the fatal effects are monitored. To calculate water quality standards, the test is run on sensitive animals. The concentration that shows a 95% mortality rate is then multiplied by two.

Activation - An event when the wastewater flow exceeds the holding capacity of the sewer lines and the hydraulic capacity of the treatment plant, causing a diversion of flow to the CSO facilities.

Aeration - The process of adding air to a liquid (e.g. wastewater).

Aliquot - A measured portion of a sample.

Anaerobic Digester - The structure where organic material is broken down by organisms in the absence of oxygen.

Anoxia - The absence of oxygen.

Average Monthly Discharge Limitation - The highest allowable average of "daily discharge" over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured.

Average Weekly Discharge Limitation - The highest allowable average of "daily discharge" over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bar Screen - A screen made of bars designed to catch large debris (e.g. rags, wood, shoes) in waterways.

Below Detection Limit/Level (BDL) - Values below the Reporting or Quantitation Limit. For further explanation see Appendix K.

Bioaccumulation - The process in which industrial waste, toxic chemicals, and other pollutants gradually build up in living tissues and organs.

Biochemical - Having to do with a chemical change resulting from the metabolic activities of living organisms.

Biochemical Oxygen Demand (BOD) - The amount of oxygen needed to oxidize inorganic materials and to degrade organic materials by *biochemical reactions* in a certain time at a certain temperature. BOD is used as a measure of organic pollution.

Biomagnification - The process by which the concentration of a compound increases in species occupying successive trophic levels.

BDL - See Below Detection Limit

Bloom - A large mass of algae (microscopic and or macroscopic) in water.

BOD - See Biochemical Oxygen Demand.

Buffering Capacity - Measures the ability of certain water bodies to resist changes in pH from addition of acidic or caustic substances.

CFR- See Code of Federal Regulations

Chemical Oxygen Demand (COD) - The amount of oxygen needed for the *chemical oxidation* of chemicals in water. COD is used to measure the suitability of water for organisms that require oxygen.

Chlorination - The addition of chlorine or chlorine compounds to wastewater. Chlorination is most often done for disinfection purposes.

Choking - A process by which flows that cannot be handled by existing pumps are "choked back" into the sewer system, frequently leading to local overflows.

Chronic - A stimulus that lingers or continues for a relatively long period of time, often one-tenth of the life span or more. Chronic should be considered a relative term depending on the life span of an organism. The measurement of a chronic effect can be reduced growth, reduced reproduction, etc., in addition to lethality.

Chronic Criteria - The maximum concentration of a constituent in water that an organism may be exposed to for a total of four days over three years without showing long term, harmful effects, short of mortality. Chronic criteria involve sublethal effects on, among other things, the growth, reproductivity, and fertility of organisms.

Chronic Reproduction Test - A test designed to measure the chronic effects of wastewater on reproduction and fertility.

Chronic Survival and Growth Test - Test designed to see if any mortality occurs after the chronic criteria have been passed. After the organisms have survived, the size of the animals are measured after seven days and statistically compared to controls.

Clean Water Act (CWA) - Formally referred to as the Federal Water Pollution Control Act or Federal Water Pollution Control Act Amendments of 1972. Pub. L. 92-500, as amended by Pub. L. 95-576, Pub. L. 96-483, and Pub. L. 97-117: 33 U.S.C. 1251 et seq.

COD - See Chemical Oxygen Demand

Code of Federal Regulations (CFR) - Codification of the general and permanent rules of the federal government. CFR 40 covers environmental protection.

Combined Sewer - A sewer receiving both sanitary wastewater and stormwater runoff.

Combined Sewer Overflow Facility - A place where overflow from combined sewers is screened, settled, and chlorinated before being discharged.

Combined Sewer Overflow Pipe - A pipe that discharges overflow from combined sewers in order to prevent back-ups in the sewerage system.

Composite Sample - A sample consisting of a minimum of eight grab samples collected at equal intervals during a 24-hour period (or lesser period if specified) and combined proportional to flow, or a sample continuously collected proportionally to flow over that same time period.
Conventional Parameters/Pollutants - Those pollutants and constituents that are removed from wastewater by conventional treatment. Generally these constituents are settleable solids, biochemical oxygen demand, total suspended solids, oil and grease, total coliform, fecal coliform, residual chlorine, and chlorides.
Conventional Treatment - Well-known or well-established water or wastewater treatment methods, usually consisting of primary and secondary processes and may include advanced or tertiary treatment.
Criteria - The numerical and or narrative elements of water quality standards.
Critical Dilution - Dilution of the effluent required to meet Water Quality Standards.
CWA - See Clean Water Act.
Daily Discharge - The discharge of a pollutant measured during a calendar day or any 24-hours period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurements, the daily discharge is calculated as the average measurement of the pollutant over the day.
Designated Use - Specified use of a body of water included in state water quality standards.
Digester - A place where organic matter is broken down either with oxygen (aerobically) or without oxygen (anaerobically).
Disinfection - The destruction of pathogens (e.g. fecal coliform bacteria) in a water source or wastewater.
Effluent - The wastewater or other water coming out of a treatment facility or process.
Effluent Limitation - Any restriction imposed by the Director (the person authorized to sign NPDES permits by EPA and/or the State) on quantities, discharge rates, and concentrations of “pollutants” which are “discharged” from “point sources” into “waters of the United States,” the waters of the “contiguous zone,” or the ocean.
Eutrophication - The natural process by which a body of water ages. Nutrients stimulate plant growth and lakes, estuaries, and bays evolve into bogs or marshes. Effluents high in nutrients cause excessive plant growth that accelerates eutrophication.
Fecal Coliform - Bacteria found in the wastes of warm-blooded animals. Fecal coliform is used as an indicator that disease causing bacteria and viruses are present. It is a component of Total Coliform.
Floatables - Constituents of wastewater that rise to the surface in the settling process, consisting mainly of oil, grease, and plastics.
Grab Sample - An individual sample collected in a period of less than 15 minutes.
Gravity Facility - A combined sewer overflow facility that receives flows by gravity (descending gradients from source to outfall) and requires no pumping.
Grit - Heavy suspended mineral matter in wastewater like sand and gravel.

Grit Chamber - A detention tank were grit is separated by sedimentation (grit settles to the bottom). The settling is controlled by the velocity of the water.
Headworks - A structure where wastewater are screened out and grit and other solids are trapped before the wastewater is pumped to a treatment facility.
Human Health Criteria - Estimated concentrations or quantities of chemicals that can be expected to occur in the environment in water, sediment, or food and that are not likely to pose a significant risk to the exposed human population. Human health criteria are published under section 304(a) of the CWA and are based on the latest scientific information. This information is updated and issued to the states to serve as guidance for the development of criteria.
Hydrocarbons - Chemical compounds only containing hydrogen and carbon.
Hypochlorite - The chemical used for chlorine disinfection of wastewater (either calcium, sodium, or lithium hypochlorite).
Hypoxia - The state of very low oxygen concentration.
IDL - See Instrument Detection Limit.
I/I - Infiltration and Inflow. See separate entries for each.
Infiltration - Groundwater that enters sewer pipes through cracks.
Inflow - Water that enters sewer pipes through illegal connections and storm water runoff.
Inorganic - Not containing carbon.
Influent - Wastewater or other water going into treatment facility or process.
Instrument Detection Limit (IDL) - The smallest amount of a substance a particular instrument is capable of detecting. See Appendix K for further explanation.
Interceptor - A large sewerage line collecting water from smaller sewerage pipes.
J values - Values between the Method Detection Limit and the Quantitation (or Reporting) Limit. See Appendix J for further explanation.
Lethal Concentration 50% (LC50) - The concentration of effluent in a sample that causes mortality to 50% of the test population at a specific time of observation.
Limiting Nutrient - In a given ecosystem, the limiting nutritional factor that controls the growth of plants or animals. Usually the limiting nutrient for plant growth is nitrogen in the marine environment and phosphorus in the fresh water environment. The limiting nutrient can also be thought of as the specific nutrient that will have the most impact on a receiving body of water (for example, the accelerated eutrophication of fresh water bodies caused by phosphorus in wastewater effluent).
Local Limits - The development of specific limits as part of MWRA's General Pretreatment Program: "The permittee shall develop and enforce specific effluent limits for industrial users, and all other users, as appropriate, pursuant to 40 CFR 403.5."
Lowest Observed Effect Concentration (LOEC) - The lowest concentration of effluent to which organisms are exposed in a life cycle or partial life cycle test which contains an adverse effect (on survival, growth, and reproduction).
Maximum Acceptable Toxicant Concentration (MATC)- The effluent concentration that may be present in a receiving water body without causing significant harm to productivity or other uses. The MATC is determined by the results of chronic tests of either a partial life cycle with sensitive life stages

or a full life cycle of the test organism. The MATC is the geometric mean of the No Observed Effect Concentration and the Lowest Observed Effect Concentration.
Maximum Daily Discharge Limitation - The highest allowable daily discharge.
MBAS - See Methylene Blue Anion Surfactant
MDL - See Method Detection Limit
Metals - A group of priority pollutants. See Appendix K for a complete list.
Method Detection Limit (MDL) - The smallest amount of a substance that can be detected above background noise by following a particular method of analysis. See Appendix K for further explanation.
Methylene Blue Anion Surfactant - A specific type of surfactant. See surfactant.
Mixing Zone - Area where discharged effluent is first diluted. The area is extended to cover the secondary mixing in the ambient water body. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as toxic conditions are prevented.
National Pollutant Discharge Elimination System (NPDES) - The national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements, under sections 307, 402, and 405 of the Clean Water Act (CWA). The term includes an "approved program."
Nine Minimum Controls - Part of the EPA's CSO Policy. The Nine Minimum Controls are:
1) Proper operation and regular maintenance (O&M) programs for the sewer system and combined sewer overflow points
2) Maximum use of the collection system for storage
3) Review and modification of the pretreatment programs to assure CSO impacts are minimized
4) Maximization of flow to the POTW for treatment
5) Prohibition of CSO discharges during dry weather
6) Control of solid and floatable materials in CSO discharges
7) Pollution prevention programs that focus on contaminant reduction activities
8) Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts
9) Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls.
Nitrification - The conversion of ammonia and nitrite to nitrate.
No Observed Acute Level (NOAL) - The highest concentration of effluent to which organisms are exposed in a short-term test in which at least 90% of the test organisms survive.
No Observed Effect Concentration (NOEC) - The highest concentration of effluent to which organisms are exposed in a life cycle or partial life cycle test which contains no adverse effects (on growth, survival, and reproduction).
NPDES - See National Pollutant Discharge Elimination System
Nutrient - Any element or compound essential as raw material for organism growth and development. Examples: phosphorus and nitrogen.
Oil and Grease - Fats, oils, and grease from animal and plant derivation. Also called FOGs.

Organic Compounds - Volatiles, Acid Compounds, Base/Neutral, and Pesticides. Organics are listed in 40 CFR Ch. 1 Appendix D under CWA Section 307(a). See Appendix K for a complete list.
Orthophosphorus - A form of phosphorus, included in nutrients.
Outfall - the site of initial discharge
PAH - See Polynuclear Aromatic Hydrocarbon
Pesticides/PCBs - Subdivision of priority pollutants. See Appendix K for a complete list.
Petroleum Hydrocarbon (PHC) - Oil and grease from petroleum derivation.
pH - The negative log of the hydrogen ion concentration used to express acidity (<7) and alkalinity (>7).
PHC - See Petroleum Hydrocarbon.
Pollutant - Dredged soil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemicals wastes, biological materials, radioactive materials, (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 <u>et</u> <u>seq</u>.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water.
It does <u>not</u> mean: (a) Sewage from vessels; or (b) Water, gas, or other material which is injected into a well to facilitate production of oil or gas, or water derived in association with oil and gas production and disposed or in a well, if the well used either to facilitate production or for disposal purposes is approved by authority of the State in which the well is located, and if the State in which the well is located, and if the State determines that the injection or disposal will not result in the degradation of ground or surface water resources.
Polynuclear Aromatic Hydrocarbon (PAH) - A type of semi-volatile organic. Also known as polycyclic aromatic hydrocarbons.
POTW - See Publicly Owned Treatment Work.
Preaeration - The process by which air is added to primary influent to help in the removal of gases, floatation of grease, addition of oxygen, and in the settling or coagulation of wastewater.
Prechlorination - The addition of chlorine to primary influent at or near the beginning of the treatment facility/process.
Primary Settling - The detention of wastewater as part of primary treatment to settle out solids (sludge) and collect floatables (scum).
Primary Treatment - Screening and settling of wastewater.
Priority Pollutants - Refers to some of the chemicals listed in 40 CFR Ch. 1 Appendix D under Section 307(a) of the CWA. There are 65 compounds and families of compounds that are among the most persistent, prevalent, and toxic of chemicals know to man. These 65 compounds or families of compounds have been translated into 126 individual pollutants. See Appendix K, Table K-2 for the complete list.
Priority Pollutant Scan - A series of chemical analyses to identify the presence of priority pollutants.
Publicly Owned Treatment Work (POTW) - Any facility or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of liquid nature that is owned by a “State” or a “municipality.” This definition includes sewers, pipes, or other conveyances only if they convey wastewater to a POTW providing treatment.
Pumping Station - Structures where wastewater from low-lying areas is

pumped.
Quantitation Limit - See Reporting Limit.
Removal Rate - or Percent Removal. Defined as the influent concentration minus the effluent concentration, divided by the influent concentration.
Reporting Limit - The smallest concentration that can be quantified. On a graph of pollutant concentration versus instrument response, the reporting limit is the smallest concentration where the linear relationship holds before starting to curve as the pollutant concentration goes to zero. Also called the Quantitation Limit. See Appendix J for further explanation.
Residuals - Matter left over by treatment processes including screenings, scum, and sludge.
Screening - The process by which sewage from interceptors first goes through headworks where grit and large objects like leaves, sticks, and hygiene products (like tampon applicators and condoms) are screened out.
Screenings - The objects that are collected by the process of screening.
Scum - Solids that float to the top of wastewater.
Secondary Treatment - The treatment of wastewater beyond solids and grit removal. The process decreases the organic load.
Sedimentation - The process by which solids are allowed to settle by gravity.
Sedimentation Tank - Tanks used to detain wastewater while the solids settle out.
Semi-Volatile Organics - Also known as Acid Base Neutrals (ABNs). A subcategory of organic pollutants. See Appendix K for a complete list.
Separate Sewer - A sewerage system divided into a storm sewer and a sanitary sewer.
Settleable Solids - The estimated amount of sludge that will settle by sedimentation. It is a fraction of the suspended-solids.
Settled Solids - Sludge. (See sludge.)
Sewage - Any wastes, including wastes from humans, households, commercial establishments, industries, and storm water runoff, that are discharged to or otherwise enter a POTW.
Sludge - Solids, residues, and precipitate separated from or created in sewage by the unit processes of a POTW.
SOP - See System Optimization Plan or Standard Operating Procedures
Stratification - The separation of water into layers characterized by thermal differences.
Standard Operating Procedures (SOP) - Documented protocols for plant operation, laboratory procedures, etc.
Surcharging - When the capacity of the sewer is insufficient and sewage escapes through a manhole.
Surfactant - Surface-active agent. Large organic molecules that cause foaming. They are usually found in detergents.
System Optimization Plan (SOP) - Hydraulic improvements that, in conjunction with ongoing programs of municipal sewerage agencies, might promote a balanced hydraulic system. The SOP may include optimization of the collector/interceptor system upstream of regulators, to ensure that the storage and transport capacity of the system is maximized within constraints unalterable except for major structural modifications.
Thickener - The structure where sludge is sent to be thickened by removing water.

TKN - See Total Kjeldahl Nitrogen.
Total Coliform - Bacteria found in decaying matter, feces, and soil. It used as an indicator of pathogens that are present in wastewater.
Total Kjeldahl Nitrogen (TKN) - The total organic and ammonia nitrogen.
Total Phosphorus - A measure of all the forms of phosphorus, a nutrient, found in water (orthophosphates, polyphosphates, and organic phosphates).
Total Suspended Solids (TSS) - The sum of insoluble solids that either float on the surface of, or are in suspension in water, wastewater, or other liquids.
Toxic Pollutant - Any pollutant listed as toxic in Appendix D of 40 CFR Part 122, under Section 307(a)(1) of CWA.
Toxics - Pollutants that have a toxic effect on living organisms. The "priority pollutants" of CWA Section 307(a) are a subset of this group of pollutants.
Toxicity Test - A procedure to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of effect on exposed test organisms of a specific chemical or effluent.
TSS - See Total Suspended Solids.
Twelve Month Running Average - The monthly average computed using the specific month and the previous 11 months.
Unregulated Community - Dischargers not required to have Permits to discharge into MWRA sewerage system. They are not regulated or required to meet Local Limits, nor are they regulated under the Local Limits Discharge Program.
Vertical Mixing - The vertical movement of the water column caused by wind, and/or density and/or temperature differences.
Volatile Organic Acid (VOA) - Same as Volatile Organic Compound.
Volatile Organic Compound (VOC) - Same as Volatile Organic Acid.
Volatile Solids - Those solids of a suspended solid sample that are burned off in a muffle oven at 550±50 °C.
Water Quality - The chemical, biological, and physical conditions of a body of water.
Water Quality Criteria - Specific levels of pollutants that would make a body of water unsuitable for its designated use (i.e. harmful if used for drinking, swimming, farming, fishing, or industrial processes).
Water Quality Standard - A law or regulation that consists of: the beneficial designated use or uses of a water body; the numeric and narrative water quality criteria that are necessary to protect the use or uses of that particular water body; and an antidegradation statement.
Whole Effluent Toxicity (WET) - The total toxic effect of effluent, not chemical specific but rather the cumulative effect, whether it be synergistic or antagonistic, of the chemicals found in the effluent.

K.2 Abbreviations and Acronyms

ABNs - Acids Bases Neutrals
BDL - Below Detection Limit
BOD - Biochemical Oxygen Demand
BWSC - Boston Water and Sewer Commission
CFR - Code of Federal Regulations
CSO - Combined Sewer Overflow
CWA - Clean Water Act
DEP - Massachusetts Department of Environmental Protection

DITP - Deer Island Treatment Plant
ENQUAD - Environmental Quality Department
EPA - United States Environmental Protection Agency
FY - Fiscal Year
IDL - Instrument Detection Level
I/I - Infiltration and Inflow
LC50 - Median Lethal Concentration
LD50 - Median Lethal Dose
LOAEL - Lowest Observed Adverse Effect Level
LOEC - Lowest Observed Effect Concentration
MATC - Maximum Acceptable Toxicant Concentration
MDC - Metropolitan District Commission
MDL - Method Detection Limit
MPN - Most Probable Number
MWRA - Massachusetts Water Resources Authority
NITP - Nut Island Treatment Plant
NOAL - No Observed Acute Level
NOEC - No Observed Effect Concentration
NPDES - National Pollutant Discharge Elimination System
PAH - Polycyclic (or Polynuclear) Aromatic Hydrocarbon
PCB - Polychlorinated Biphenyl
PHC - Petroleum Hydrocarbon
POTW - Publicly Owned Treatment Work
SD - Standard Deviation
SOP - Standard Operating Procedures or System Optimization Plan
SSO - Sanitary Sewer Overflow
TKN - Total Kjeldahl Nitrogen
TRAC - Toxic Reduction and Control Department
TSS - Total Suspended Solids
VOA - Volatile Organic Acid
VOC - Volatile Organic Compound
WET - Whole Effluent Toxicity [test]

K.3 Units

in/yr - inches per year
L - liter
lbs - pounds
lbs/day - pounds per day
mL/L - milliliters per liter
MG - million gallons
mgd - million gallons per day
mg/L - milligrams per liter
µg/L (or ug/L) - micrograms per liter

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