EPA's Annual Water Quality Report on the Lower Charles River 2005

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Prepared By

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Background

In 1995, the U.S. Environmental Protection Agency - New England (EPA) established the Clean Charles Initiative to restore the lower Charles River (from Watertown to Boston harbor) to a swimmable and fishable condition by Earth Day in the year 2005. The initiative incorporated a comprehensive approach for improving water quality through: Combined Sewer Overflow (CSO) controls, illicit sanitary connection removals, stormwater management, public outreach, education, monitoring, enforcement, technical assistance, and the development of a Total Maximum Daily Load (TMDL) for the Lower Charles.

Introduction

In 1998, EPA's Office of Environmental Measurement and Evaluation (OEME) initiated the Clean Charles Core Monitoring Program. The purpose of the program was to track water quality improvements in the lower Charles River and to identify where further pollution reductions or remediation actions were necessary to meet the Clean Charles Initiative goals. The program was designed to sample during the summer months coinciding with peak recreational uses.

On Earth Day, 2005, the initiative's target date was reached for the lower Charles River to obtain swimmable and fishable conditions. The Clean Charles initiative has achieved significant improvements in water quality during the past ten years. However, water quality still needs improvements to obtain a healthy river. The Lower Charles continues to suffer from nutrient enrichment and sections continue to exceed bacteria standards.

In 2005, EPA changed the monitoring program to reflect changes in the initiative and existing trends in water quality conditions. The monitoring program was changed to monitor key parameters during dry weather conditions. Seven stations (Figure 5) were monitored during five dry weather sampling events. The seven trend stations were a subset of the original twelve Core Monitoring stations. During each sampling event field parameters (temperature, DO, pH, specific conductance, salinity, turbidity, Secchi disk transparency, and transmissivity) were measured and samples were analyzed for fecal coliform, E.coli, total phosphorus, ortho-phosphate, and Chlorophyll a. On August 11, an additional sampling event was added to measure depth profiles at ten selected stations for temperature, specific conductance, DO and pH during warm afternoon conditions. In addition Pharmaceutical and Personal Care Products (PPCP) were sampled throughout the watershed on three sampling events.

Discussion of Results

The summary below reflects the EPA water quality monitoring data collected during 2005 and compares these data with previous Core Monitoring Program data collected from 1998 to 2004. Maps of all the sampling stations sampled by EPA during 2005 are presented in Figures 5, 6, and 7.

In addition to point source and non-point source pollutant loadings, water quality was influenced by yearly fluctuations in weather and river flows, making short-term trends difficult to determine. The weather conditions and river flow affect the transport of pollutants in the watershed. The flow data collected at the Waltham USGS gaging station revealed that in 2005, the mean monthly summer (June - September) flow was slightly below the mean monthly flow for

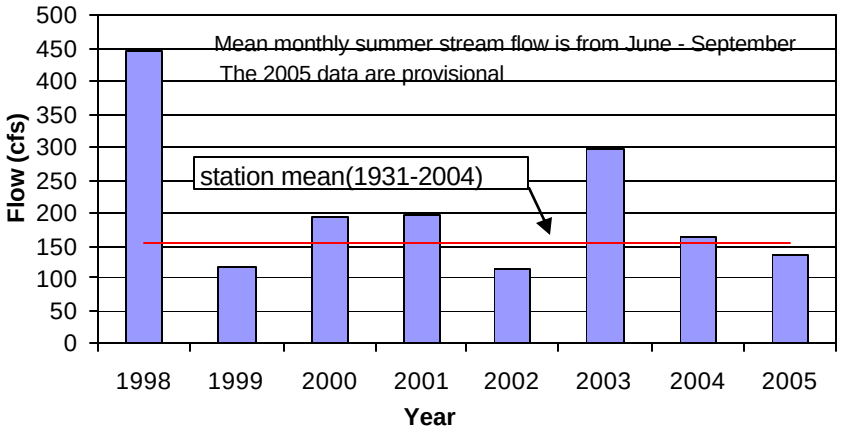


Figure 1: Mean Monthly Stream Flow at the USGS Gaging Station in Waltham, MA

all years (from 1931 – 2004) and slightly higher than the means recorded during the drier years of 1999 and 2002 (Figure 1). In 2005, the highest flows were recorded during the beginning of June and at the end of October.

When comparing the 2005 data to the past seven years of data, the following conclusions can be made. The majority of the time, the best water quality occurred near the mouth of the River (Mass Ave. Bridge to the New Charles River Dam; CRBL07, CRBLA8, CRBL11 & CRBL12). This part of the river met the swimming standards more often than any other part of the lower Charles River.

Some of the lowest and highest Secchi disk readings were recorded in 2005. The low readings occurred in October near the mouth of the River and were associated with an algae bloom. The mean total phosphorus values show a decreasing trend over the past eight years. During 2002, elevated nutrient concentrations were measured in the water below the pycnocline (the interface between water of different densities).

Clarity

Water clarity was directly measured in the field using a Secchi disk. During four of the five sampling events increased clarity was measured down stream of station CRBL06 (Downstream of the BU bridge) toward the mouth of the River. The increased clarity at the mouth of the River has been a trend observed from the previous Core Monitoring Program data from 1998 - 2004 (EPA 2005). During the June 8 and August 9 sampling events, all stations met the Massachusetts Department of Environmental Protection primary contact (swimming) use support criterion of greater than or equal to 1.2 meters. Reviewing the data from the previous 8 years, at all but one station, the greatest clarity was recorded during June 8 or August 9, 2005. In addition, the clarity Secchi disk criterion was met during the July 13 sampling event at the two most down stream stations (CRBL11 and CRBL12). During the October sampling event, decreased Secchi disk clarity was measured heading downstream. During this sampling event, at the most downstream stations, the lowest clarity and the most elevated chlorophyll a concentrations were record, indicating a significant algae bloom. The three down stream stations (CRBLA8, CRBL11, and CRBL12) measured chlorophyll a values above a 100 ug/l (Figure 2) and Secchi disk reading at 0.6 meters. These Secchi disk values were some of the lowest values recorded (1998 - 2005) at these three stations.

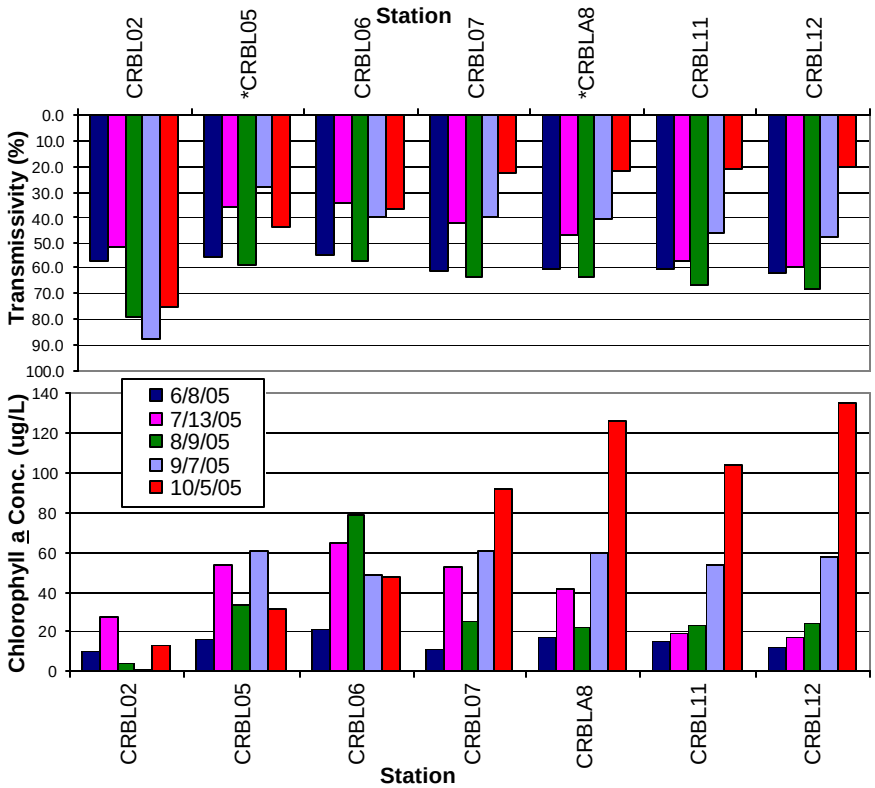


Figure 2: Transmissivity and Chlorophyll a concentrations

Based on the data collected over the last eight years, the most downstream station (upstream of the New Charles River Dam) met the MA DEP swimming criterion approximately 80% of the time, while the station at Magazine beach met the criterion less than 10% of the time.

Transmissivity is a measurement of water clarity which is independent of external light. As with Secchi disk readings, transmissivity was higher in June and August and lower transmissivity was measured at the downstream stations (CRBLA8, CRBL11, and CRBL12) during the October sampling event (Figure 2). There

was a greater correlation between transmissivity and chlorophyll a at the downstream station than the upstream locations (CRBL12, R^2= 0.95; CRBL02, R^2 = 0.68).

Bacteria

In 2005, the calculated dry weather fecal coliform geometric means[1] met the swimming standard at all seven locations. The highest geometric mean (174 cfu/100 ml) was at the Watertown Dam station (CRBL02), the lowest geometric mean (18 cfu/100 ml) and was between the Longfellow Bridge and the Old Dam (CRBL11). Fecal coliform concentrations were generally lower near the mouth of the River (Mass Ave. Bridge to the New Charles River Dam; CRBL07, CRBLA8, CRBL11, & CRBL12)). This is a consistent trend, which has occurred in the previous seven years of data collection. The area from station CRBL07 - CRBL12 is the most heavily recreated part of the River. This area contains the MIT (Massachusetts Institute of Technology) Sailing Pavilion and Community Boating where much sailing, kayaking, windsurfing, and occasional contact with the water occurs. In general, the fecal coliform concentrations measured in 2005 were similar to that of previous years.

Table 1: Massachusetts Freshwater Bacteria Criteria

Indicator Organism	MA DEP Surface Water Quality Standards (314 CMR 4.00) and water quality guidelines		MA DPH Minimum Criteria for Bathing Beaches (105 CMR 445.00)
	Primary contact	Secondary contact	Bathing beaches
E. coli	Proposed	Proposed	≤235 colonies/100ml and a geometric mean of most recent five samples ≤126 col/100ml
Enterococci	Proposed	Proposed	≤61 colonies/100ml and a geometric mean of most recent
Fecal coliform	a geometric mean ≤200 col/100ml for ≥5 samples ≤400/100ml for not more than 10 % of the samples ≤400 col/100ml for <5 samples	a geometric mean ≤1000 col/100ml for ≥5 samples ≤2000/100ml for not more than 10 % of the samples ≤2000 col/100ml for <5 samples	NA

NA = Not applicable

In addition to fecal coliform, E. coli bacteria was sampled during all sampling events. Of all the dry weather samples, one sample exceeded the Department of Public Health (DPH) Bathing Beach single sample criterion[2]. This occurred at the station located above the Watertown Dam (CRBL02). All calculated geometric means were less than the DPH geometric mean criterion[2].

Dissolved Oxygen (DO), pH and Temperature

Dissolved Oxygen (DO) is required for a healthy ecosystem. Fish and other aquatic organisms require DO for survival. Massachusetts has established DO criterion[3] for class B waters. One DO violation was measured during 2005 in the surface water. This measurement occurred during the September sampling event at the

1 The Massachusetts fecal coliform swimming criterion of less than 200 colonies/100ml is based on a geometric mean of five samples or more.

2 The Massachusetts DPH E. coli Bathing Beach criterion for as single sample is less than or equal to 235 colonies/100ml. The geometric mean criterion is less than or equal to 126 colonies/100ml and is based on a geometric mean of the most recent five samples within the same bathing season.

3 The Massachusetts water quality criteria for Class B water for DO is ≥ 5 mg/l and ≥60% saturation, for pH is in the range of 6.5 through 8.3, and for temperature is ≤ 28.3°C (83°F).

station located above the Watertown Dam (CRBL02). On August 11, depth profiles revealed water quality bottom conditions downstream of the BU Bridge were anoxic and failed to meet state DO criterion[1]. This condition has also been identified in previous reports (EPA 2002).

The pH of an aquatic system is an important parameter in evaluating toxicity. High acidity (a low pH) can convert insoluble metal sulfides to soluble forms, which increases the bioavailability. A high pH can also cause ammonia toxicity (EPA 1998). The surface measurements from the five dry weather sampling events showed pH violated the upper range of the criterion[1] 13 times or approximately 46 % of all field measurements. The highest of these exceedences was 9.3 and the mean exceedence was 8.8. On August 11, depth profiles revealed surface measurements violated the pH criterion at nine of the ten sampling locations. The highest of these exceedences was 8.9 and the mean exceedence was 8.7.

Temperature is a crucial factor in maintaining a natural ecosystem. Changes in the temperature can alter the existing or natural aquatic community (EPA 1986). Temperature also governs many biochemical and physiological processes in cold-blooded aquatic organisms (such as fish and the organisms they feed on). Increased temperature decreases the oxygen solubility in water and this can exacerbate the impact of oxygen-demanding waste. The surface measurements from the five dry weather sampling events showed the temperature criterion[1] was violated on August 9 at the two most downstream stations (CRBL11 and CRBL12). All of the measurements from the five dry weather sampling events occurred in the morning when water temperatures have generally not reached their peak daily values. On August 11, depth profiles revealed surface measurements violated the temperature criterion[1] at nine of the ten sampling locations. The highest temperature (38.1^{o}C) was measured one meter below the waters surface near the discharge of the Kendall Station NPDES non contact-cooling water discharge (Table A-2 in the Appendix). All of the temperature violations were likely influence by the NPDES cooling water discharge from the Kendall Station.

Table 2: Massachusetts Class B Surface Water Quality Standards and Guidelines for Warm Waters

Parameter	MA Surface Water Quality Standards (314 CMR 4.00) and Guidelines
Dissolved oxygen	$\geq$ 5 mg/l and $\geq$ 60% saturation
Temperature	$\leq$ 83^{o}F (28.3^{o}C) and change 3^{o}F (1.7^{o}C) in Lakes, change 5^{o}F (2.8^{o}C) in Rivers
pH	Between 6.5 and 8.3
Bacteria	See Table 4
Secchi disk depth	Lakes $\geq$ 1.2 meters (for primary contact recreation use support)
Solids	Narrative and TSS $\leq$ 25.0 mg/l (for aquatic life use support)
Color and turbidity	Narrative Standard
Nutrients	Narrative "Control of Eutrophication" Site Specific

1 The Massachusetts water quality criteria for Class B water for DO is $\geq$ 5 mg/l and $\geq$60% saturation, for pH is in the range of 6.5 through 8.3, and for temperature is $\leq$ 28.3^{o}C (83^{o}F).

Phosphorus

Elevated levels of nutrients in the water can lead to excessive growth of algae and other instream plants. This can cause nuisance conditions and reduce oxygen in the water during times of respiration. Phosphorus is the most significant nutrient in this system. Elevated phosphorus concentrations at many of the sampling stations indicated highly eutrophic conditions.

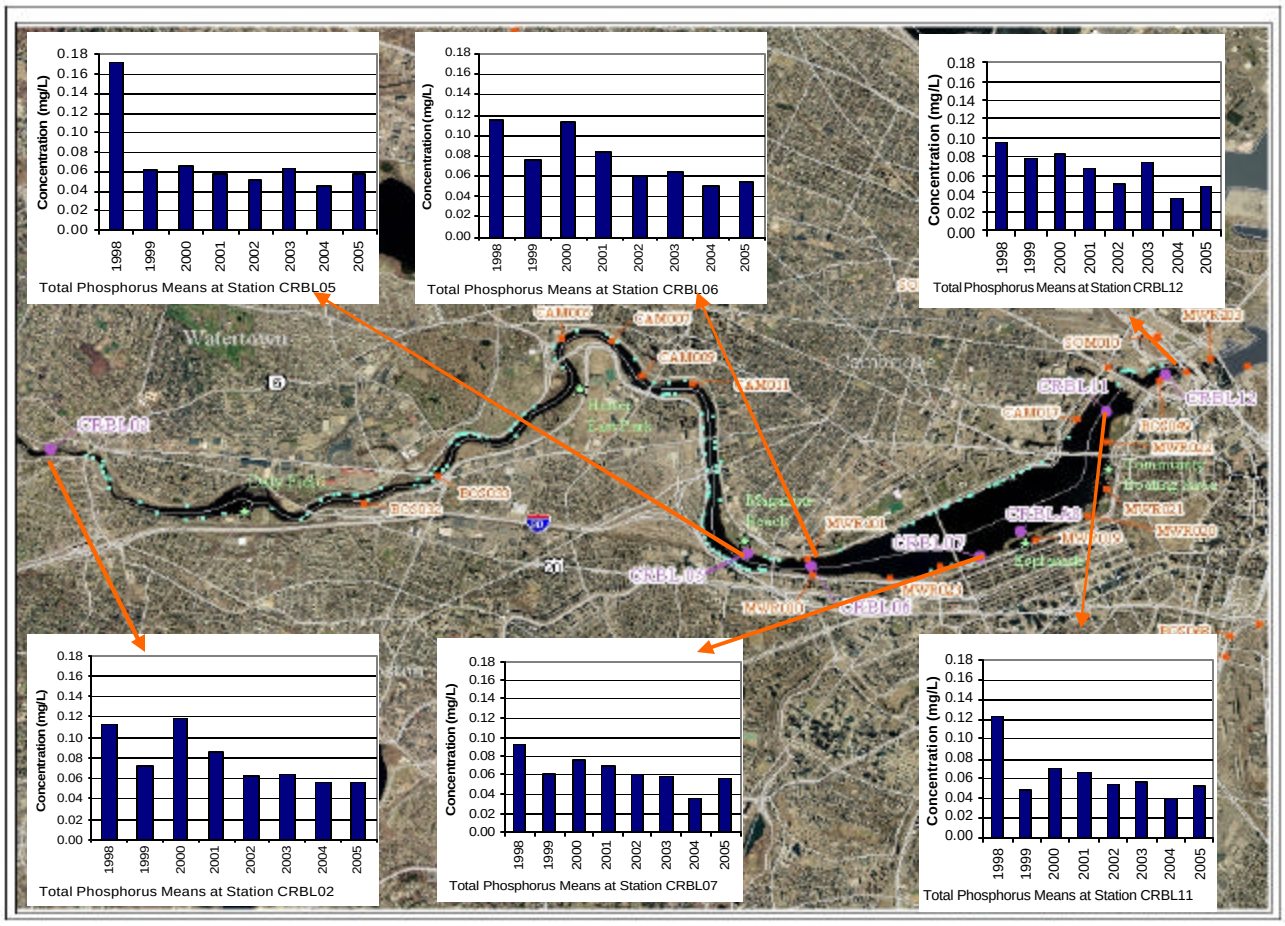


Figure 3: Total Phosphorus Concentrations from 1998 - 2005

Highest total phosphorus concentrations were recorded during the October sampling event at the three down stream stations (CRBLA8, CRBL11, and CRBL12). These high phosphorus values may have help trigger the significant algae bloom and reduced clarity on this sampling event.

All except one total phosphorus sample result exceeded the EPA recommended Ambient Water Quality Criterion (AWQC) for Rivers and Streams[1] and all sample results exceeded the recommended criterion for lakes and reservoirs[2] (EPA, 2001).

There appears to be a decreasing trend in phosphorus levels at most of the stations over the past eight years (Figure 3). A longitudinal analysis using the dry weather yearly means from the past 8 years shows there to be a significant rate of reduction (Rate ~ -.0081/year) over the 8 years (Heltshe).

1 The EPA recommended total phosphorus criterion for rivers and stream in ecoregion XIV subecoregion 59 is 0.0237 mg/L.
2 The EPA recommended total phosphorus criterion for lakes and reservoirs in ecoregion XIV subecoregion 59 is 0.008 mg/L.

In 2002, additional samples were collected at selected stations from various depths to support the development of a water quality model for the Total Maximum Daily Load (TMDL). The results from this sampling showed elevated concentrations of total phosphorus, ortho-phosphorous, total kjeldahl nitrogen, and ammonia below the pycnocline (the interface between water of different densities). The concentrations measured below the pycnocline where significantly higher than concentrations measured above the pycnocline and in the surface water (EPA, 2003).

Pharmaceutical and Person Care Products (PPCP)

In 2006, twenty water samples were analyzed for Pharmaceutical and Personal Care Products (PPCP) throughout the watershed on three different sampling events. Thirty one different compounds were analyzed. The most upstream station was located in the headwaters at Echo Lake in Hopkinton, MA and the most downstream station was located in the lower Charles River Basin near the mouth in Boston, MA. These samples were analyzed by a contract laboratory to determine relative concentrations throughout the river and to determine possible correlation with bacteria levels in the river. The collection of these data was intended as an initial screening and for research purposes. A brief summary of the data is listed below and the data is presented in the Appendix.

On ten of the PPCP sampling events EPA measured corresponding bacteria (fecal coliform and E.coli) concentrations. The highest fecal coliform concentration (1342 cfu/100ml) was measured on September 7 at Laundry brook (LAUD01). The other three station sampled during this event were collected in the mainstem of the Charles River and had corresponding bacteria concentration all under 100 cfu/100ml. Of the four stations measured on this sampling event, Laundry Brook (LAUD01) measured the highest concentrations of caffeine (stimulant), carbamazepine (anti-seizure drug), and pentoxifylline (improves blood flow - drug). In addition, to bacteria data collected by EPA, USGS collected fecal coliform and E.coli data at two stations during the sampling event on June 8. Although elevated bacteria concentrations (fecal coliform = 43,000 cfu/100ml) were measured in Beaver Brook (CRBC), no correlations could be made with elevated caffeine, carbamazepine, and pentoxifylline concentrations. Of the nine stations sampled during this event, triclosan (antibiotic) was the highest at the Beaver Brook station.

The concentration of caffeine in the River generally increased heading down stream (Figure 4). Several compounds were higher downstream of the Charles River Pollution Control District (station CRPCDPDW). During both the June and August sampling events, the following compounds were higher downstream of the Charles River Pollution Control District: carbamazepine (anti-seizure drug), diazepam (muscle relaxant), dilantin (anti-convulsant drug), gemfibrozil (lipid regulator), meprobamate (anti-anxiety drug), and oxybenzone (sun screen).

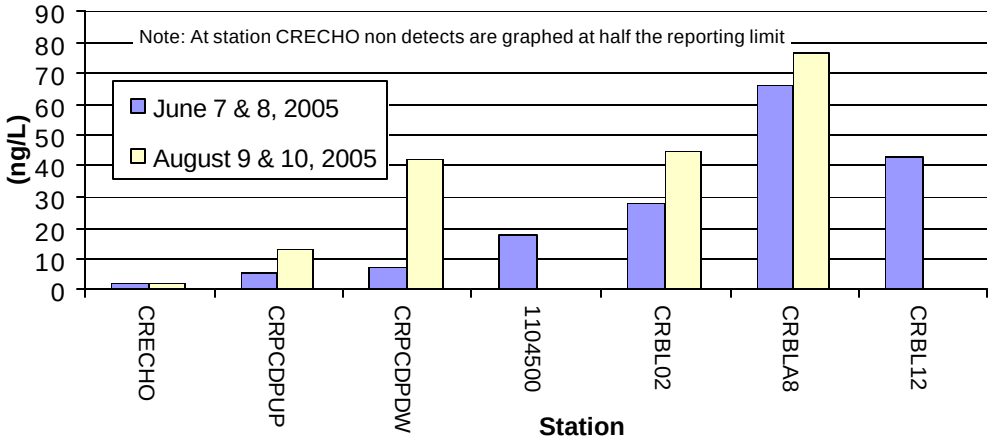


Figure 4: Caffeine Concentration Measured on June 7 & 8 and August 9 & 10, 2005

Data Usability

Quality control criteria were established to insure data quality. Criteria were specified for holding times, sample preservation, and precision and accuracy goals. The quality control requirements for this project were documented in the Project Work/QA Plan – Clean Charles River Clean 2005 – 2010 Water Quality Study Dated

June 7, 2005. Laboratory generated data that did not meet laboratory quality control parameters were reported as estimated in this report. All estimated data was identified with a swung dash (~) preceding the value. All data that did not meet field or collection quality control parameters are described below.

Instruments used in the field to measure temperature, DO, pH, specific conductance, salinity, turbidity, and transmissivity were calibrated prior to sampling and verified after use. Field monitoring data that did not meet all the established quality control criteria were not presented in this report and are summarized below. The DO data collected on June 8 was not reported at six of the seven stations, because of a problem with the DO probe membrane. The pH data collected on July 13 was not reported because of a problem with the pH probe.

Additional chlorophyll measurements were collected during some of the sampling events using field optical instruments. These data were for method development and evaluation.

Duplicate field measurements (temperature, DO, pH, specific conductance, salinity, turbidity, and transmissivity) were collected during the sampling events. The Project Work/QA Plan did not specify Relative Percent Difference (RPD) goals between the regular and duplicate samples for any of these measurements. All RPDs between the regular and duplicate field samples were less than 5%. None of the field measurement data were qualified based on duplicate sampling results.

Chemistry data that partially met laboratory quality control criteria or concentrations that were less than the associated reporting limit were reported as estimated values. The chlorophyll a samples collected on September 7 were reported as estimated data since samples were not filtered by the laboratory on the same day of collection. All other holding times were met for all samples.

Field duplicate chemistry samples were collected during each of the six sampling events to evaluate sampling and analytical precision. All of the field duplicate samples collected for laboratory analyses met the precision quality control goals established in the Project Work/QA Plan. A trip blank was used to evaluate any contamination caused by: the sample container, sample preservation, sampling method, transportation to the laboratory, and/or laboratory processing. The trip blank collected on August 9 for chemistry analysis showed no contamination and all values were reported as "ND" (non detect). Therefore, all field quality control samples (duplicates and blank) met the requirements defined in the QAPP.

The Pharmaceutical and Person Care Product data (PPCP) were intended as an initial screening and for research purposes, therefore general quality control procedure were used and project specific quality control criteria were not established. Two field duplicates and one trip blank were collected for this project. In addition, two samples were collected as duplicates with the USGS.

The greatest RPD from all PPCP compounds for the field duplicate samples collected by EPA was 153%, the mean RPD was 36% and the median was 10%. Caffeine was the only compound that was analyzed by EPA and USGS during a joint sample collection on June 8, 2005. Of the two samples that were analyzed, the EPA results for caffeine were 105% and 25% RPD less than samples collected by USGS. A trip blank was collected with EPA's laboratory deionized and distilled water. Except for DEET, which was reported as twice the reporting limit, all compounds were reported as non detect. There were no additional qualifications made to the data from field quality control samples. The method for conducting PPCP analysis is still being refined and improved. The analyses were conducted by Columbia Analytical Services (CAS). CAS reported several problems conducting the analyses which are listed on the data sheet (Table A-3 in the Appendix).

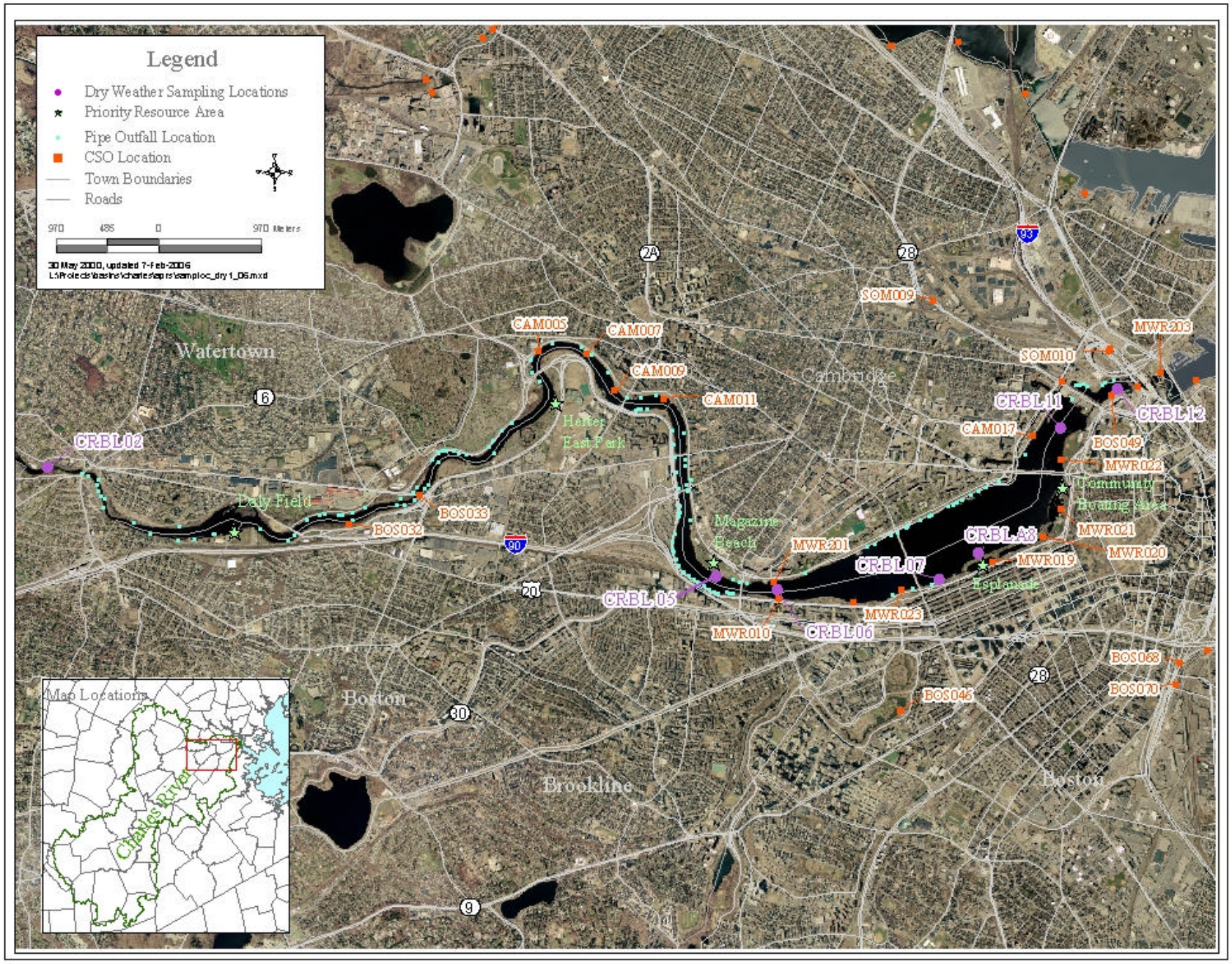
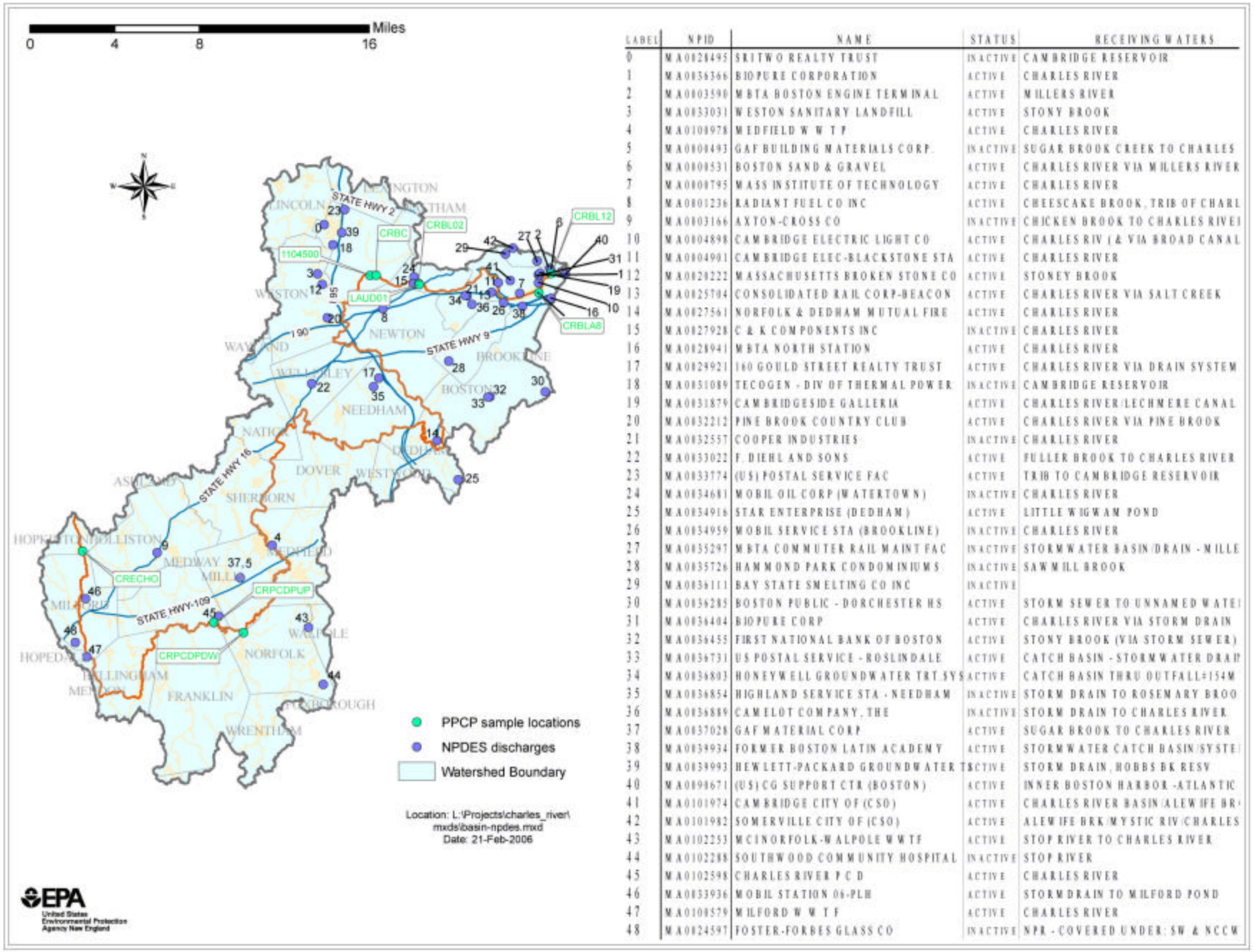


Figure 5: EPA Charles River Dry Weather Trend Station Locations

Figure 6: Locations of EPA Charles River Water Chemistry Profiles Collected on August 11, 2005



LABEL	NPID	NAME	STATUS	RECEIVING WATERS
0	MA0028495	SRITWO REALTY TRUST	INACTIVE	CAMBRIDGE RESERVOIR
1	MA0036366	BIOPURE CORPORATION	ACTIVE	CHARLES RIVER
2	MA0003590	MBTA BOSTON ENGINE TERMINAL	ACTIVE	MILLERS RIVER
3	MA0033031	WESTON SANITARY LANDFILL	ACTIVE	STONY BROOK
4	MA0100978	MEDFIELD W W T F	ACTIVE	CHARLES RIVER
5	MA0000493	GAF BUILDING MATERIALS CORP	INACTIVE	SUGAR BROOK CREEK TO CHARLES
6	MA0000531	BOSTON SAND & GRAVEL	ACTIVE	CHARLES RIVER VIA MILLERS RIVER
7	MA0000795	MASS INSTITUTE OF TECHNOLOGY	ACTIVE	CHARLES RIVER
8	MA0001236	RADIANT FUEL CO INC	ACTIVE	CHEESCAKE BROOK, TRIB OF CHARL
9	MA0003166	AXTON-CROSS CO	INACTIVE	CHICKEN BROOK TO CHARLES RIVEI
10	MA0004898	CAMBRIDGE ELECTRIC LIGHT CO	ACTIVE	CHARLES RIV (& VIA BROAD CANAL
11	MA0004901	CAMBRIDGE ELEC-BLACKSTONE STA	ACTIVE	CHARLES RIVER
12	MA0020222	MASSACHUSETTS BROKEN STONE CO	ACTIVE	STONEY BROOK
13	MA0025704	CONSOLIDATED RAIL CORP-BEACON	ACTIVE	CHARLES RIVER VIA SALT CREEK
14	MA0027561	NORFOLK & DEDHAM MUTUAL FIRE	ACTIVE	CHARLES RIVER
15	MA0027928	C & K COMPONENTS INC	INACTIVE	CHARLES RIVER
16	MA0028941	MBTA NORTH STATION	ACTIVE	CHARLES RIVER
17	MA0029921	160 GOULD STREET REALTY TRUST	ACTIVE	CHARLES RIVER VIA DRAIN SYSTEM
18	MA0031089	TECOGEN - DIV OF THERMAL POWER	INACTIVE	CAMBRIDGE RESERVOIR
19	MA0031879	CAMBRIDGESIDE GALLERIA	ACTIVE	CHARLES RIVER/LECHMERE CANAL
20	MA0032212	PINE BROOK COUNTRY CLUB	ACTIVE	CHARLES RIVER VIA PINE BROOK
21	MA0032557	COOPER INDUSTRIES	INACTIVE	CHARLES RIVER
22	MA0033022	F. DIEHL AND SONS	ACTIVE	FULLER BROOK TO CHARLES RIVER
23	MA0033774	(US) POSTAL SERVICE FAC	ACTIVE	TRIB TO CAMBRIDGE RESERVOIR
24	MA0034681	MOBIL OIL CORP (WATERTOWN)	INACTIVE	CHARLES RIVER
25	MA0034916	STAR ENTERPRISE (DEDHAM)	ACTIVE	LITTLE WIGWAM POND
26	MA0034959	MOBIL SERVICE STA (BROOKLINE)	INACTIVE	CHARLES RIVER
27	MA0035297	MBTA COMMUTER RAIL MAINT FAC	INACTIVE	STORMWATER BASIN/DRAIN - MILLE
28	MA0035726	HAMMOND PARK CONDOMINIUMS	INACTIVE	SAWMILL BROOK
29	MA0036111	BAY STATE SMELTING CO INC	INACTIVE	
30	MA0036285	BOSTON PUBLIC - DORCHESTER HS	ACTIVE	STORM SEWER TO UNNAMED WATEI
31	MA0036404	BIOPURE CORP	ACTIVE	CHARLES RIVER VIA STORM DRAIN
32	MA0036455	FIRST NATIONAL BANK OF BOSTON	ACTIVE	STONY BROOK (VIA STORM SEWER)
33	MA0036731	US POSTAL SERVICE - ROSLINDALE	ACTIVE	CATCH BASIN - STORMWATER DRAIN
34	MA0036803	HONEYWELL GROUNDWATER TRT SYS	ACTIVE	CATCH BASIN THRU OUTFALL#154M
35	MA0036854	HIGHLAND SERVICE STA - NEEDHAM	INACTIVE	STORM DRAIN TO ROSEMARY BROO
36	MA0036889	CAMELOT COMPANY, THE	INACTIVE	STORM DRAIN TO CHARLES RIVER
37	MA0037028	GAF MATERIAL CORP	ACTIVE	SUGAR BROOK TO CHARLES RIVER
38	MA0039934	FORMER BOSTON LATIN ACADEMY	ACTIVE	STORMWATER CATCH BASIN/SYSTEI
39	MA0039993	HEWLETT-PACKARD GROUNDWATER T	ACTIVE	STORM DRAIN, HOBBS BK RESV
40	MA0090671	(US) CG SUPPORT CTR (BOSTON)	ACTIVE	INNER BOSTON HARBOR -ATLANTIC
41	MA0101974	CAMBRIDGE CITY OF (CSO)	ACTIVE	CHARLES RIVER BASIN/ALEWIFE BR
42	MA0101982	SOMERVILLE CITY OF (CSO)	ACTIVE	ALEWIFE BRK/MYSTIC RIV/CHARLES
43	MA0102253	MCINORFOLK-WALPOLE W W T F	ACTIVE	STOP RIVER TO CHARLES RIVER
44	MA0102288	SOUTHWOOD COMMUNITY HOSPITAL	INACTIVE	STOP RIVER
45	MA0102598	CHARLES RIVER P C D	ACTIVE	CHARLES RIVER
46	MA0033936	MOBIL STATION 06-PLH	ACTIVE	STORMDRAIN TO MILFORD POND
47	MA0100579	MILFORD W W T F	ACTIVE	CHARLES RIVER
48	MA0024597	FOSTER-FORBES GLASS CO	INACTIVE	NPR - COVERED UNDER: SW & NCCW

Figure 7: EPA Charles River PPCP Sampling Locations and NPDES Discharges

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Table A-1 EPA Charles River Annual Montinoring Data - 2005

Station	Time	Temp (Deg C)	Sp Cond. (uS/cm)	Salinity (ppth)	DO (%)	DO (mg/l)	pH	Turbidity (NTU)	Secchi (meters)	Transmissivity (%)	Fecal coliform (cfu/100ml)	E.coli (cfu/100ml)	Chlorophyll a (ug/L)	Orthophosphate as P (ug/L)	Total Phosphorus (ug/L)	Sonde (in-situ) Chlorophyll * (ug/L)	Scufa (in-situ) Chlorophyll * (ug/L)
Results from 6/8/05 Dry Weather Monitoring Sampling																	
CRBL02	13:55	25.0	454	0.22	NA	NA	7.4	2	NA	57.5	247	186	10	11	63	NA	NA
CRBL05	12:25	24.9	470	NA	NA	NA	7.3	NA	1.6	56.2	33	22	16	4.5	58	NA	NA
CRBL06	12:10	24.4	472	NA	NA	NA	7.3	NA	1.6	55.2	66	47	21	5.9	59	NA	NA
CRBL07	11:45	24.6	483	0.23	NA	NA	7.3	1	1.8	61.2	50	50	11	5.5	50	NA	NA
CRBLA8	11:15	23.8	466	0.22	NA	NA	7.3	1	1.7	60.6	44	25	17	~3.2	48	NA	NA
CRBL11	10:50	25.0	507	NA	NA	NA	7.1	NA	1.9	60.6	14	14	15	5.1	43	NA	NA
CRBL12	10:00	23.8	676	0.33	92.6	7.8	7.0	1	2.0	62.4	22	19	12	5.9	24	NA	NA
CRBLA8 (dup)	11:15	23.8	466	0.22	NA	NA	7.3	1	1.7	60.3	28	8	18	~3.6	46	NA	NA
Results from 7/13/05 Dry Weather Monitoring Sampling																	
CRBL02	11:55	24.6	493	0.24	104.7	8.7	NA	4	NA	52.1	330	240	28	ND(5)	53	15.9	NA
CRBL05	10:25	24.4	530	0.26	136.4	11.4	NA	4	1.0	35.7	108	64	54	ND(5)	63	31.3	NA
CRBL06	10:10	24.1	522	0.25	133.6	11.2	NA	4	1.0	34.0	96	52	65	ND(5)	71	37.3	NA
CRBL07	9:45	24.1	608	0.29	125.7	10.5	NA	4	1.0	42.4	116	84	53	ND(5)	75	24.5	NA
CRBLA8	9:20	23.8	600	0.29	119.7	10.1	NA	3	1.2	47.0	124	72	42	ND(5)	64	23.7	NA
CRBL11	8:55	24.8	664	0.32	91.6	7.6	NA	3	1.6	57.4	116	64	19	~3.7	56	10.9	NA
CRBL12	8:40	24.0	790	0.39	87.2	7.3	NA	2	1.7	59.4	66	53	17	5.8	54	10.0	NA
CRBL11 (dup)	8:55	24.9	664	0.32	91.7	7.6	NA	2	1.6	56.7	112	64	17	~4.4	57	10.3	NA
Results from8/09/05 Dry Weather Monitoring Sampling																	
CRBL02	12:20	26.9	589	0.28	74.1	5.9	7.2	0	NA	79.2	227	115	4	5.2	17	4.8	NA
CRBL05	10:50	26.8	535	0.26	122.1	9.8	7.8	2	1.5	59.1	53	62	34	ND(5)	37	14.0	NA
CRBL06	10:25	26.2	763	0.37	106.6	8.6	7.5	3	1.5	57.7	55	34	79	ND(5)	33	19.5	NA
CRBL07	10:00	26.9	1170	0.58	116.4	9.3	8.5	2	1.7	63.6	8	8	25	ND(5)	28	7.4	NA
CRBLA8	9:40	27.4	1254	0.62	123.6	9.8	8.7	2	1.9	63.9	17	ND(4)	22	ND(5)	~30	9.9	NA
CRBL11	9:00	29.9	1438	0.71	118.5	8.9	8.6	2	2.1	66.3	11	4	23	ND(5)	24	7.5	NA
CRBL12	8:35	28.9	1472	0.73	118.1	9.1	8.5	1	2.1	68.0	19	16	24	ND(5)	29	6.7	NA
CRBL07 (dup)	10:05	26.9	1168	0.58	116.5	9.3	8.5	2	1.7	63.4	17	4	22	ND(5)	29	7.8	NA
Blank	8:45	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND(2)	ND(5)	ND(5)	NA	NA
Results from9/07/05 Dry Weather Monitoring Sampling																	
CRBL02	12:00	22.6	705	0.34	56.5	4.9	7.2	3	NA	87.8	53	30	~ND(2)	41	84	5.1	NA
CRBL05	10:15	24.1	1142	0.57	100.3	8.4	7.6	9	0.7	28.0	88	25	~61	ND(5.0)	67	27.1	73.6
CRBL06	10:00	24.3	1300	0.65	100.8	8.4	7.7	6	0.8	40.5	140	101	~49	ND(5.0)	52	17.7	56.0
CRBL07	9:40	24.7	1961	1	133.3	11.0	9.0	7	0.8	40.6	57	25	~61	ND(5.0)	~60	11.4	30.5
CRBLA8	9:20	24.5	1860	0.94	129.9	10.8	9.0	7	0.9	41.0	28	8	~60	ND(5.0)	46	11.5	32.3
CRBL11	9:05	26.5	2252	1.15	115.1	9.2	8.7	6	1.0	46.5	19	4	~54	ND(5.0)	41	9.8	28.0
CRBL12	8:30	25.5	2412	1.24	115.7	9.4	8.8	6	1.0	47.8	38	4	~58	ND(5.0)	41	9.8	27.9
CRBLA8 (dup)	9:20	24.5	1860	0.94	130.1	10.8	9.0	7	0.9	41.2	47	8	~64	ND(5.0)	45	11.4	30.3
LAUD01	12:15	NA	NA	NA	NA	NA	NA	NA	NA	NA	1342	875	NA	NA	NA	NA	NA
Results from10/05/05 Dry Weather Monitoring Sampling																	
CRBL02	12:20	19.3	613	NA	76.8	7.1	7.3	2	NA	75.5	164	76	13	ND(5.0)	71	5.3	NA
CRBL05	10:45	20.1	1193	NA	111.2	10.1	8.0	5	0.9	44.2	33	33	32	ND(5.0)	54	11.1	37.7
CRBL06	10:30	19.9	1677	NA	116.8	10.6	8.6	7	0.8	36.6	212	128	48	ND(5.0)	60	12.0	31.6
CRBL07	9:45	20.0	2337	NA	148.8	13.5	9.3	9	0.6	22.7	84	76	92	ND(5.0)	71	12.8	39.4
CRBLA8	9:30	21.2	2721	NA	136.6	12.0	9.2	10	0.6	21.8	11	11	126	ND(5.0)	92	13.1	37.7
CRBL11	9:10	22.9	2798	NA	135.8	11.6	9.2	10	0.6	21.2	6	6	104	ND(5.0)	98	12.8	35.6
CRBL12	8:50	22.2	2944	NA	129.4	11.2	9.1	10	0.6	20.0	4	4	135	ND(5.0)	92	13.0	43.4
CRBLA8 (dup)	9:30	21.2	2721	NA	136.8	12.1	9.2	10	0.6	21.8	6	4	114	ND(5.0)	76	13.5	NA

Note:
ND = not detected above the associated detection limit
NA = not available
~ = estimated data
* = relative values to be used for method development

Table A-2 Charles River Water Chemistry Profiles Collected on August 11, 2005

Time (hours)	Depth (m)	Temp ©	SpCond (uS/cm)	DO % (%)	DO Conc (mg/L)	pH	GPS	Station Location	Total Depth (m)
Station 1									
14:41	Surface	27.3	1061	111	8.8	8.2	42deg. 21' 09.923" N		4.6
14:42	0.6	27.2	1063	111	8.8	8.2	71deg. 06' 00.747" W	Midsteam and upstream of Harvard Bridge.	
14:43	1.0	27.1	1073	110	8.7	8.2			
14:44	2.0	26.5	1260	100	8.0	8.0			
14:46	3.0	26.0	1175	84	6.8	7.6			
14:49	4.0	23.8	2122	3	0.3	6.9			
14:50	4.6	22.7	8749	3	0.3	6.9			
Station 2									
15:14	Surface	30.0	1554	127	9.5	8.7	42deg. 21' 33.613" N		6.7
15:15	0.6	30.0	1554	126	9.5	8.7	71deg. 04' 36.730" W	Midsteam and upstream of Longfellow Bridge. Between highway bridges on the north side and the containment buoys on the south side.	
15:16	1.0	30.0	1553	126	9.5	8.8			
15:18	2.0	29.3	1528	120	9.2	8.7			
15:19	3.0	27.4	1387	112	8.9	8.5			
15:20	4.0	26.7	2179	61	4.9	7.4			
15:22	5.0	20.8	23764	2	0.1	7.1			
15:24	6.0	20.5	29700	2	0.1	7.1			
Intake									
15:35	Surface	30.2	1541	151	11.3	8.9	42deg. 21' 43.925" N		2.4
15:36	0.6	29.9	1536	154	11.6	8.9	71deg. 04' 41.739" W	Mouth of the intake canal.	
15:37	1.0	29.7	1531	152	11.5	8.9			
15:39	2.0	29.1	1530	131	10.0	8.7			
Discharge									
15:51	Surface	37.1	1635	126	8.4	8.6	42deg. 21' 46.734" N		3.0
15:55	0.6	37.8	1642	126	8.3	8.6	71deg. 04' 40.039" W	North side and down stream from intake 150m .	
15:56	1.0	38.1	1640	128	8.4	8.6			
Station 3									
16:10	Surface	30.7	1595	118	8.8	8.6	42deg. 21' 48.813" N		4.8
16:11	0.6	30.8	1603	121	9.0	8.6	71deg. 04' 24.806" W	Near the west riverside across from the in-zone transect.	
16:12	1.0	30.7	1598	120	8.9	8.6			
16:14	2.0	30.7	1601	120	9.0	8.6			
16:16	3.0	27.8	1470	106	8.3	8.3			
16:18	4.0	26.3	6677	11	0.9	7.1			
16:20	4.8	21.2	30217	1	0.1	7.2			
Station 4									
16:29	Surface	30.5	1596	125	9.3	8.6	42deg. 21' 48.652" N		8.4
16:30	0.6	30.4	1596	124	9.3	8.6	71deg. 04' 26.530" W	Between Station 3 and Station 5.	
16:31	1.0	30.5	1593	124	9.3	8.6			
16:32	2.0	30.2	1587	120	9.0	8.6			
16:33	3.0	27.8	1480	110	8.6	8.4			
16:34	4.0	27.0	4864	38	3.0	7.3			
16:35	5.0	21.7	26165	1	0.1	7.2			
16:35	6.0	21.7	26154	1	0.1	7.2			
16:37	7.0	19.6	34171	3	0.2	7.3			

Time (hours)	Depth (m)	Temp ©	SpCond (uS/cm)	DO % (%)	DO Conc (mg/L)	pH	GPS	Station Location	Total Depth (m)
Station 5									
16:43	Surface	31.1	1612	131	9.7	8.6	42deg. 21' 51.324" N		7.6
16:43	0.6	31.1	1612	132	9.7	8.6	71deg. 04' 29.322" W	Between Station 4 and Station 6.	
16:44	1.0	30.8	1614	129	9.6	8.6			
16:45	2.0	30.7	1615	128	9.5	8.6			
16:46	3.0	30.4	1616	125	9.4	8.6			
16:47	4.0	27.7	1529	108	8.5	8.2			
16:49	5.0	27.1	4911	58	4.5	7.4			
16:51	6.0	21.3	29570	2	0.1	7.2			
16:52	7.0	20.0	34949	17	1.3	7.3			
Station 6									
17:00	Surface	32.0	1614	144	10.5	8.8	42deg. 21' 53.57" N		3.2
17:01	0.6	31.6	1611	148	10.9	8.9	71deg. 04' 31.43" W	Near the east riverside across from the in-zone transect.	
17:03	1.0	31.5	1611	145	10.7	8.9			
17:03	2.0	30.6	1614	135	10.0	8.8			
17:04	3.0	28.4	1918	97	7.5	8.0			
Station 7									
17:18	Surface	30.0	1794	118	8.9	8.7	42deg. 21' 56.295" N		7.2
17:19	0.6	30.0	1804	118	8.9	8.6	71deg. 04' 23.232" W	West opening of the old dam and locks.	
17:20	1.0	29.9	1819	117	8.8	8.6			
17:21	2.0	29.3	1980	101	7.7	8.2			
17:22	3.0	28.8	1900	92	7.1	8.0			
17:23	4.0	26.7	9810	60	4.7	7.5			
17:24	5.0	21.8	27914	24	1.9	7.3			
17:25	6.0	19.5	37635	37	2.9	7.4			
17:26	7.0	18.9	39527	50	4.0	7.5			
Staion 8									
17:36	Surface	29.5	1734	121	9.2	8.7	42deg. 22' 06.831" N		5.7
17:37	0.6	29.5	1732	121	9.2	8.7	71deg. 04' 00.737" W	Midsteam and 100m upstream from new dam and locks.	
17:38	1.0	29.5	1733	121	9.2	8.7			
17:39	2.0	29.2	1743	108	8.2	8.4			
17:40	3.0	28.8	1767	96	7.4	8.1			
17:42	4.0	27.0	9877	89	6.8	8.0			
17:44	5.0	21.8	30212	61	4.8	7.7			
17:45	5.7	19.4	37993	50	4.0	7.6			

Table A-3: EPA Chalres River Pharmaceutical and Personal Care Products (PPCP) Results

Sampling Station		CRECHO		CRPCDPUP		CRPCDPDW		1104500		CRBC		CRBL02		CRBLA8		CRBLA8 (DUP)		CRBL12		CRECHO		CRPCDPUP		CRPCDPDW		CRBL02		CRBLA8		CRBLA8 (dup)		LAUD01		Blank		CRBL02		CRBLA8		CRBL12	
Sampling Time		11:30		10:30		10:55		7:20		8:30		13.55		11:15		11:15		10:00		10:00		8:45		8:15		12:20		9:40		9:40		12:15		15:05		12:00		9:20		8:30	
Sampling Date		6/7/05		6/7/05		6/7/05		6/8/05		6/8/05		6/8/05		6/8/05		6/8/05		6/8/05		8/10/2005		8/10/2005		8/10/2005		8/9/2005		8/9/2005		8/9/2005		9/7/2005		9/7/2005		9/7/2005		9/7/2005		9/7/2005	
Units		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l		ng/l	
Compound	use	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL	conc.	RL
17-alpha-estradiol	Estrogen	ND	0.5	ND	0.5	ND	0.5	ND	0.5	ND	0.5	ND	0.5	0.96	0.5	0.63	0.5	0.58	0.5	0.76	0.6	0.73	0.5	2.8	0.6	1.3	0.5	3.4	0.5	ND	0.77	ND	0.5	ND	0.5	ND	0.5	ND	0.5	ND	0.5
17-alpha-ethynylestradiol	Ovulation Inhibitor/Synthetic Estrogen	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2.2	ND	2.0	ND	2.6	ND	2.0	ND	2.0	6.0	3.10	ND	2.0	ND	2.0	ND	2.0	4.9	2.0	ND	2.0
17-beta-estradiol	Estrogen	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2.2	ND	2.0	ND	2.6	ND	2.0	ND	2.0	ND	3.10	ND	2.0	ND	2.0	ND	2.0	ND	2.0	ND	2.0
Acetominophen	pain relievers & antipyretics	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	11	ND	10.0	ND	13	ND	10.0	ND	10.0	ND	16.00	ND	10.0	ND	10.0	ND	10.0	ND	10.0	ND	10.0
Androstenedione	Androgen	1	1	ND	1	ND	1	1.3	1	ND	1	ND	1	ND	1	1.1	1	1.7	1	0.72	0.55	1.7	0.5	1.6	0.63	1.4	0.5	5.3	0.5	2.3	0.77	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Atrazine	herbicide	1.7	0.5	1.2	0.5	2	0.5	1.8	0.5	13	0.5	2.5	0.5	11	0.5	7.2	0.5	7.2	0.5	ND	0.55	ND	0.5	0.98	0.63	ND	0.5	0.73	0.5	ND	0.77	1.6	0.5	ND	0.5	ND	0.5	3.0	0.5	0.63	0.5
Bisphenol A	plasticizer	ND	10	ND	10	ND	10	12	10	ND	10	ND	10	ND	10	ND	10	ND	10	ND	11	ND	10.0	~12	13	~26	10.0	~11	10.0	81	16	39	10.0	ND	10.0	ND	10.0	ND	10.0	37	10.0
Caffeine	stimulant	~ND	5	~5.8	5	~7.3	5	~18	5	~33	5	~28	5	~66	5	~55	5	~43	5	ND	5.5	13	5.0	42	6.3	45	5.0	77	5.0	120	7.70	120	5.0	ND	5.0	38	5.0	21	5.0	55	5.0
Carbamazepine	Anti-seizure drug	~11	0.5	~ND	0.5	~28	0.5	~ND	0.5	~4.3	0.5	~6.8	0.5	~7.4	0.5	~6.2	0.5	~6.6	0.5	3.4	0.55	34	0.5	47	0.63	4.4	0.5	3.3	0.5	8.9	0.77	4.6	0.5	ND	0.5	0.87	0.5	2.0	0.5	2.6	0.5
Deet	Insect repellent	5.9	5	75	5	65	5	77	5	18	5	33	5	28	5	29	5	21	5	ND	5.5	47	5.0	35	6.3	31	5.0	29	5.0	93	7.70	48	2.0	4.0	2.0	45	2.0	27	2.0	42	2.0
Diazepam	Muscle Relaxant	~ND	0.5	~ND	0.5	~0.54	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	ND	0.55	ND	0.5	0.77	0.63	ND	0.5	ND	0.5	ND	0.77	ND	0.5	ND	0.5	ND	0.5	ND	0.5	ND	0.5
Diclofenac	Anti-arthritic	~42	2	~32	2	~40	2	~25	2	~67	2	~52	2	~66	2	~68	2	~46	2	ND	2.2	ND	2.0	ND	2.6	ND	2.0	ND	2.0	ND	3.10	ND	2.0	ND	2.0	ND	2.0	ND	2.0	ND	2.0
Diethylstilbestrol	Synthetic estrogen	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	ND	0.55	ND	0.5	ND	0.63	ND	0.5	ND	0.5	ND	0.77	ND	0.5	ND	0.5	ND	0.5	ND	0.5	ND	0.5
Dilantin	Anti-convulsant drug	2.8	1	3.5	1	11	1	2.1	1	3.7	1	4.8	1	3.8	1	6.7	1	3.2	1	ND	1.1	59	1.0	100	1.3	3.6	1.0	5.6	1.0	6.7	1.50	4.7	1.0	ND	1.0	3.0	1.0	7.6	1.0	8.8	1.0
Estriol	Estrogen	~ND	2	~ND	2	~ND	2	~ND	2	~ND	2	~ND	2	~ND	2	~ND	2	~ND	2	ND	2.2	ND	2.0	3.5	2.6	ND	2.0	ND	2.0	ND	3.10	ND	2.0	ND	2.0	ND	2.0	ND	2.0	ND	2.0
Estrone	Estrogen	ND	1	ND	1	ND	1	ND	1	ND	1	ND	1	2	1	1	1	ND	1	ND	1.1	2.8	1.0	ND	1.3	ND	1.0	ND	1.0	ND	3.10	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Fluoxetine	Anti-depressant	~ND	1	~ND	1	~ND	1	~ND	1	~ND	1	~ND	1	~ND	1	~ND	1	~ND	1	~1.2	1.1	~1.2	1.0	~3.6	1.3	ND	1.0	~3.6	1.0	~9.4	1.50	ND	1.0	ND	1.0	ND	1.0	ND	1.0	ND	1.0
Gemfibrozil	Lipid regulator	~3.6	0.5	~24	0.5	~26	0.5	~5.6	0.5	~5.8	0.5	~5	0.5	~9.1	0.5	~8.4	0.5	~6.7	0.5	ND	0.55	2.8	0.5	18	0.63	3.3	0.5	2.1	0.5	16	0.77	6.7	0.5	ND	0.5	1.4	0.5	2.2	0.5	8.1	0.5
Hydrocodone	Cough suppression / Analgesic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	2.2	4.5	2.0	7.9	2.8	ND	2.0	ND	2.0	ND	3.10	ND	2.0	ND	2.0	ND	2.0	ND	2.0	ND	2.0
Ibuprofen	antiinflammatory	~140	10	~83	10	~170	10	~86	10	~220	10	~150	10	~235	10	~230	10	~140	10	ND	11	ND	10.0	ND	13	14	10.0	ND	10.0	60	16.00	22	10.0	ND	10.0	ND	10.0	ND	10.0	27	10.0
Iopromide	Contrast enhancer (Angiography)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.6	1.1	6.4	1.0	2.9	1.3	6.4	1.0	1.8	1.0	9.6	1.50	2.1	1.0	ND	1.0	ND	1.0	1.5	1.0	3.3	1.0
Meprobamate	Anti-anxiety drug	ND	5	13	5	21	5	~ 2.4	5	ND	5	~ 4.3	5	9.2	5	ND	5	ND	5	ND	5.5	16	5.0	21	6.3	ND	5.0	ND	5.0	ND	7.70	ND	5.0	ND	5.0	ND	5.0	ND	5.0	ND	5.0
Naproxen	Analgesic	~ND	0.5	~0.73	0.5	~0.52	0.5	~0.77	0.5	~0.66	0.5	~0.67	0.5	~0.58	0.5	~0.68	0.5	~2	0.5	ND	0.55	ND	1.2	ND	1.4	ND	0.64	ND	1.10	ND	3.10	0.52	0.5	ND	0.5	1.1	0.5	0.68	0.5	ND	0.5
Oxybenzone	Sun Screen	~ND	2	~ND	2	~3.9	2	~2.5	2	~7.7	2	~ND	2	~3.7	2	~3.3	2	~10	2	0.71	2.2	7.6	2.0	8.7	2.6	18	2.0	200	2.0	89	3.10	34	2.0	ND	2.0	6.1	2.0	6.3	2.0	57	2.0
Pentoxifylline	Improve blood flow	~2.3	1	~ND	1	~ND	1	~ND	1	~ND	1	~2.4	1	~3.7	1	~1.4	1	~1.9	1	1.2	1.1	2.2	1.0	3.2	1.3	3.6	1.0	1.5	1.0	5.2	1.50	4.1	1.0	ND	1.0	ND	1.0	1.2	1.0	1.2	1.0
Phenytoin	anticonvulsant	2.8	1	3.5	1	11	1	2.1	1	3.7	1	4.8	1	3.8	1	6.7	1	3.2	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Progesterone	Ovulation Inhibitor / Estrogen	0.53	0.5	ND	0.5	ND	0.5	0.53	0.5	0.62	0.5	1	0.5	0.58	0.5	ND	0.5	0.64	0.5	~1.6	0.55	~1.3	0.5	~1.8	0.63	~0.94	0.5	~2	0.5	ND	0.77	ND	0.5	ND	0.5	ND	0.5	ND	0.75	ND	0.5
Sulfamethoxazole	antibiotic	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	~ND	0.5	ND	0.55	~1.8	0.5	~8.1	0.63	ND	0.5	ND	0.5	ND	0.77	ND	0.5	ND	0.5	ND	0.5	ND	0.5	ND	0.5
Testosterone	Androgen	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	2	ND	1.1	ND	2.0	0.64	2.6	ND	2.0	ND	2.0	ND	3.10	ND	2.0	ND	2.0	ND	2.0	ND	2.0	ND	2.0
Triclosan	antimicrobial disinfectant	~ND	5	~ND	5	~ND	5	~ND	5	~9.8	5	~ND	5	~ND	5	~ND	5	~ND	5	ND	5.5	ND	5.0	ND	6.3	ND	5.0	ND	5.0	9.2	7.70	ND	5.0	ND	5.0	8.1	5.0	ND	5.0	ND	5.0
Trimethoprim	antibiotic	~ND	1	~ND	1	~ND	1	~ND	1	~ND	1	~ND	1	~ND	1	~ND	1	~ND	1	2.5	1.1	24	1.0	12	1.3	1.4	1.0	7.8	1.0	6.5	1.50	4.7	1.0	ND	1.0	2.4	1.0	9.5	1.0	2.9	1.0

STATION	STATION DESCRIPTION
CRECHO	Echo lake, left side of dam from downstream (from shore/dam)
CRPCDPUP	Walker st bridge/ poplatic st just upstream of Charles River Polution Control District Plant (waders)
CRPCDPDW	Canoe launch, river street just before confluence of mill river (waders)
1104500	Crwa site on the pedestrian bridge just east of moody st bridge in waltham
CRBC	Crwa site at Beaver Brook at confluence with the Charles, West Culvert
CRBL02	Upstream of Watertown Dam
LAUD01	Laudry brook at confluence of Charles
CRBLA8	Off the esplanade
CRBL12	Upstream of the Railroad Bridge near the locks

Notes:
RL = Reporting Limit
NA = Not available
On June 7 & 8 much of the data were reported as estimated data because of poor recoveries in the laboratory control/duplicate samples.
On June 7 and 8 Gemifibrozil was reported as estimated data. An error associated with the an elevated laboratory recovery equates to potential high.
On August 9 and 10 the there was method blank contamination for fuoxentine, sulfamethoxazole, progesterone and bisphenol -A, sample results less than 20 times the level in the method blank are reported as estimated.
On August 9 and 10 the the reporting limit for naproxen was elvevated for samples CRBLA8, CRBL02, CRBL99P, CRPCDPUP, and CRPCDPDW.
On August 9 and 10 the reporting limit (RL) was elevated for all analytes associated with samples CRBL99P, CRPCDPDW, and CRECHO.
On September 7 the reporting limit for Progesterone was elevated for sample CRBLA8