

**2013 Annual Report
National Pollutant Discharge Elimination System**

FOR THE

CITY OF CAMBRIDGE, MASSACHUSETTS
COMBINED SEWER OVERFLOW PERMIT
#MA0101974

April 2014

Submitted to:

U.S. Environmental Protection Agency
Water Technical Unit

MA Department of Environmental Protection
Bureau of Resource Protection

Submitted by:

City of Cambridge
Department of Public Works



I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.


Signature of Authorized Official: Richard Rossi
City Manager, City of Cambridge

7/28/14
Date

1.0 Purpose of Report

This report has been prepared in accordance with Part I, Section D of Permit No. MA0101974, issued to the City of Cambridge Department of Public Works on September 30, 2009. The permit authorizes the City of Cambridge to discharge flow from twelve (12) Combined Sewer Overflows (CSO) located in eleven (11) regulator structures to the receiving water bodies named in the permit.

The City of Cambridge is additionally required to provide a comparison between the precipitation for the year and the precipitation of the typical year under future planned conditions in the MWRA Final CSO Facilities Plan or “Notice of Project Change: document.” The comparison shall include the number of events and the size of events (including recurrence interval). Also required for each CSO is a comparison between the activation volume and frequency for the year and the volume and frequency during a typical year under future planned conditions. Finally, an evaluation of whether the CSO activation volumes and frequencies for the year are in accordance with the estimate in the MWRA Final CSO Facilities Plan or the report entitled “Notice of Project Change for the Long Term CSO Control Plan for Alewife Brook”, given the precipitation which occurred during the year, and the CSO abatement activities which have been implemented. Where CSO discharges are determined to be greater than the activation frequency or volume in either document, an assessment of the results shall be completed and documented. A discussion of remaining CSO abatement activities and an assessment of the impact of those projects on attaining the level of CSO control identified in the relevant document or any amendments.

2.0 Combined Sewer Overflow Monitoring Plan

As part of the Year 1 Annual Report, the City revised weir equations for use in estimating combined sewer overflow quantities at the various regulators. During Year 2 (2010), the City further refined these results using model simulations where CSO activations are impacted by the river systems. For Year 3 (2011) and Year 5 (2013), the City continued to refine the results using model simulations of rainfall from the typical year and the current year to help determine the course of action for the CSO regulating structures.

Section 2.1 describes the existing methodology by which the City estimates effluent volumes and characterizes CSO events. Section 2.2 presents data from the calendar year of 2013 based on this approach, and Section 2.3 describes recommended enhancements and reporting methodology to be utilized by the City going forward.

2.1 Existing CSO Monitoring Methodology

As part of the City's current NPDES Permit, the Department of Public Works (DPW) monitors flow weirs within combined sewer overflow regulator structures to estimate CSO discharge to the Charles River and Alewife Brook. Currently, there are 12 permitted CSO locations associated with 11 CSO regulator structures.

**Table 2.1
Summary of Combined Sewer Locations**

Regulator Structure	CSO Location	Locus	Statuses
CAM 001	CAM 001	Alewife Brook Parkway	Open
CAM 002	CAM 002A	Massachusetts Ave. at Alewife Brook Parkway	Open
	CAM 002B ²	Massachusetts Ave. at Alewife Brook Parkway	Closed
CAM 004 ¹	CAM 004	Fresh Pond Rotary	Open
CAM 400	CAM 400	Alewife Brook Parkway and Harrison Avenue	Closed ³
CAM 401A	CAM 401A	Bellis Circle/Sherman Street	Open
CAM 401B	CAM 401B	Massachusetts Ave. at Alewife Brook Parkway	Open
CAM 005	CAM 005	Mount Auburn Hospital	Open
CAM 007	CAM 007	Memorial Drive at Hawthorne Street	Open
CAM 009	CAM 009	Memorial Dr. at Old Murray Rd.	Closed ⁴
CAM 011	CAM 011	Plympton St.	Closed ⁴
CAM 017	CAM 017	Binney Street at First Street	Open

¹ To be closed by December 31, 2015

² To be open by December 31, 2015

³ Permanently closed on March 31, 2011

⁴ City retains the right to re-open once a hydraulic study is completed

Metering is typically performed by measuring the depth of flow in the structure and computing discharge using a weir equation. In addition, CAM 002A and CAM 005 have secondary area and velocity flow measuring devices in place at the CSO outfall pipe to accurately determine the CSO overflow discharge.

Weir Equation: Currently the City uses the following rectangular contracted weir equation as provided by the flow meter manufacturer to compute flow over a standard weir:

$$Q = K(l - 0.2h)h^{1.5}$$

Where:

Q is flow measured in cubic feet per second (CFS)

l is the weir crest length in feet

K is the weir coefficient equal to 3.330, when $1 \leq l \leq 10$ feet

h is the head on the weir in feet, the limits of which vary according to l as follows:

<u>Weir Length l (ft.)</u>	<u>h minimum (ft.)</u>	<u>h maximum (ft.)</u>
1	0.2	0.5
1.5	0.2	0.75
2	0.2	1.0
2.5	0.2	1.25
3	0.2	1.5
4	0.2	2.0
5	0.2	2.5
6	0.2	3.0
8	0.2	4.0
10	0.2	4.5

The CSO regulator weir crest lengths as reported under existing conditions are:

<u>Location</u>	<u>Weir Length (ft.)</u>
CAM 001 (Alewife Brook Pkwy)	1.46
CAM 002A (Massachusetts Ave at Alewife Brook Pkwy)	5.00
CAM 004 (Fresh Pond Rotary)	7.50
CAM 400 (Harrison Ave at Alewife Brook Pkwy)	7.48
CAM 401A (Bellis Circle at Sherman Street)	19.96
CAM 401B (Massachusetts Ave at Alewife Brook Pkwy)	6.00
CAM 005 (Mount Auburn Hospital)	3.94
CAM 007 (Memorial Drive at Hawthorne Street)	6.29
CAM 017 (Binney Street at First Street)	8.00

The summary of CSO activations for 2013, which follows is based on activation and quantification results based on weir equations, flow measuring devices and modeling software (Infoworks) in use during 2013.

2.2 Summary of 2013 CSO Activations

Activation Frequency and Discharge Volumes

Based on the monitoring procedures described above, four (4) total activations occurred at Charles River CSO regulators during four (4) separate storm events. Thirty-three (33) total activations occurred at Alewife Brook CSO regulators during fifteen (11) separate storm events. A summary of 2013 activations are provided in Table 2.1 and 2.2 for the Charles River and Alewife Brook, respectively.

Precipitation data for each day of the 2013 reporting period is provided in monthly tables in **Appendix I**. In conformance with permit requirements under Part 1, Section D, Paragraph 2, data is provided for each day, including total rainfall, peak intensity, and average intensity. The monthly CSO volume data sheets are provided in **Appendix II**.

**Table 2.2
Summary of 2013 Activations
Charles River CSOs**

Receiving Water	Outfall No.	Discharge Location	2013 Activation Frequency	2013 Activation Volume (million gallons)
Charles River	CAM005	Lowell St. @ Mt. Auburn St.	4	0.25
	CAM007	Memorial Dr. @ Hawthorne St.	0	0.00
	CAM009	Memorial Dr. @ Old Murray Rd.	*	n/a
	CAM011	Plympton St.	*	n/a
	CAM017	Edwin Land Blvd. @ Binney St.	0	0.00
	TOTAL			
* CAM009 and CAM011 are temporarily blocked				

**Table 2.3
Summary of 2013 Activations
Alewife Brook CSOs**

Receiving Water	Outfall No.	Discharge Location	2013 Activation Frequency	2013 Activation Volume (million gallons)
Alewife Brook	CAM001	Foch St. @ Alewife Brook Pkwy.	1	.001
	CAM002A CAM002B ¹	Mass Ave. @ Alewife Brook Pkwy	4	0.54
	CAM004	Concord Ave. Rotary @ Fresh Pond Pkwy	10	5.17
	CAM400 ²	Harrison Ave. @ Alewife Brook Pkwy	0	0.00
	CAM401A	Sherman St. @ B&M Railroad	8	2.60
	CAM401B	Mass Ave./Columbus Ave. @ Alewife Brook Pkwy	10	2.28
	TOTAL			

¹ CAM002B is temporarily closed.
² CAM400 was permanently closed on March 31, 2011.

2.3 Modifications to CSO Monitoring Plan

The purpose of this analysis is to evaluate the current monitoring plan and to improve upon it, if possible, by modifying the present metering approach, improving CSO activation reporting under the current NPDES permit.

CSO Regulator Structures

The methodology used to calculate overflows at each regulator structure has been reviewed and evaluated as described below. Where appropriate, revisions to existing calculation methodology are proposed. In addition, calculations will continue to be updated based on field investigations in order to reflect current field conditions.

CAM 001

The permitted configuration for CAM 001 consisted of an 18” overflow pipe with a steel plate at the end. The plate covered the bottom portion of the 18” pipe. The top of the steel plate was 5-3/4 inches below the crown of the 18” pipe. This created a restricted 70.6 square inch opening with an overflow elevation of 15.22 Feet (NGVD).

The final configuration for CAM 001 consists of a 10" PVC pipe outlet with a 15" PVC elbow for floatable controls. There is also a brick weir set as elevation 15.22 Feet (NGVD).

Hydraulic backwater computations on both the permitted configuration based on the 18" pipe and on the modified configuration using the brick weir with the 10" pipe were performed. The analysis indicates that for flows up to four (4) CFS, the performances of the two (2) configurations are almost identical. For flows through the outfall pipe slightly greater than four (4) CFS, the hydraulic grade line will be greater than the rim elevation of the manholes and combined sewage will escape the sewer system and flow overland to the Brook, however this situation has not been observed in any combined sewer event. To determine the possibility of the structure being over topped a 100-year rain storm was run through the hydraulic model and showed that a flow over 10 cfs will remain approximately 1.0-foot below the rim elevation of the CAM 001.

CAM 002A

A standard weir equation was used to calculate the CSO activation volume for each storm.

$$Q = 3.33 * (L - 0.2 * h) * (h)^{1.5}$$

The above formula will be used to calculate overflow volumes for all flows below 2.5-feet above the weir elevation of 17.3-ft (CCB) . Beyond that, Infoworks will be used to calculate all flows.

CAM 004

This CSO is located within a drainage confluence structure called Drain Vault 5 within the Alewife Brook Rotary at the junction of Concord Avenue and The Alewife Brook Parkway. The weir structure within this CSO is a complex weir with the lowest weir having a length of 7.5 ft and being perpendicular to the direction of flow, the two higher weirs are aligned parallel to the direction of flow and are eight (8) inches higher with a total weir length of an additional seventeen (17) feet.

After reviewing the data from the storms that occurred in 2011, the current multi-step weir equation was considered no longer valid. Instead, an Infoworks calibrated model was used to calculate the total amount of CSO's that occurred at this structure. River elevations for the year are taken from a meter that was located inside of CAM 400 and translated to the outfall of CAM 004. The weir structure was modified to be two (2) separate weirs as described above. The heights or "h" values that were calculated by Infoworks were consistent with "h" values that the flow meter was reading.

CAM 400 (Closed March 31, 2011)

The downstream combined sewer system for CAM 400 was under construction as part of common manhole separation project (Contract 13) for part of the year (2012). This construction consisted of laying new storm sewer and sanitary sewer mains and separating common manholes. The work was completed in March 2012 and the CAM 400 CSO regulator was closed.

CAM 401A

Due to the complicated nature of this structure and the existing floatables control brush screen at the existing weir, an alternative weir equation was used for comparison to the standard equation. This configuration requires a weir coefficient of $K = 2.4$ (based on information from the brush screen manufacturer) to replace the standard weir equation coefficient of 3.33. Consequently the equation used for this CSO structure overflow was:

$$Q = 2.4(l - 0.2h)h^{1.5}$$

The City will use this revised weir equation for future flow estimates. It should be noted that similar to other CSOs, this system will experience a backwater effect above the weir elevation for the 25-year storm event and above and will be subject to additional analysis when submitting annual reports.

CAM 401B

Due to the size of the outlet, a rectangular weir will be used up to an elevation of 1.4 feet above the bottom of the invert and an orifice equation will be used for all flows above 1.4 feet.

Rectangular Weir

$$Q = 3.33 * (L - 0.2 * h) * (h)^{1.5}$$

Orifice Equation

$$Q = A * C_v * \sqrt{2 * g * h_o}$$

The Infoworks modeling software will also be used to better understand the flows from the CSO regulator structure.

CAM 005

An area / velocity meter has been installed in the downstream overflow pipe, and it will continue to authenticate CSO overflows from the CAM 005 regulator instead of relying solely on the weir equations or model output. To determine flow values for CAM 005 the velocity meter and flow meter data was reviewed. When the velocities were positive a standard rectangular weir equation was used.

CAM 007

The standard weir equation is accurate in this scenario, and the City will continue to use this existing equation for flow approximation purposes.

CAM 007 has experienced significant inflow from the Charles River. The inflow typically does not affect the CSO outfall however during a 2012 storm event, a CSO event occurred while the Charles River was flowing into the system. Further studies of the inflow needs to be completed during the next several years to gain a better understanding of how this inflow affects the conveyance of CSO activities.

CAM 017

The reconstruction of CAM017 has recently been completed. The new structure consists of 3 bending weirs that will allow flow to enter the Charles River once a certain elevation is achieved.

Due to the complexity of the bending weirs, flow conditions, and downstream and upstream conditions a standard weir equation is not adequate. Once an overflow has been detected a series of weir equations will be run based on the degree of rotation of the bending weir and elevation and velocity of the water. The rotation of the bending weir will be measured by a rotational meter and the elevation of the system will be measured by a depth probe. The bending weirs and associated equations will be validated once activation occurs. The results will be crossed checked with the current Infoworks model to ensure that the overflow was properly detected.

2.4 Rainfall Characteristics

Under the City of Cambridge Combined Sewer Overflow Permit MA0101974, an analysis of precipitation for the previous year against the typical year should be performed in the 2013 CSO NPDES Annual Report.

The City of Cambridge has three (3) active rain gauges located throughout the City. Two (2) meters are located near Fresh Pond. These gauges are the USGS gauge (USGS) at Fresh Pond and the Cambridge Water Department (CWD) Gauge. The gauge located on the Water Department, is a seasonal rain gauge. This data does not constitute a full year and is not considered valid when comparing to the typical year.

After analyzing the data from the USGS gauge and the DPW gauge, the data was reviewed for any inconsistencies. The gauges were compared to the typical year rainfall in order to assess any similarities and differences in the rainfall. Only the USGS meter was imputed into Infoworks to compare the 2013 Combined Sewer System to the Long Term Control Plan issued by the MWRA by using the typical year rainfall data and the 2013 rainfall data.

The results of the rainfall analysis are presented in Appendix X.

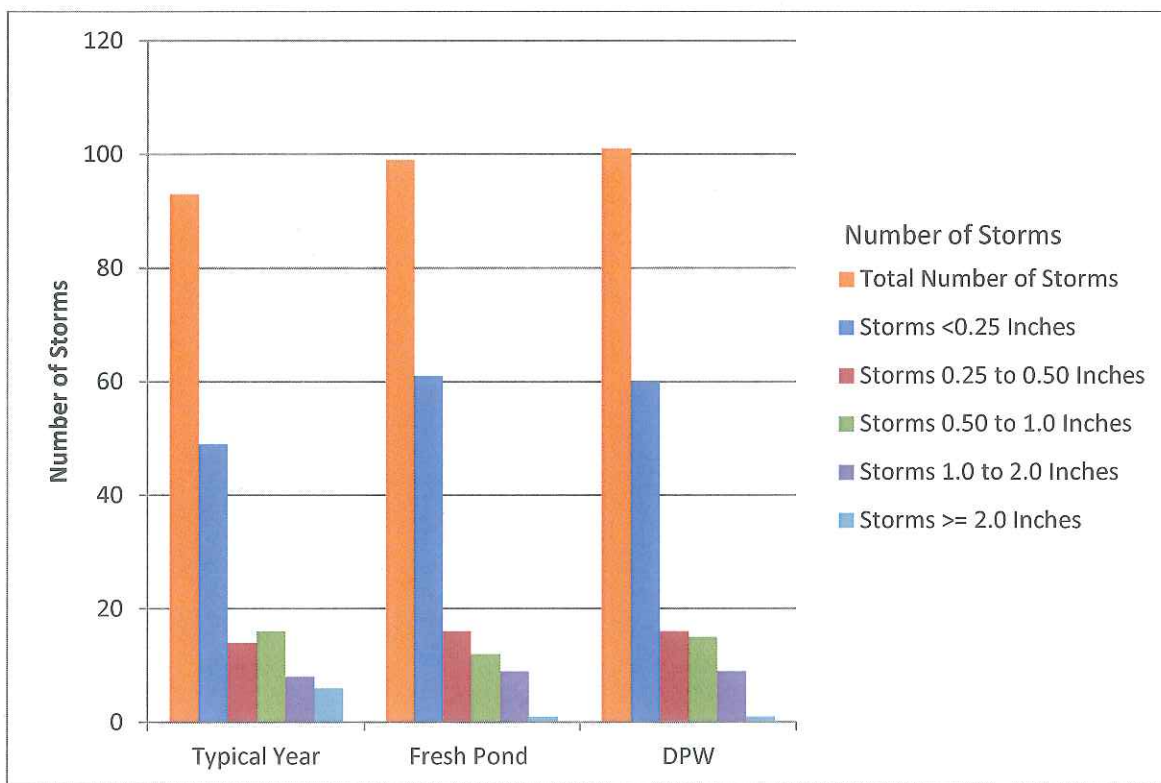
Comparison of 2013 Rainfall to Typical Year

A comparison of the 2013 rainfall at the two (2) locations and the typical year rain gauge is presented in Table 2.4. The typical year total rainfall is 46.8 inches spread out through ninety-three (93) storms. The USGS gauge recorded ninety-nine (99) storms that produce 33.61 inches of rain and the DPW gauge recorded one hundred-one (101) storms and 37.37 inches of rain. The USGS and the DPW rain gauge recorded significantly less rainfall than the typical year though recorded more storms throughout the year.

Table 2.4 Comparison of Frequency of Rainfall Events Selected Ranges of Total Rainfall, Typical Year Versus 2013

Table 2.4.1 Frequency Comparison by Volume

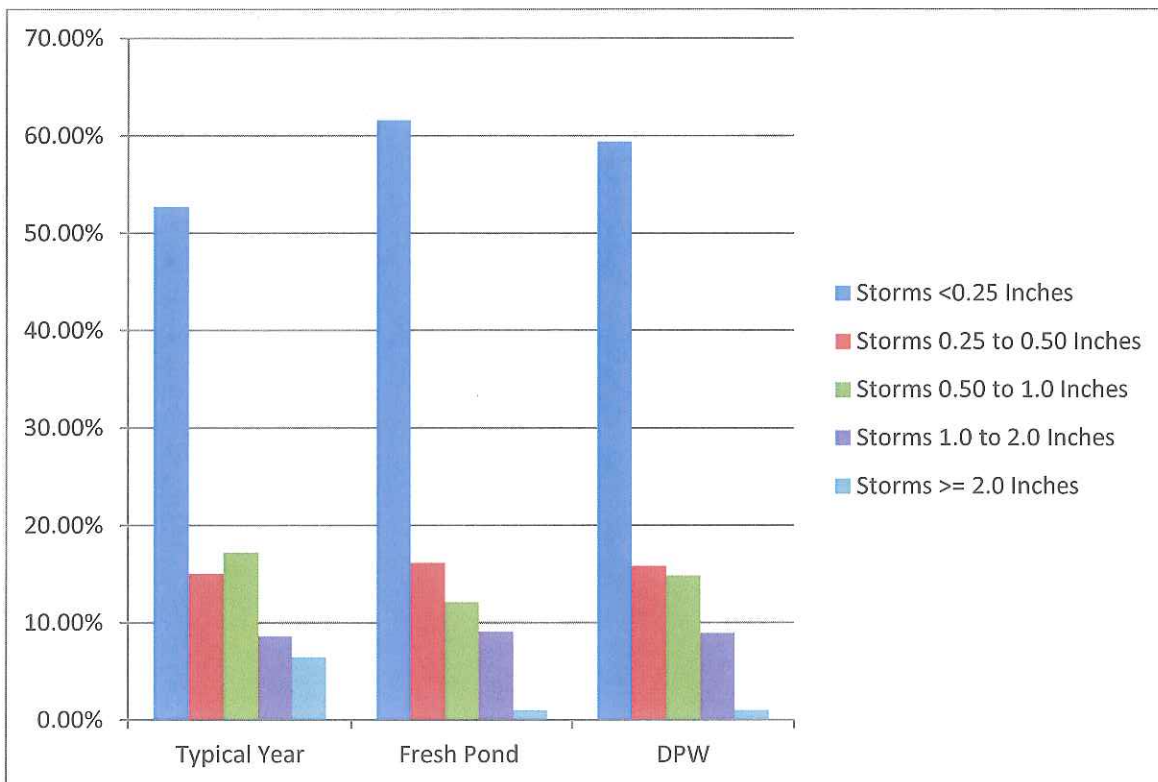
Conditions	Total Rainfall (inches)	Total Number of Storms	Number of Storms by Volume				
			Volume < 0.25 inches	Volume 0.25 to 0.50 inches	Volume 0.5 to 1.0 inches	Volume 1.0 to 2.0 inches	Volume >= 2.0 inches
Typical Year	46.8	93	49	14	16	8	6
Fresh Pond	33.61	99	61	16	12	9	1
DPW	37.37	101	60	16	15	9	1



Graph 2.4.1 Frequency Comparison by Volume

Table 2.4.2 Frequency Comparison by Percentage of Storms

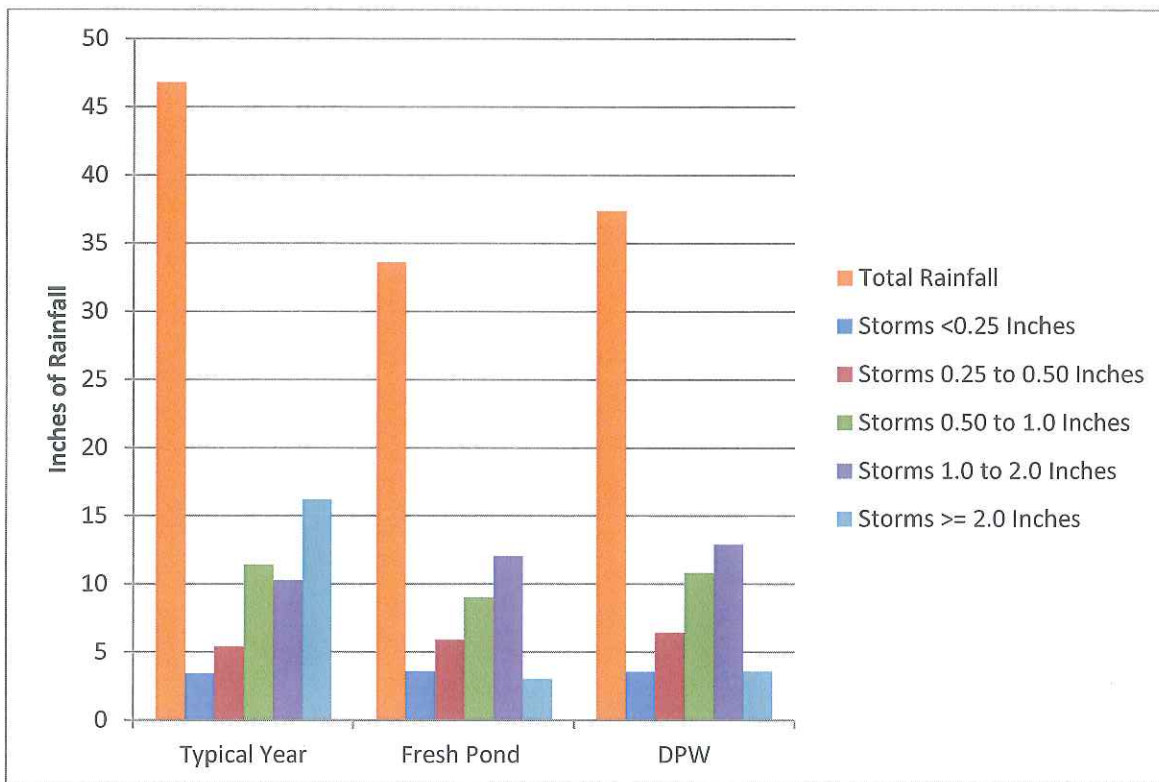
Conditions	Total Rainfall (inches)	Total Number of Storms	Number of Storms by Percentage				
			Volume < 0.25 inches	Volume 0.25 to 0.50 inches	Volume 0.5 to 1.0 inches	Volume 1.0 to 2.0 inches	Volume >= 2.0 inches
Typical Year	46.8	93	52.69%	15.05%	17.20%	8.60%	6.45%
Fresh Pond	33.61	99	61.62%	16.16%	12.12%	9.09%	1.01%
DPW	37.37	101	59.41%	15.84%	14.85%	8.91%	0.99%



Graph 2.4.2 Frequency Comparison by Percentage of Storms

Table 2.4.3 Frequency Comparison of Total Rainfall Volume Distribution

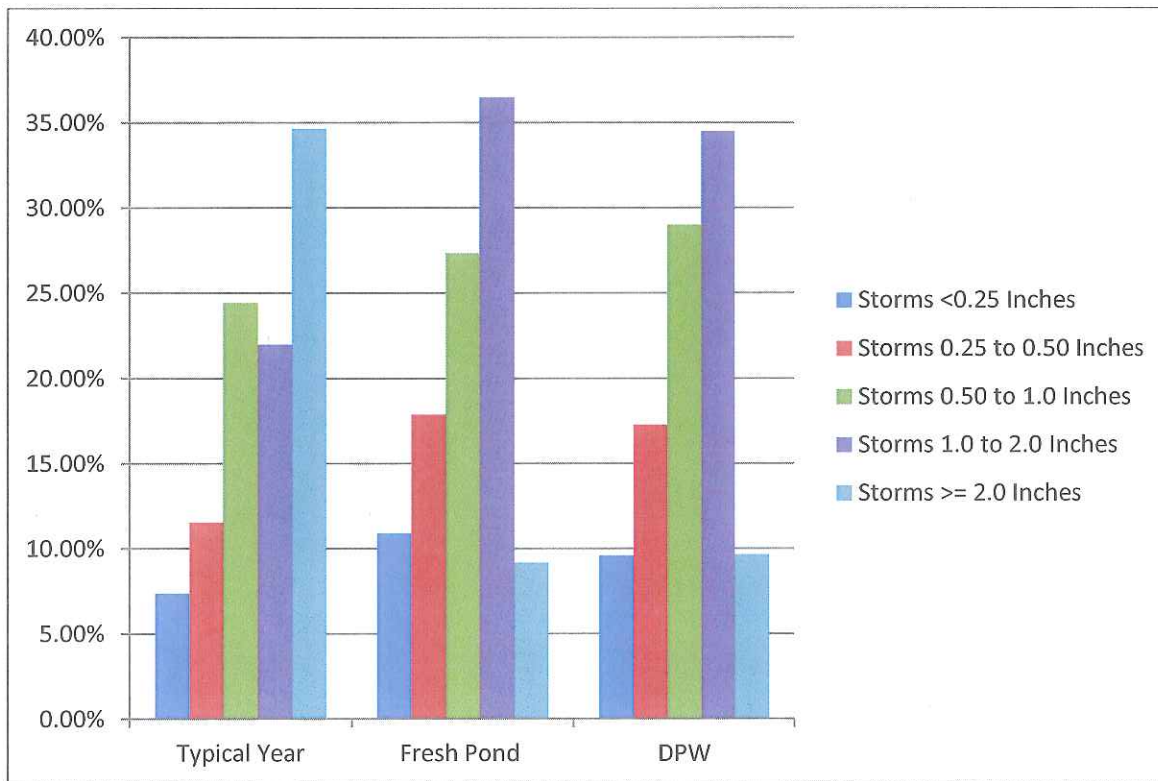
Conditions	Total Rainfall (inches)	Total Number of Storms	Total Rainfall Volume of Storms				
			Volume < 0.25 inches	Volume 0.25 to 0.50 inches	Volume 0.5 to 1.0 inches	Volume 1.0 to 2.0 inches	Volume >= 2.0 inches
Typical Year	46.8	93	3.45	5.4	11.43	10.29	16.21
Fresh Pond	33.61	99	3.6	5.9	9.03	12.05	3.03
DPW	37.37	101	3.58	6.45	10.84	12.89	3.61



Graph 2.4.3 Frequency Comparison of Total Rainfall Volume Distribution

Table 2.4.4 Frequency Comparison of Total Rainfall Volume Distribution by Percentage

Conditions	Total Rainfall (inches)	Total Number of Storms	Number of Storms by Percentage of Total Volume				
			Volume < 0.25 inches	Volume 0.25 to 0.50 inches	Volume 0.5 to 1.0 inches	Volume 1.0 to 2.0 inches	Volume >= 2.0 inches
Typical Year	46.8	93	7.37%	11.54%	24.42%	21.99%	34.64%
Fresh Pond	33.61	99	10.90%	17.86%	27.34%	36.48%	9.17%
DPW	37.37	101	9.58%	17.26%	29.01%	34.49%	9.66%



Graph 2.4.4 Frequency Comparison of Total Rainfall Volume Distribution by Percentage

Table 2.4.1 presents a comparison of storm frequency with a selected range of total precipitation for 2013 and the typical year. The USGS and DPW gauge recorded nearly 6-7% more storms when compared to the typical year. The typical year had forty-nine (49) storms with a volume of 0.25 inches or less while the USGS had sixty-one (61) and the DPW had sixty (60). Despite more of these storms being recorded, when reviewing the percentage and rainfall distribution of

these storm occurrences, they align with the typical year. For storms that produced a volume between 0.25 to 0.5 inches the USGS and DPW gauges record sixteen (16), the typical year had fourteen (14). When looking at the percentage and rainfall distribution the 2013 rainfall for this classification of storm is slightly higher than the typical year. For storms that range from 0.5 to 1.0 inches, the typical year produced sixteen (16) storms and the DPW gauge produced fifteen (15) storms, while USGS gauge had twelve (12) storms. The typical year record 11.43 inches of rain for storms of this distribution, while, the USGS meter was lower by more than 2 inches with 9.03 inches. The DPW gauge was also lower when compared to the typical year by about three quarters of an inch.

For storms ranging from 1.0 to 2.0 inches the USGS gauge and DPW gauge were higher than the typical year. When comparing the rainfall total for storms of this category the USGS and DPW gauge exceed the typical year. The USGS and DPW gauge record nearly 2 inches more of rain with only one (1) more storm when compared to the typical year.

However, for storms with a volume greater than 2.0 inches the USGS and DPW gauge was significantly lower than typical year in number of storms, distribution, and volume. The typical year produced six (6) storms with 16.21 inches of rainfall while the USGS gauge recorded one (1) storm with only 3.03 inches of rainfall and the DPW gauge also recorded 1 storm that produced 3.61 inches of rain.

When comparing all the gauges, typical year, DPW and USGS gauge, the three differ when looking at distribution, volume and percentage of rainfall. The typical year produce more total rainfall than the other gauges, but it had a fewer amount of storms overall. For storms less than 0.25, the typical year had more than 10 fewer storms than the DPW and USGS gauge, however the three were fairly close in the amount of rainfall that fell in that storm range. For storm ranging from 0.25 inches to 1.0 inches the rainfall distribution and volume are all fairly close from all three conditions. For volume ranging from 1.0 inches to 2.0 inches the number of storms was close but the USGS and DPW gauge recorded a high volume of rainfall. For storms greater than 2.0 inches the typical year was greater in all categories.

In conclusion, it is difficult to categorize and compare yearly rainfall due to the variety of storms and atmospheric conditions. The past year the USGS and DPW gauge were below average for total rainfall for the year but yet had a larger number of storms when compared to the typical year. When looking at the history of rainfall, for the past four years the USGS meter has record; 2010-54.21 inches, 2011-50.36 inches, 2012-39.41 inches and 2013-33.61 inches, which varies greatly from the typical year but when averaged out is fairly close to the 46.8 inches or rain that is used in the typical year.

Table 2.5 presents storms that produces rainfall amount above 2.0 inches for the USGS and DPW gauge as well as the typical year.

TABLE 2.5 COMPARISON OF STORMS GREATER THAN 2 INCHES OF TOTAL RAINFALL, TYPICAL YEAR VERSUS 2013

RAIN GUAGE	STORM NO.	DATE	DURATION	TOTAL RAINFALL	AVERAGE INTENSITY	PEAK INTENSITY	STORM RECURRENCE INTERVAL
			(hours)	(inches)	(in/hr)	(in/hr)	(24-hour)
TYPICAL YEAR	87	12/11/1992	50.00	3.89	0.08	0.2	1Y
	59	8/15/1992	72.00	2.91	0.04	0.66	3M
	67	9/22/1992	23.00	2.76	0.12	0.65	1Y
	83	11/21/1992	84.00	2.39	0.03	0.31	3M
	41	5/31/1992	30.00	2.22	0.07	0.37	3M-6M
	69	10/9/1992	65.00	2.04	0.03	0.42	<3M
USGS GUAGE AT FRESH POND	41	6/7/2013	21.75	3.03	0.14	0.66	1Y
DPW	42	6/7/2013	22.25	3.61	0.16	0.70	1Y

TABLE 2.6 COMPARISON OF STORMS WITH PEAK INTENSITIES GREATER THAN 0.40 INCHES/HOUR, TYPICAL YEAR VERSUS 2013

RAIN GAUGE	STORM NO.	DATE	DURATION	TOTAL RAINFALL	AVERAGE INTENSITY	PEAK INTENSITY	STORM RECURRENCE INTERVAL
			(hours)	(inches)	(in/hr)	(in/hr)	(24-hour)
TYPICAL YEAR	74	10/23/1992	4	1.18	0.29	1.08	1-2Y
	57	8/11/1992	11	0.87	0.08	0.75	6M-1Y
	59	8/15/1992	72	2.91	0.04	0.66	3M-6M
	67	9/22/1992	23	2.76	0.12	0.65	3M-6M
	35	5/2/1992	7	1.14	0.16	0.63	3M-6M
	63	9/9/1992	1	0.57	0.57	0.57	3M
	61	9/3/1992	13	1.19	0.09	0.51	<3M
	42	6/5/1992	18	1.34	0.07	0.44	<3M
USGS GAUGE AT FRESH POND	69	10/9/1992	65	2.04	0.03	0.42	<3M
	39	5/29/2013	3.75	0.35	0.2	0.53	<3M
	41	6/7/2013	21.75	3.03	0.14	0.66	1Y
	45	6/18/2013	10.25	0.74	0.23	0.41	<3M
	56	7/23/2013	12.25	1.27	0.24	0.51	3M
	65	8/9/2013	10.25	1.14	0.14	0.47	<3M
DPW METER	72	9/12/2013	10	0.95	0.27	0.80	1Y
	39	5/29/2013	4	0.84	0.21	0.66	<3M
	42	6/7/2013	22.25	3.61	0.16	0.70	1Y
	45	6/18/2013	9.75	0.63	0.19	0.45	<3M
	56	7/23/2013	13.5	1.76	0.27	0.56	3M
	65	8/9/2013	12.25	1.62	0.19	0.51	<3M
	73	9/12/2013	10.25	0.96	0.29	0.8	1Y

2.5 Combined Sewer Overflow Comparison

Under the City of Cambridge Combined Sewer Overflow Permit MA0101974, an analysis of the combined sewer overflows for the previous year against the typical year should be performed in the 2014 CSO NPDES Annual Report.

The City of Cambridge has a total of twelve (12) combined sewer overflow located in eleven (11) regulator structures, seven (7) are located on the Alewife Brook and five (5) are located on the Charles River. For the seven (7) overflows that are located on the Alewife Brook, all but one was active for the entire year. CAM 400 was permanently closed on March 31, 2012. Of the five (5) Charles River CSO's, three (3) locations were active year round, while CAM 009 and CAM 011 are temporarily plugged.

A previously calibrated Infoworks model was used to compare all the data. The current 2013 infoworks model was used to calculate the typical rainfall activation volumes for comparison purposes. The activation volumes for the 2013 rainfall were based on actual recordings from the meters placed in the CSO regulatory structures, and in some cases, the Infoworks model was used for activation data. Due to ongoing construction, CAM 017 did not have a meter recording the overflows; the calibrated Infoworks model was used to determine the overflows for the structure.

As discussed under the Rainfall Characteristics, the rainfall that occurred during the 2013 year was less than the typical year. Therefore, 2013 CSO activations should be less than the typical year. Table 2.7 shows a comparison of 2013 rainfall and the typical year rainfall on the current City of Cambridge combined sewer system and the Long Term Control Plan.

Comparison of 2013 Conditions to Long Term CSO Control Plan

As discussed in the Rainfall Comparison section of this report, the rainfall for 2013 was less than typical year rainfall. Though the 2013 rainfall had more events, less total rainfall and less intense events than the typical year, one can make the conclusion that 2013 overflow activations should be less than the typical year. This is the case for the CSO's for the Alewife Brook and the Charles River, as shown in Table 2.7.

When comparing the typical year to the 2013 rainfall, the individual storms' rainfall characteristics, system configuration and performance issues must be considered. Though storms may have the same intensity, the volume and timing needs to be considered as well. The evapo-transpiration index and ground wetness factor also needs to be considered when examining the CSO activations.

Table 2.7 SUMMARY OF 2013 AND TYPICAL YEAR MODEL SIMULATION RESULTS AND COMPARISON TO TYPICAL YEAR LONG TERM CSO CONTROL PLAN

OUTFALL	2013 RAINFALL UNDER 2013 SYSTEM CONDITIONS		TYPICAL-YEAR RAINFALL UNDER 2013 SYSTEM CONDITIONS		2013 RAINFALL W/ LONG TERM CONTROL PLAN		TYPICAL-YEAR RAINFALL W/ LONG TERM CSO CONTROL PLAN	
	ACTIVATION FREQUENCY	VOLUME (MG)	ACTIVATION FREQUENCY	VOLUME (MG)	ACTIVATION FREQUENCY	VOLUME (MG)	ACTIVATION FREQUENCY	VOLUME (MG)
ALEWIFE BROOK								
CAM 001	1	.001	1	0.003	2	0.06	5	0.19
CAM 002	4	0.54	8	1.75	2	0.30	4	0.69
CAM 004	10	5.17	10	10.11	TO BE CLOSED	N/A	TO BE CLOSED	N/A
CAM 401 ¹	0	0	0	0	TO BE CLOSED	N/A	TO BE CLOSED	N/A
CAM 401A	8	2.60	11	4.81	1	0.1	5	1.61
CAM 401B	10	2.28	10	2.42	2	0.32	7	2.15
TOTAL	33	10.59	40	19.09	7	0.69	21	4.64³
CHARLES RIVER								
CAM 005	4	0.25	4	1.61	1	0.48	3	0.84
CAM 007	0	0	3	0.66	2	0.03	1	0.03
CAM 009 ²	0	0	0	0	0	0	2	0.01
CAM 011 ²	0	0	0	0	0	0	0	0.00
CAM 017	0	0	0	0	1	0.03	1	0.45
TOTAL	4	0.25	7	2.27	4	0.54	7	1.33

¹CAM 400 CLOSED ON MARCH 31, 2011

²TEMPORARILY PLUGGED

³ THIS TOTAL DOES NOT INCLUDE MWRA 003 AND SOM 001, THE LTCP VOLUME OF CSO IS 7.29 MG PER YEAR

Alewife Brook

The total amount of activations for the Alewife Brook was thirty-three (33) activations with 10.59 million gallons of combined sewer for the 2013 rainfall. Under the typical year rainfall there were forty (40) activations that produced 19.09 million gallons of combined sewer.

The overall hydraulic conditions for the Alewife Brook catchment area will change over the next several years with the separation of CAM 004 and other upstream and downstream

separation, and mitigation efforts by the surrounding towns and the MWRA. The CSO flow into the MWRA system will be reduced and storm water flow into the Alewife Brook will be cleaner than it is today.

CAM 001

The Long Term Control Plan (LTCP) has CAM 001 producing five (5) activations with an overflow volume of 0.19 MG. The 2013 rainfall produced one total activation with a volume of 0.001 MG. According to the Infoworks modeling software, the typical year rainfall on the 2013 system would produce a total of one activation that had a volume of 0.003 MG. CAM 001 pattern of activation occurs in conjunction with a high peak intensity driven storms.

CAM 002

The LTCP has CAM 002 producing four (4) activations and an overflow volume of 0.69 MG of combined sewer. The 2013 rainfall produced four (4) overflows that had a total volume of 0.54 MG. The typical year rainfall on the 2013 system produced eight (8) activations that had a total volume of 1.75 MG.

CAM 002 currently has one (1) outfall open. The LTCP has both CAM 002A and CAM 002B overflows open. The LTCP plan also has an overflow to the 60-inch MWRA pipe located in the Alewife Brook Parkway open, which is currently closed. The closure allows for more flow to enter the regulator structure and creates more activations at CAM 002A. The regulating structure has an 18-inch outlet leading the 29"x 33" MWRA relief pipe that conveys the combined sewer flow. Due to this added flow, the total volume entering the structure is greater than the 18-inch outlet can handle during larger rain events and overflows to the Alewife Brook occur. Once the overflow to the Alewife Brook Sewer is open, it will allow for more combined sewer to enter into the MWRA system and reduce overflow activations into the Alewife Brook.

CAM 004

The LTCP has CAM 004 closed. The work for this outfall has begun and a more detailed description of the work has been documented in section 3.0 Status of CSO Abatement Projects.

When reviewing the data for 2013 drainage system, the 2013 rainfall had just as many activations as the typical year however the 2013 rainfall produced only 5.17 million gallons of combined sewer overflow while the typical year had nearly double that volume at 10.11 million gallons. The CAM 004 is a complex structure and is usually one of the most active structures, as it proved to be once again in 2013. The upstream and downstream conditions, the rainfall volume and intensity, and many other factors can lead to activations at this structure.

CAM 401A

The 2013 rainfall produced eight (8) activation that had a total release volume of 2.60 MG, and the typical year rainfall on the 2013 system produced eleven (11) activations for a total of 4.81 MG. The LTCP has CAM 401A activating five (5) times with total overflow volume of 1.61

MG. CAM 401A is influenced greatly by the peak intensity of a storm. CAM 401A is also influenced by downstream conditions that will be changing once CAM 004 is separated. The hydraulic conditions today do not accurately reflect the LTCP conditions.

CAM 401B

CAM 401B will have ten (10) releases with a total volume of 2.15 MG according to the LTCP. The 2013 rainfall produced ten (10) activations that had a total volume of 2.28 MG. The typical year rainfall on the 2013 system had a total volume of 2.42 MG through 10 releases. CAM 401B currently has a 10-inch orifice plate on the relief pipe to the MWRA system. This orifice is attached to an 18-inch pipe. The LTCP has this orifice being removed, which will allow more flow into the 18-inch pipe and in turn reduces the amount of CSO activation in the LTCP.

On November 27, 2013 a combined sewer overflow to Alewife Brook occurred at the CAM401B CSO regulator. This CSO activation was reported by Cambridge Public Works (DPW) per the standard e-mail protocol on November 27, 2013 at 6:59AM. This overflow condition continued until December 2nd. During this time there were two days of dry weather release into the Alewife Brook and four days of wet weather release. The total amount of Dry Weather Event (DWO) released into the Alewife Brook was 391,432 gallons. On December 2nd the City detected the discharge and work crews were sent to clear the structure. A blockage was discovered in the structure at this time and once removed the water level in the manhole started to reduce and the DWO was stopped. The DWO was reported to DEP and EPA by phone on December 2nd and through the Sanitary Sewer Overflow/Bypass Notification Form on December 5th.

Charles River

For the CSO's that are located on the Charles River the 2013 rainfall produced a total of four (4) releases. All four (4) releases came from CAM 005 and produced 0.25 MG of combined sewer overflow. The LTCP allows for seven (7) releases with a total volume of 1.33 MG.

CAM 005

The 2013 rainfall produced four (4) activations for the 2013 rainfall with a volume of 0.25 MG, while the typical year rainfall produces four (4) activations for a total of 1.61 MG. The LTCP has CAM 005 activating three (3) times with a volume of 0.84 MG.

CAM 007

The Long Term Control Plan has CAM 007 activating once with a CSO release of 0.03 MG. The 2013 rainfall produce no activations, while the typical year rainfall on the 2013 system had 3 releases for 0.66 MG. CAM 007, like many of the City's CSO regulating structures, will overflow from a storm with a high hourly peak. The volumes of overflow will also increase when this peak coincides with a storm that has a large volume of rainfall.

CAM 009 and CAM 011

Currently CAM 009 and CAM 011 are temporarily plugged. The LTCP has both of these outfalls open. The City of Cambridge plans to keep these outfalls closed until a more comprehensive study can be completed in this area on the effects of climate change and upstream conditions. This report assumes that these outfalls shall remain closed beyond the LTCP closing date.

CAM 017

The LTCP has CAM 017 producing one (1) activation with an overflow of 0.45 MG. The typical year rainfall and the 2013 rainfall did not produce an activation for the 2013 system. The history of CAM 017 is that the large peak events produce overflows and will remain this way with the bending weir structures.

It is important to note that CAM 017 regulator structure has undergone a major construction project that reconfigured the weir structure. Previously the overflows at CAM 017 were regulated by a 10-ft wide static weir at an elevation of 14.39-ft. There will be three weirs installed in different chambers the two weirs will be set at an elevation of 15.19-ft and will be 7.5-ft wide and the other bending weir will be set at 15.08-ft and will be 9.5-ft wide. The new weirs will have a variable release elevation based on the hydraulic conditions in the system. The bending weirs will be set so they crest at an elevation of 14.94-ft. The implementation of the bending weirs will lower the overall hydraulic grade line and reduce flooding concerns upstream from the bending weirs.

3.0 Status of CSO Abatement Projects`

3.1 Project Updates

The City of Cambridge continues to implement abatement projects in accordance with the Massachusetts Water Resources Authority (MWRA) Final CSO Facilities Plan, the Federal Court Order (US v. MDC., et al., No. 85-0489 (D. Mass)), as amended by the Second Stipulation of the United States and the Massachusetts Water Resources Authority on Responsibility and Legal Liability for Combined Sewer Overflow Control. The information provided in this Annual Report conforms to information and data submitted to the MWRA for inclusion in their court-ordered annual report on CSO abatement project progress.

As described in more detail in the MWRA 2013 CSO Annual Progress Report (available at <http://www.mwra.com/cso/csoannualreports.htm>), the CSO Control Plan for Alewife Brook includes four (4) project components for which the City of Cambridge is responsible, including:

- CAM004 Stormwater Outfall and Wetland Basin (Contract 12)
- CAM004 Sewer Separation (Contracts 8A, 8B, and 9)
- CAM400 Common Manhole Separation (Contract 13)
- Interceptor Connection Relief and Floatables Control (Contract 4)

Contract 12

Contract 12 (Cambridgepark Drive Area Drainage Improvements and Stormwater Wetland Project) will convey stormwater flows removed from the combined sewer system to an innovative stormwater wetland. The constructed wetland basin will attenuate the stormwater to the Little River and Alewife Brook. The wetland will also contribute to the ecological and recreational goals of the Department of Conservation and Recreation (DCR) Master Plan for the Alewife Reservation. Cambridge commenced construction in the spring 2011. All though Cambridge achieved beneficial use of the stormwater conduit and wetland basin by the end of April 2013, in compliance with the MWRA Federal Court Order, construction of other project-related improvements to the Alewife Reservation continue through October 2013, when the project was officially opened to the public.

Contracts 8A, 8B and 9

Cambridge has continued to make substantial progress with the three (3) construction contracts that comprise the remaining work of the CAM004 sewer separation project, advancing the ongoing construction of contracts 8A and 8B and recently receiving construction bids for Contract 9. At the same time, Cambridge continues to manage, coordinate and sequence the work of all three (3) contracts and related utility relocations and traffic management to bring the project to completion by December 2015 in compliance with Schedule Seven (7). Construction of Contract 8A is approximately sixty-five (65) percent complete. Contract 8A includes the installation of approximately 14,700 linear feet of sanitary sewer and storm drain pipe up to 54-inch diameter in Huron Avenue and several intersecting streets and 7,200 linear feet of smaller diameter drain pipe for building, catch basin and other connections in a 68-acre area immediately east of Fresh Pond Parkway, from Fresh Pond to Brattle Street. Subsurface work associated with sewer separation construction is nearing completion on all streets in the Contract 8A area. The City's contractor continues with activities to construct and connect a special drainage structure on Vassal Lane, to complete remaining sewer and storm drain installations in Larch Road and the Lexington Avenue. Huron Avenue intersection, and to reline a sewer in Lexington Avenue. The contractor has completed surface construction and restoration, including catch basins, curbing and base pavement on Lexington Avenue, Lakeview Avenue and Grozier Road. The contractor will perform this work on remaining streets as weather allows through next year. Throughout Contract 8A, utility coordination and relocations have gone well and are not expected to be a factor in completing the contract work.

The City of Cambridge issued the Notice to Proceed for Contract 8B on September 30, 2013. Contract 8B includes 21,000 linear feet of new sanitary sewers and storm drains from 8-inch to 30-inch diameter, 1,700 linear feet of trenchless pipe rehabilitation, and approximately 13,230 linear feet of ductile iron water main pipe from 4-inch to 24-inch diameter. Work is planned in Huron Avenue and several intersecting streets to separate combined sewers in an 83-acre area east of the Contract 8A work area, extending as far east and north as Concord Avenue and as far south as Brattle Street. To date, the contractor has completed approximately ten (10) percent of the construction. The completed work of Contract 8B focused on planning activities, layout, test pits, contract required submittals and preparation of the work area. The contractor removed old rails on Huron Avenue and pruned and protected trees in advance of storm drain and sewer installation. NStar Gas has been relocating its gas lines along Huron Avenue and Vassal Lane ahead of the sewer and storm drain installations. Work is presently underway with sewer and

drain construction on Fayerweather Street, with additional crews to be added shortly for Reservoir Street and Appleton Street. Coordination with utility companies is underway and could have an effect on the contract's schedule, particularly for gas relocations needed in advance of the sewer and drain construction work. Because winter conditions will limit NStar's gas line relocations, Cambridge and its contractor will, if necessary, adjust the schedule of sewer and drain work to avoid conflicts with the gas main(s) to the extent possible.

Cambridge completed the design of Contract 9 and advertised the construction contract on October 30, 2013. Contract 9 includes the installation 19,640 linear feet of new sanitary sewers and storm drains from 6-inch to 48-inch diameter, 4,070 linear feet of trenchless pipe rehabilitation, approximately 10,360 linear feet of ductile iron water main pipe from 4-inch to 20-inch diameter, and 800 linear feet of 20-in water pipe trenchless rehabilitation in Concord Avenue and several intersecting streets to separate combined sewers in a 60-acre area north of Contracts 8A and 8B and extending from Fresh Pond Parkway in the west to the intersection of Concord Avenue and Huron Avenue in the east.

Cambridge received bids on December 5, 2013, will issue a notice proceed and commence construction of Contract 9 in January 2014.

For a copy of plans visit:

Concord Ave.:

<http://www.cambridgema.gov/theworks/cityprojects/detail.aspx?path=%2fsitecore%2fcontent%2fhome%2ftheworks%2fcityprojects%2f2013%2falewifeseverseparationconcordavenueneighborhood>

Huron 8A:

<http://www.cambridgema.gov/theworks/cityprojects/detail.aspx?path=%2fsitecore%2fcontent%2fhome%2ftheworks%2fcityprojects%2f2010%2falewifeseverseparationproject>

Huron 8B:

<http://www.cambridgema.gov/theworks/cityprojects/detail.aspx?path=%2fsitecore%2fcontent%2fhome%2ftheworks%2fcityprojects%2f2012%2falewifeseverseparationprojecthuronb>

Combined Sewer Manhole 17

The construction of the bending weirs for CAM 017 was completed on November 5, 2013. The new structure consists of three (3) bending weirs in separate chambers connected by 72" RCP pipes. The design will allow storms that are larger than typical year largest storm to activate the three (3) bending weirs per the hydraulic model. The Long Term Control Plan allowed for one release of 0.46 MG of combined sewer. That release came from the largest storm in the typical year rainfall. The new design does not allow for overflows from the largest storm in the typical year but will allow for overflows for storms greater than that. When the weirs are activated by the hydraulic conditions the weirs will "bend" over and release combined sewer overflow. Once the hydraulic conditions have been eased upstream the weirs will "bend" back the CSO will stop.

Work began in the spring of 2013. Significant utility relocation was required to construct the structure that would house the bending weirs. New water mains needed to be installed to a residential complex as well as a relocated watermain for the City of Cambridge System.

Relocated gas mains and sewer mains were also completed in the summer time. A new 36-in RCP pipe for a future drainage connection performed by others was completed prior to the bending weir structures being installed. Work on the bending weir structures started in September with the bending weirs being installed in mid October. The weirs were sealed with grout and were tested to ensure they would bend and allow for a combined sewer overflow when the hydraulic conditions are right. Surface work and final paving was completed in late fall.

CAM 017 has been outfitted with two (2) FlowShark Triton Flow meters with depth/ velocity sensors that are used to monitor flows. A Rieker Inclinometer with a Hawkeye data logger is used to monitor the deflection of the bending weir during activation. The meters have been calibrated to ensure that they detect an overflow properly.

3.2 Project Schedule

Design and construction milestones for the Alewife Brook projects were added to Schedule Seven (7) in 2006 when EPA and DEP approved the regional long-term CSO control plan. However, the wetland appeals process continued through 2007 and into 2008. As a result of the delays associated with the wetlands appeals, the City has developed new project schedules and time estimates to complete major design, permitting and construction tasks.

Project	Benefit	Implementation Status	Scheduled Completion
Contract 4: Interceptor Connection Relief and Floatables Control	Upgrades connections between Cambridge and MWRA systems to provide greater capacity; provides floatables control.	Project completed in October 2010.	2010
Contract 13: CAM400 Manhole Separation	Removes stormwater from the sewer system; eliminate CSO at Outfall CAM400.	Project completed in March 2012.	2012
Contract 12: CAM004 Stormwater Outfall and Wetland Basin	Conveys separated stormwater flows to wetland system for treatment and flow attenuation.	Commence construction in Spring 2012.	2013
Contracts 8A, 8B and 9: CAM004 Sewer Separation	Removes stormwater from the sewer system; eliminate CSO at Outfall CAM004.	Early work along Fresh Pond Parkway was completed in 2000-02. Sewer Separation construction has begun in Contract 8A and Contract 8B. Contract 9 is estimated to start in March 2014	2015
Common Manhole 7	Eliminate common manholes in separated areas	Early 2013	2014

Table 3.1 – City of Cambridge CSO Abatement Projects and Status, December 2013

CSO Outfall	Required Project Type Under 2 nd Stipulation	Receiving Water	Contract / Project Name	Completion Date or Proposed Completion Date	Notes
CAM001	Floatables Control	Alewife	Contract 4 - Floatables	October 2010	Baffles installed.
CAM002	Floatables control; interceptor relief	Alewife	Contract 4 - Floatables	October 2010	Baffles installed 2010 and blocked underflow.
CAM004	Sewer Separation	Alewife	2A/2B Fresh Pond Parkway	2001	CSO is now controlled by Drain Vault 5
CAM004	Sewer Separation	Alewife	Contract 8A/8B/9	December 2015	At completion, CSO at CAM004 will be eliminated; removal of blocked underflow in CAM002 and orifice plate in CAM401B
CAM004	Sewer Separation	Alewife	Contract 12- Stormwater Outfall	April 2013	Stormwater outfall and treatment wetland
CAM400	Sewer Separation / common manholes	Alewife	Contract 13	March 2011	CSO regulator eliminated; convert to stormwater outfall.
CAM401A	Floatables Control	Alewife	Bellis Circle	2005	Installed brush screen
CAM401B	Floatables control; interceptor relief	Alewife	Contract 4- Floatables	October 2010	Baffles installed in 2010 and underflow throttled.
CAM005	Hydraulic Relief	Charles	MWRA CAM005 Hydraulic Relief	2000	For full project description see: http://www.mwra.com/annual/csuar/2009/csuar2009.pdf
CAM007	Floatables Control	Charles	Contract 5	2009	Baffle installed
CAM009	Floatables Control	Charles	Contract 5	2009	Outfall temporarily plugged
CAM011	Floatables Control	Charles	Contract 5	2009	Outfall temporarily plugged
CAM017	Floatables Control	Charles	Contract 5	2009	Baffles were installed in 2009.
CAM017	Hydraulic Relief	Charles	CAM 017 Hydraulic Relief	2013	Bending weirs and baffles installed in 2013

4.0 Modifications to Nine Minimum Controls Plan

The Nine Minimum Controls Plan (NMCP) was updated in its entirety and submitted together with the first annual report (April 2009). The plan provides a summary of the evaluations undertaken to address each control measure since the original plan was developed in 1997. Enhancements were made to the NMCP to meet the minimum implementation levels stipulated in the permit.

APPENDIX I

CAMBRIDGE DPW RAIN GAUGE

CSO NPDES Annual Report | 2013

CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS
 2013 DAILY RAINFALL DATA
 DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
1/1/2013	0.00	0.00	0.00
1/2/2013	0.00	0.00	0.00
1/3/2013	0.00	0.00	0.00
1/4/2013	0.00	0.00	0.00
1/5/2013	0.00	0.00	0.00
1/6/2013	0.00	0.00	0.00
1/7/2013	0.00	0.00	0.00
1/8/2013	0.00	0.00	0.00
1/9/2013	0.00	0.00	0.00
1/10/2013	0.00	0.00	0.00
1/11/2013	0.12	0.04	0.08
1/12/2013	0.01	0.01	0.04
1/13/2013	0.00	0.00	0.00
1/14/2013	0.00	0.00	0.00
1/15/2013	0.00	0.00	0.00
1/16/2013	0.37	0.15	0.11
1/17/2013	0.00	0.00	0.00
1/18/2013	0.00	0.00	0.00
1/19/2013	0.00	0.00	0.00
1/20/2013	0.00	0.00	0.00
1/21/2013	0.01	0.01	0.04
1/22/2013	0.00	0.00	0.00
1/23/2013	0.00	0.00	0.00
1/24/2013	0.00	0.00	0.00
1/25/2013	0.01	0.01	0.04
1/26/2013	0.01	0.01	0.04
1/27/2013	0.00	0.00	0.00
1/28/2013	0.17	0.12	0.14
1/29/2013	0.01	0.01	0.04
1/30/2013	0.06	0.03	0.05
1/31/2013	0.31	0.15	0.07
TOTAL	1.08		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
2/1/2013	0.00	0.00	0.00
2/2/2013	0.00	0.00	0.00
2/3/2013	0.03	0.03	0.03
2/4/2013	0.00	0.00	0.00
2/5/2013	0.03	0.03	0.12
2/6/2013	0.05	0.20	0.20
2/7/2013	0.00	0.00	0.00
2/8/2013	0.85	0.09	0.12
2/9/2013	1.00	0.12	0.31
2/10/2013	0.00	0.00	0.00
2/11/2013	0.20	0.05	0.03
2/12/2013	0.00	0.00	0.00
2/13/2013	0.00	0.00	0.00
2/14/2013	0.00	0.00	0.00
2/15/2013	0.00	0.00	0.00
2/16/2013	0.01	0.01	0.04
2/17/2013	0.20	0.04	0.80
2/18/2013	0.00	0.00	0.00
2/19/2013	0.45	0.15	0.11
2/20/2013	0.01	0.01	0.04
2/21/2013	0.00	0.00	0.00
2/22/2013	0.00	0.00	0.00
2/23/2013	0.23	0.07	0.06
2/24/2013	0.82	0.12	0.07
2/25/2013	0.01	0.01	0.04
2/26/2013	0.00	0.00	0.00
2/27/2013	1.37	0.25	0.08
2/28/2013	0.00	0.00	0.00
TOTAL	5.26		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS
 2013 DAILY RAINFALL DATA
 DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
3/1/2013	0.00	0.00	0.00
3/2/2013	0.00	0.00	0.00
3/3/2013	0.00	0.00	0.00
3/4/2013	0.00	0.00	0.00
3/5/2013	0.00	0.00	0.00
3/6/2013	0.05	0.04	0.03
3/7/2013	0.11	0.05	0.03
3/8/2013	0.36	0.08	0.03
3/9/2013	0.00	0.00	0.00
3/10/2013	0.00	0.00	0.00
3/11/2013	0.00	0.00	0.00
3/12/2013	0.29	0.20	0.12
3/13/2013	0.00	0.00	0.00
3/14/2013	0.00	0.00	0.00
3/15/2013	0.00	0.00	0.00
3/16/2013	0.00	0.00	0.00
3/17/2013	0.00	0.00	0.00
3/18/2013	0.05	0.02	0.10
3/19/2013	0.68	0.19	0.04
3/20/2013	0.00	0.00	0.00
3/21/2013	0.02	0.01	0.08
3/22/2013	0.00	0.00	0.00
3/23/2013	0.00	0.00	0.00
3/24/2013	0.00	0.00	0.00
3/25/2013	0.00	0.00	0.00
3/26/2013	0.05	0.04	0.20
3/27/2013	0.00	0.00	0.00
3/28/2013	0.00	0.00	0.00
3/29/2013	0.01	0.01	0.04
3/30/2013	0.00	0.00	0.00
3/31/2013	0.03	0.02	0.06
TOTAL	1.65		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

CSO NPDES Annual Report | 2013

CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS
 2013 DAILY RAINFALL DATA
 DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
4/1/2013	0.12	0.05	0.07
4/2/2013	0.00	0.00	0.00
4/3/2013	0.00	0.00	0.00
4/4/2013	0.00	0.00	0.00
4/5/2013	0.00	0.00	0.00
4/6/2013	0.00	0.00	0.00
4/7/2013	0.00	0.00	0.00
4/8/2013	0.00	0.00	0.00
4/9/2013	0.06	0.06	0.06
4/10/2013	0.19	0.11	0.11
4/11/2013	0.04	0.02	0.03
4/12/2013	0.35	0.14	0.07
4/13/2013	0.02	0.02	0.04
4/14/2013	0.00	0.00	0.00
4/15/2013	0.00	0.00	0.00
4/16/2013	0.00	0.00	0.00
4/17/2013	0.00	0.00	0.00
4/18/2013	0.00	0.00	0.00
4/19/2013	0.05	0.03	0.07
4/20/2013	0.38	0.10	0.07
4/21/2013	0.00	0.00	0.00
4/22/2013	0.00	0.00	0.00
4/23/2013	0.13	0.05	0.26
4/24/2013	0.00	0.00	0.00
4/25/2013	0.03	0.02	0.06
4/26/2013	0.00	0.00	0.00
4/27/2013	0.00	0.00	0.00
4/28/2013	0.00	0.00	0.00
4/29/2013	0.00	0.00	0.00
4/30/2013	0.00	0.00	0.00
TOTAL	1.37		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

CSO NPDES Annual Report | 2013

CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS
 2013 DAILY RAINFALL DATA
 DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
5/1/2013	0.00	0.00	0.00
5/2/2013	0.00	0.00	0.00
5/3/2013	0.00	0.00	0.00
5/4/2013	0.00	0.00	0.00
5/5/2013	0.00	0.00	0.00
5/6/2013	0.00	0.00	0.00
5/7/2013	0.00	0.00	0.00
5/8/2013	0.37	0.15	0.25
5/9/2013	0.61	0.28	0.11
5/10/2013	0.06	0.02	0.24
5/11/2013	0.02	0.01	0.02
5/12/2013	0.04	0.02	0.03
5/13/2013	0.00	0.00	0.00
5/14/2013	0.00	0.00	0.00
5/15/2013	0.00	0.00	0.00
5/16/2013	0.00	0.00	0.00
5/17/2013	0.00	0.00	0.00
5/18/2013	0.00	0.00	0.00
5/19/2013	0.17	0.05	0.09
5/20/2013	0.04	0.02	0.03
5/21/2013	0.01	0.01	0.04
5/22/2013	0.05	0.02	0.04
5/23/2013	0.05	0.03	0.03
5/24/2013	0.57	0.20	0.08
5/25/2013	0.34	0.09	0.08
5/26/2013	0.05	0.04	0.07
5/27/2013	0.00	0.00	0.00
5/28/2013	0.00	0.00	0.00
5/29/2013	0.84	0.66	0.21
5/30/2013	0.00	0.00	0.00
5/31/2013	0.00	0.00	0.00
TOTAL	3.22		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS
 2013 DAILY RAINFALL DATA
 DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
6/1/2013	0.00	0.00	0.00
6/2/2013	0.00	0.00	0.00
6/3/2013	0.71	0.12	0.16
6/4/2013	0.00	0.00	0.00
6/5/2013	0.00	0.00	0.00
6/6/2013	0.02	0.01	0.08
6/7/2013	3.07	0.70	0.16
6/8/2013	0.54	0.25	0.11
6/9/2013	0.00	0.00	0.00
6/10/2013	0.88	0.37	0.16
6/11/2013	1.38	0.35	0.16
6/12/2013	0.07	0.02	0.07
6/13/2013	0.72	0.12	0.09
6/14/2013	1.02	0.19	0.11
6/15/2013	0.00	0.00	0.00
6/16/2013	0.00	0.00	0.00
6/17/2013	0.43	0.21	0.25
6/18/2013	0.63	0.19	0.45
6/19/2013	0.00	0.00	0.00
6/20/2013	0.00	0.00	0.00
6/21/2013	0.00	0.00	0.00
6/22/2013	0.00	0.00	0.00
6/23/2013	0.00	0.00	0.00
6/24/2013	0.33	0.08	0.19
6/25/2013	0.00	0.00	0.00
6/26/2013	0.04	0.04	0.04
6/27/2013	0.03	0.03	0.06
6/28/2013	0.45	0.25	0.16
6/29/2013	0.07	0.07	0.14
6/30/2013	0.11	0.06	0.09
TOTAL	10.50		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
7/1/2013	0.03	0.02	0.03
7/2/2013	0.00	0.00	0.00
7/3/2013	0.00	0.00	0.00
7/4/2013	0.00	0.00	0.00
7/5/2013	0.00	0.00	0.00
7/6/2013	0.00	0.00	0.00
7/7/2013	0.00	0.00	0.00
7/8/2013	0.01	0.01	0.04
7/9/2013	0.00	0.00	0.00
7/10/2013	0.01	0.01	0.04
7/11/2013	0.17	0.05	0.11
7/12/2013	0.00	0.00	0.00
7/13/2013	0.00	0.00	0.00
7/14/2013	0.00	0.00	0.00
7/15/2013	0.00	0.00	0.00
7/16/2013	0.01	0.00	0.04
7/17/2013	0.00	0.00	0.00
7/18/2013	0.00	0.00	0.00
7/19/2013	0.00	0.00	0.00
7/20/2013	0.00	0.00	0.00
7/21/2013	0.01	0.01	0.04
7/22/2013	0.00	0.00	0.00
7/23/2013	1.76	0.27	0.56
7/24/2013	0.00	0.00	0.00
7/25/2013	0.27	0.15	0.09
7/26/2013	1.00	0.33	0.16
7/27/2013	0.00	0.00	0.00
7/28/2013	0.01	0.01	0.04
7/29/2013	0.33	0.07	0.26
7/30/2013	0.00	0.00	0.00
7/31/2013	0.00	0.00	0.00
TOTAL	3.61		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
8/1/2013	0.00	0.00	0.00
8/2/2013	0.13	0.05	0.06
8/3/2013	0.00	0.00	0.00
8/4/2013	0.00	0.00	0.00
8/5/2013	0.00	0.00	0.00
8/6/2013	0.00	0.00	0.00
8/7/2013	0.00	0.00	0.00
8/8/2013	0.07	0.03	0.14
8/9/2013	1.62	0.19	0.51
8/10/2013	0.00	0.00	0.00
8/11/2013	0.00	0.00	0.00
8/12/2013	0.00	0.00	0.00
8/13/2013	0.00	0.00	0.00
8/14/2013	0.00	0.00	0.00
8/15/2013	0.00	0.00	0.00
8/16/2013	0.00	0.00	0.00
8/17/2013	0.00	0.00	0.00
8/18/2013	0.00	0.00	0.00
8/19/2013	0.00	0.00	0.00
8/20/2013	0.00	0.00	0.00
8/21/2013	0.00	0.00	0.00
8/22/2013	0.00	0.00	0.00
8/23/2013	0.00	0.00	0.00
8/24/2013	0.00	0.00	0.00
8/25/2013	0.00	0.00	0.00
8/26/2013	0.01	0.01	0.04
8/27/2013	0.01	0.01	0.02
8/28/2013	0.00	0.00	0.00
8/29/2013	0.00	0.00	0.00
8/30/2013	0.00	0.00	0.00
8/31/2013	0.00	0.00	0.00
TOTAL	1.84		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS
 2013 DAILY RAINFALL DATA
 DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
9/1/2013	0.38	0.12	0.17
9/2/2013	0.38	0.15	0.39
9/3/2013	0.00	0.00	0.00
9/4/2013	0.00	0.00	0.00
9/5/2013	0.09	0.05	0.12
9/6/2013	0.00	0.00	0.00
9/7/2013	0.00	0.00	0.00
9/8/2013	0.00	0.00	0.00
9/9/2013	0.00	0.00	0.00
9/10/2013	0.03	0.02	0.04
9/11/2013	0.00	0.00	0.00
9/12/2013	0.57	0.29	0.80
9/13/2013	0.39	0.08	0.22
9/14/2013	0.00	0.00	0.00
9/15/2013	0.00	0.00	0.00
9/16/2013	0.00	0.00	0.00
9/17/2013	0.00	0.00	0.00
9/18/2013	0.00	0.00	0.00
9/19/2013	0.00	0.00	0.00
9/20/2013	0.00	0.00	0.00
9/21/2013	0.00	0.00	0.00
9/22/2013	0.37	0.20	0.16
9/23/2013	0.00	0.00	0.00
9/24/2013	0.00	0.00	0.00
9/25/2013	0.00	0.00	0.00
9/26/2013	0.00	0.00	0.00
9/27/2013	0.00	0.00	0.00
9/28/2013	0.00	0.00	0.00
9/29/2013	0.00	0.00	0.00
9/30/2013	0.00	0.00	0.00
TOTAL	2.21		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS
 2013 DAILY RAINFALL DATA
 DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
10/1/2013	0.00	0.00	0.00
10/2/2013	0.00	0.00	0.00
10/3/2013	0.00	0.00	0.00
10/4/2013	0.03	0.03	0.03
10/5/2013	0.00	0.00	0.00
10/6/2013	0.31	0.14	0.06
10/7/2013	0.11	0.08	0.22
10/8/2013	0.00	0.00	0.00
10/9/2013	0.00	0.00	0.00
10/10/2013	0.00	0.00	0.00
10/11/2013	0.00	0.00	0.00
10/12/2013	0.00	0.00	0.00
10/13/2013	0.00	0.00	0.00
10/14/2013	0.00	0.00	0.00
10/15/2013	0.00	0.00	0.00
10/16/2013	0.00	0.00	0.00
10/17/2013	0.03	0.03	0.06
10/18/2013	0.02	0.02	0.08
10/19/2013	0.00	0.00	0.00
10/20/2013	0.00	0.00	0.00
10/21/2013	0.00	0.00	0.00
10/22/2013	0.00	0.00	0.00
10/23/2013	0.00	0.00	0.00
10/24/2013	0.00	0.00	0.00
10/25/2013	0.00	0.00	0.00
10/26/2013	0.00	0.00	0.00
10/27/2013	0.03	0.02	0.06
10/28/2013	0.00	0.00	0.00
10/29/2013	0.00	0.00	0.00
10/30/2013	0.05	0.03	0.04
10/31/2013	0.03	0.01	0.06
TOTAL	0.61		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS
 2013 DAILY RAINFALL DATA
 DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
11/1/2013	0.03	0.01	0.04
11/2/2013	0.00	0.01	0.00
11/3/2013	0.03	0.02	0.06
11/4/2013	0.00	0.00	0.00
11/5/2013	0.00	0.00	0.00
11/6/2013	0.00	0.00	0.00
11/7/2013	0.22	0.08	0.15
11/8/2013	0.00	0.00	0.00
11/9/2013	0.00	0.00	0.00
11/10/2013	0.03	0.02	0.06
11/11/2013	0.00	0.00	0.00
11/12/2013	0.08	0.03	0.32
11/13/2013	0.00	0.00	0.00
11/14/2013	0.00	0.00	0.00
11/15/2013	0.00	0.00	0.00
11/16/2013	0.00	0.00	0.00
11/17/2013	0.04	0.02	0.04
11/18/2013	0.15	0.09	0.09
11/19/2013	0.00	0.00	0.00
11/20/2013	0.00	0.00	0.00
11/21/2013	0.00	0.00	0.00
11/22/2013	0.25	0.09	0.06
11/23/2013	0.00	0.00	0.00
11/24/2013	0.00	0.00	0.00
11/25/2013	0.00	0.00	0.00
11/26/2013	0.10	0.05	0.03
11/27/2013	1.79	0.37	0.12
11/28/2013	0.00	0.00	0.00
11/29/2013	0.00	0.00	0.00
11/30/2013	0.00	0.00	0.00
TOTAL	2.72		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS
 2013 DAILY RAINFALL DATA
 DEPARTMENT OF PUBLIC WORKS, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
12/1/2013	0.27	0.08	0.09
12/2/2013	0.00	0.00	0.00
12/3/2013	0.00	0.00	0.00
12/4/2013	0.00	0.00	0.00
12/5/2013	0.01	0.01	0.04
12/6/2013	0.30	0.15	0.05
12/7/2013	0.09	0.02	0.36
12/8/2013	0.00	0.00	0.00
12/9/2013	0.43	0.09	0.06
12/10/2013	0.07	0.02	0.06
12/11/2013	0.00	0.00	0.00
12/12/2013	0.00	0.00	0.00
12/13/2013	0.00	0.00	0.00
12/14/2013	0.22	0.06	0.08
12/15/2013	0.64	0.15	0.08
12/16/2013	0.00	0.00	0.00
12/17/2013	0.53	0.08	0.07
12/18/2013	0.00	0.00	0.00
12/19/2013	0.00	0.00	0.00
12/20/2013	0.00	0.00	0.00
12/21/2013	0.00	0.00	0.00
12/22/2013	0.01	0.01	0.04
12/23/2013	0.68	0.19	0.08
12/24/2013	0.00	0.00	0.00
12/25/2013	0.00	0.00	0.00
12/26/2013	0.05	0.02	0.10
12/27/2013	0.00	0.00	0.00
12/28/2013	0.00	0.00	0.00
12/29/2013	0.00	0.00	0.00
12/30/2013	0.00	0.00	0.00
12/31/2013	0.00	0.00	0.00
TOTAL	3.30		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

**USGS RAIN GAUGE
AT
FRESH POND**

CSO NPDES Annual Report | 2013

CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
1/1/2013	0.00	0.00	0.00
1/2/2013	0.00	0.00	0.00
1/3/2013	0.00	0.00	0.00
1/4/2013	0.00	0.00	0.00
1/5/2013	0.00	0.00	0.00
1/6/2013	0.00	0.00	0.00
1/7/2013	0.00	0.00	0.00
1/8/2013	0.00	0.00	0.00
1/9/2013	0.00	0.00	0.00
1/10/2013	0.00	0.00	0.00
1/11/2013	0.11	0.05	0.05
1/12/2013	0.02	0.01	0.04
1/13/2013	0.00	0.00	0.00
1/14/2013	0.00	0.00	0.00
1/15/2013	0.00	0.00	0.00
1/16/2013	0.00	0.00	0.00
1/17/2013	0.00	0.00	0.00
1/18/2013	0.00	0.00	0.00
1/19/2013	0.00	0.00	0.00
1/20/2013	0.00	0.00	0.00
1/21/2013	0.00	0.00	0.00
1/22/2013	0.00	0.00	0.00
1/23/2013	0.00	0.00	0.00
1/24/2013	0.00	0.00	0.00
1/25/2013	0.00	0.00	0.00
1/26/2013	0.00	0.00	0.00
1/27/2013	0.00	0.00	0.00
1/28/2013	0.00	0.00	0.00
1/29/2013	0.00	0.00	0.00
1/30/2013	0.00	0.00	0.00
1/31/2013	0.41	0.15	0.10
TOTAL	0.54		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
2/1/2013	0.01	0.01	0.04
2/2/2013	0.00	0.00	0.00
2/3/2013	0.00	0.00	0.00
2/4/2013	0.00	0.00	0.00
2/5/2013	0.01	0.01	0.04
2/6/2013	0.01	0.01	0.04
2/7/2013	0.00	0.00	0.00
2/8/2013	0.29	0.05	0.04
2/9/2013	0.13	0.02	0.04
2/10/2013	0.28	0.10	0.06
2/11/2013	0.41	0.08	0.06
2/12/2013	0.00	0.00	0.00
2/13/2013	0.00	0.00	0.00
2/14/2013	0.00	0.00	0.00
2/15/2013	0.00	0.00	0.00
2/16/2013	0.01	0.01	0.04
2/17/2013	0.01	0.01	0.04
2/18/2013	0.00	0.00	0.00
2/19/2013	0.40	0.15	0.10
2/20/2013	0.00	0.00	0.00
2/21/2013	0.00	0.00	0.00
2/22/2013	0.00	0.00	0.00
2/23/2013	0.23	0.10	0.06
2/24/2013	0.60	0.07	0.05
2/25/2013	0.01	0.01	0.04
2/26/2013	0.00	0.00	0.00
2/27/2013	1.38	0.24	0.08
2/28/2013	0.00	0.00	0.00
TOTAL	3.78		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
3/1/2013	0.00	0.00	0.00
3/2/2013	0.00	0.00	0.00
3/3/2013	0.00	0.00	0.00
3/4/2013	0.00	0.00	0.00
3/5/2013	0.00	0.00	0.00
3/6/2013	0.07	0.03	0.05
3/7/2013	0.15	0.03	0.04
3/8/2013	0.59	0.09	0.05
3/9/2013	0.00	0.00	0.00
3/10/2013	0.00	0.00	0.00
3/11/2013	0.01	0.01	0.04
3/12/2013	0.28	0.18	0.11
3/13/2013	0.00	0.00	0.00
3/14/2013	0.00	0.00	0.00
3/15/2013	0.00	0.00	0.00
3/16/2013	0.00	0.00	0.00
3/17/2013	0.00	0.00	0.00
3/18/2013	0.02	0.02	0.04
3/19/2013	1.30	0.17	0.08
3/20/2013	0.03	0.01	0.04
3/21/2013	0.01	0.01	0.04
3/22/2013	0.00	0.00	0.00
3/23/2013	0.00	0.00	0.00
3/24/2013	0.00	0.00	0.00
3/25/2013	0.00	0.00	0.00
3/26/2013	0.00	0.00	0.00
3/27/2013	0.00	0.00	0.00
3/28/2013	0.00	0.00	0.00
3/29/2013	0.00	0.00	0.00
3/30/2013	0.00	0.00	0.00
3/31/2013	0.00	0.00	0.00
TOTAL	2.46		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
4/1/2013	0.10	0.06	0.06
4/2/2013	0.00	0.00	0.00
4/3/2013	0.00	0.00	0.00
4/4/2013	0.00	0.00	0.00
4/5/2013	0.00	0.00	0.00
4/6/2013	0.00	0.00	0.00
4/7/2013	0.00	0.00	0.00
4/8/2013	0.00	0.00	0.00
4/9/2013	0.08	0.08	0.08
4/10/2013	0.15	0.11	0.09
4/11/2013	0.07	0.03	0.06
4/12/2013	0.37	0.15	0.07
4/13/2013	0.02	0.02	0.04
4/14/2013	0.00	0.00	0.00
4/15/2013	0.00	0.00	0.00
4/16/2013	0.00	0.00	0.00
4/17/2013	0.00	0.00	0.00
4/18/2013	0.00	0.00	0.00
4/19/2013	0.00	0.00	0.00
4/20/2013	0.41	0.09	0.08
4/21/2013	0.00	0.00	0.00
4/22/2013	0.00	0.00	0.00
4/23/2013	0.02	0.01	0.04
4/24/2013	0.00	0.00	0.00
4/25/2013	0.02	0.02	0.04
4/26/2013	0.00	0.00	0.00
4/27/2013	0.00	0.00	0.00
4/28/2013	0.00	0.00	0.00
4/29/2013	0.00	0.00	0.00
4/30/2013	0.00	0.00	0.00
TOTAL	1.24		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
5/1/2013	0.00	0.00	0.00
5/2/2013	0.00	0.00	0.00
5/3/2013	0.00	0.00	0.00
5/4/2013	0.00	0.00	0.00
5/5/2013	0.00	0.00	0.00
5/6/2013	0.00	0.00	0.00
5/7/2013	0.00	0.00	0.00
5/8/2013	0.11	0.02	0.09
5/9/2013	0.84	0.32	0.15
5/10/2013	0.01	0.01	0.04
5/11/2013	0.05	0.02	0.04
5/12/2013	0.06	0.02	0.04
5/13/2013	0.00	0.00	0.00
5/14/2013	0.00	0.00	0.00
5/15/2013	0.00	0.00	0.00
5/16/2013	0.02	0.01	0.04
5/17/2013	0.00	0.00	0.00
5/18/2013	0.00	0.00	0.00
5/19/2013	0.08	0.02	0.04
5/20/2013	0.11	0.05	0.07
5/21/2013	0.04	0.04	0.16
5/22/2013	0.09	0.07	0.07
5/23/2013	0.10	0.07	0.07
5/24/2013	0.61	0.19	0.08
5/25/2013	0.25	0.07	0.06
5/26/2013	0.03	0.02	0.04
5/27/2013	0.00	0.00	0.00
5/28/2013	0.00	0.00	0.00
5/29/2013	0.90	0.53	0.21
5/30/2013	0.01	0.01	0.04
5/31/2013	0.00	0.00	0.00
TOTAL	3.31		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
6/1/2013	0.00	0.00	0.00
6/2/2013	0.00	0.00	0.00
6/3/2013	0.31	0.09	0.07
6/4/2013	0.00	0.00	0.00
6/5/2013	0.00	0.00	0.00
6/6/2013	0.00	0.00	0.00
6/7/2013	2.40	0.75	0.14
6/8/2013	0.61	0.20	0.14
6/9/2013	0.00	0.00	0.00
6/10/2013	0.60	0.19	0.10
6/11/2013	1.16	0.38	0.14
6/12/2013	0.04	0.01	0.04
6/13/2013	0.61	0.10	0.07
6/14/2013	1.07	0.16	0.12
6/15/2013	0.00	0.00	0.00
6/16/2013	0.00	0.00	0.00
6/17/2013	0.28	0.23	0.16
6/18/2013	0.73	0.41	0.27
6/19/2013	0.02	0.02	0.04
6/20/2013	0.00	0.00	0.00
6/21/2013	0.00	0.00	0.00
6/22/2013	0.00	0.00	0.00
6/23/2013	0.00	0.00	0.00
6/24/2013	0.10	0.07	0.06
6/25/2013	0.00	0.00	0.00
6/26/2013	0.10	0.10	0.10
6/27/2013	0.03	0.02	0.06
6/28/2013	0.34	0.26	0.12
6/29/2013	0.00	0.00	0.00
6/30/2013	0.00	0.00	0.00
TOTAL	8.40		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
7/1/2013	0.14	0.06	0.14
7/2/2013	0.00	0.00	0.00
7/3/2013	0.00	0.00	0.00
7/4/2013	0.00	0.00	0.00
7/5/2013	0.00	0.00	0.00
7/6/2013	0.00	0.00	0.00
7/7/2013	0.01	0.01	0.04
7/8/2013	0.00	0.00	0.00
7/9/2013	0.00	0.00	0.00
7/10/2013	0.03	0.01	0.04
7/11/2013	0.11	0.08	0.07
7/12/2013	0.00	0.00	0.00
7/13/2013	0.02	0.02	0.04
7/14/2013	0.00	0.00	0.00
7/15/2013	0.00	0.00	0.00
7/16/2013	0.01	0.01	0.04
7/17/2013	0.00	0.00	0.00
7/18/2013	0.00	0.00	0.00
7/19/2013	0.00	0.00	0.00
7/20/2013	0.00	0.00	0.00
7/21/2013	0.09	0.09	0.36
7/22/2013	0.00	0.00	0.00
7/23/2013	1.27	0.51	0.24
7/24/2013	0.00	0.00	0.00
7/25/2013	0.37	0.23	0.12
7/26/2013	0.74	0.31	0.12
7/27/2013	0.01	0.01	0.04
7/28/2013	0.01	0.01	0.04
7/29/2013	0.16	0.09	0.13
7/30/2013	0.00	0.00	0.00
7/31/2013	0.00	0.00	0.00
TOTAL	2.97		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
8/1/2013	0.00	0.00	0.00
8/2/2013	0.37	0.21	0.16
8/3/2013	0.00	0.00	0.00
8/4/2013	0.02	0.02	0.04
8/5/2013	0.01	0.01	0.04
8/6/2013	0.00	0.00	0.00
8/7/2013	0.00	0.00	0.00
8/8/2013	0.03	0.03	0.06
8/9/2013	1.14	0.47	0.14
8/10/2013	0.00	0.00	0.00
8/11/2013	0.00	0.00	0.00
8/12/2013	0.00	0.00	0.00
8/13/2013	0.01	0.01	0.04
8/14/2013	0.00	0.00	0.00
8/15/2013	0.00	0.00	0.00
8/16/2013	0.00	0.00	0.00
8/17/2013	0.00	0.00	0.00
8/18/2013	0.00	0.00	0.00
8/19/2013	0.00	0.00	0.00
8/20/2013	0.00	0.00	0.00
8/21/2013	0.00	0.00	0.00
8/22/2013	0.00	0.00	0.00
8/23/2013	0.00	0.00	0.00
8/24/2013	0.00	0.00	0.00
8/25/2013	0.00	0.00	0.00
8/26/2013	0.00	0.00	0.00
8/27/2013	0.02	0.02	0.04
8/28/2013	0.00	0.00	0.00
8/29/2013	0.00	0.00	0.00
8/30/2013	0.00	0.00	0.00
8/31/2013	0.00	0.00	0.00
TOTAL	1.60		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
9/1/2013	0.24	0.16	0.11
9/2/2013	0.02	0.01	0.04
9/3/2013	0.00	0.00	0.00
9/4/2013	0.00	0.00	0.00
9/5/2013	0.05	0.04	0.07
9/6/2013	0.00	0.00	0.00
9/7/2013	0.00	0.00	0.00
9/8/2013	0.00	0.00	0.00
9/9/2013	0.00	0.00	0.00
9/10/2013	0.07	0.06	0.09
9/11/2013	0.00	0.00	0.00
9/12/2013	0.86	0.80	0.49
9/13/2013	0.09	0.04	0.05
9/14/2013	0.00	0.00	0.00
9/15/2013	0.00	0.00	0.00
9/16/2013	0.00	0.00	0.00
9/17/2013	0.00	0.00	0.00
9/18/2013	0.00	0.00	0.00
9/19/2013	0.00	0.00	0.00
9/20/2013	0.00	0.00	0.00
9/21/2013	0.00	0.00	0.00
9/22/2013	0.54	0.45	0.24
9/23/2013	0.00	0.00	0.00
9/24/2013	0.00	0.00	0.00
9/25/2013	0.00	0.00	0.00
9/26/2013	0.00	0.00	0.00
9/27/2013	0.00	0.00	0.00
9/28/2013	0.00	0.00	0.00
9/29/2013	0.00	0.00	0.00
9/30/2013	0.00	0.00	0.00
TOTAL	1.87		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
10/1/2013	0.04	0.03	0.05
10/2/2013	0.03	0.03	0.04
10/3/2013	0.03	0.01	0.04
10/4/2013	0.04	0.02	0.04
10/5/2013	0.01	0.00	0.04
10/6/2013	0.39	0.13	0.07
10/7/2013	0.02	0.01	0.04
10/8/2013	0.00	0.00	0.00
10/9/2013	0.00	0.00	0.00
10/10/2013	0.00	0.00	0.00
10/11/2013	0.00	0.00	0.00
10/12/2013	0.01	0.01	0.04
10/13/2013	0.00	0.00	0.00
10/14/2013	0.00	0.00	0.00
10/15/2013	0.01	0.01	0.04
10/16/2013	0.00	0.00	0.00
10/17/2013	0.00	0.00	0.00
10/18/2013	0.00	0.00	0.00
10/19/2013	0.00	0.00	0.00
10/20/2013	0.00	0.00	0.00
10/21/2013	0.00	0.00	0.00
10/22/2013	0.00	0.00	0.00
10/23/2013	0.00	0.00	0.00
10/24/2013	0.00	0.00	0.00
10/25/2013	0.00	0.00	0.00
10/26/2013	0.00	0.00	0.00
10/27/2013	0.00	0.00	0.00
10/28/2013	0.00	0.00	0.00
10/29/2013	0.02	0.02	0.04
10/30/2013	0.07	0.02	0.04
10/31/2013	0.06	0.03	0.05
TOTAL	0.73		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
11/1/2013	0.04	0.04	0.05
11/2/2013	0.00	0.00	0.00
11/3/2013	0.02	0.01	0.04
11/4/2013	0.00	0.00	0.00
11/5/2013	0.00	0.00	0.00
11/6/2013	0.00	0.00	0.00
11/7/2013	0.00	0.00	0.00
11/8/2013	0.00	0.00	0.00
11/9/2013	0.00	0.00	0.00
11/10/2013	0.00	0.00	0.00
11/11/2013	0.00	0.00	0.00
11/12/2013	0.01	0.01	0.04
11/13/2013	0.00	0.00	0.00
11/14/2013	0.00	0.00	0.00
11/15/2013	0.00	0.00	0.00
11/16/2013	0.00	0.00	0.00
11/17/2013	0.07	0.05	0.07
11/18/2013	0.15	0.10	0.09
11/19/2013	0.00	0.00	0.00
11/20/2013	0.00	0.00	0.00
11/21/2013	0.00	0.00	0.00
11/22/2013	0.21	0.08	0.05
11/23/2013	0.00	0.00	0.00
11/24/2013	0.00	0.00	0.00
11/25/2013	0.00	0.00	0.00
11/26/2013	0.27	0.12	0.08
11/27/2013	1.48	0.40	0.10
11/28/2013	0.00	0.00	0.00
11/29/2013	0.00	0.00	0.00
11/30/2013	0.00	0.00	0.00
TOTAL	2.25		

Notes:

Rainfall was measured in fifteen minute intervals
 Shaded Data denotes CSO discharge.

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CITY OF CAMBRIDGE DEPARTMENT OF PUBLIC WORKS

2013 DAILY RAINFALL DATA

USGS METER AT FRESH POND, CAMBRIDGE, MA

Date	Daily Rainfall (in.)	Maximum Intensity (in./hr)	Average Intensity (in./hr)
12/1/2013	0.18	0.06	0.06
12/2/2013	0.01	0.01	0.04
12/3/2013	0.00	0.00	0.00
12/4/2013	0.00	0.00	0.00
12/5/2013	0.00	0.00	0.00
12/6/2013	0.40	0.12	0.07
12/7/2013	0.00	0.00	0.00
12/8/2013	0.00	0.00	0.00
12/9/2013	0.43	0.11	0.06
12/10/2013	0.05	0.02	0.04
12/11/2013	0.00	0.00	0.00
12/12/2013	0.00	0.00	0.00
12/13/2013	0.00	0.00	0.00
12/14/2013	0.04	0.01	0.04
12/15/2013	0.83	0.18	0.10
12/16/2013	0.02	0.02	0.08
12/17/2013	0.02	0.01	0.04
12/18/2013	0.29	0.04	0.04
12/19/2013	0.20	0.02	0.04
12/20/2013	0.04	0.01	0.04
12/21/2013	0.00	0.00	0.00
12/22/2013	0.00	0.00	0.00
12/23/2013	0.65	0.16	0.07
12/24/2013	0.00	0.00	0.00
12/25/2013	0.00	0.00	0.00
12/26/2013	0.02	0.02	0.04
12/27/2013	0.00	0.00	0.00
12/28/2013	0.00	0.00	0.00
12/29/2013	1.23	0.37	0.15
12/30/2013	0.00	0.00	0.00
12/31/2013	0.00	0.00	0.00
TOTAL	4.41		

Notes:

Rainfall was measured in fifteen minute intervals

Shaded Data denotes CSO discharge.

APPENDIX II

CSO NPDES Annual Report | 2013

January 2013 Daily Rainfall and Combined Sewer Overflows

January	Rain Gauges		Alewife Brook					Charles River			Total	
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001 Foch St. @ Alewife Alewife Brook	CAM 002 Mass Ave. @ Alewife Alewife Brook	CAM 401B Columbus @ Mass Ave. Alewife Brook	CAM 004 Concord Ave @ Rotary Alewife Brook	401A Sherman St. Alewife Brook	CAM 005 Lowell St. @ Mt. Auburn St Charles River	CAM 007 Hawthorne St. @ Memorial Dr. Charles River	CAM 017 Edwin Land Blvd. @ Binney St. Charles River		
	(in)	(in)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)		(GPD)
1	0.00	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.12	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.37	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.01	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.01	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.01	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.17	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.01	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.06	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.31	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.08	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Alewife Brook outfall CAM002B is temporarily plugged
 Charles River outfalls CAM009 and CAM011 are temporarily plugged
 CAM 400 Permanently closed on March 31, 2011

March 2013 Daily Rainfall and Combined Sewer Overflows

March	Rain Gauges		Alewife Brook					Charles River			Total
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001 Foch St. @ Alewife Alewife Brook	CAM 002 Mass Ave. @ Alewife Alewife Brook	CAM 401B Columbus @ Mass Ave. Alewife Brook	CAM 004 Concord Ave @ Rotary Alewife Brook	401A Sherman St. Alewife Brook	CAM 005 Lowell St. @ Mt. Auburn St Charles River	CAM 007 Hawthorne St. @ Memorial Dr. Charles River	CAM 017 Edwin Land Blvd. @ Binney St. Charles River	
	(in)	(in)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-13.92	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-439.81	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1897.64	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-33701.05	0.00	0.00
6	0.05	0.07	0.00	0.00	0.00	0.00	0.00	0.00	-49083.89	0.00	0.00
7	0.11	0.15	0.00	0.00	0.00	0.00	0.00	0.00	-38803.38	0.00	0.00
8	0.36	0.59	0.00	0.00	0.00	0.00	0.00	0.00	-2832.16	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-38306.71	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.29	0.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1060.85	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-3985.67	0.00	0.00
18	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.68	1.30	0.00	0.00	0.00	0.00	0.00	0.00	-8115.77	0.00	0.00
20	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.65	2.46	0.00	0.00	0.00	0.00	0.00	0.00	-178,240.85	0.00	0.00

Alewife Brook outfall CAM002B is temporarily plugged
 Charles River outfalls CAM009 and CAM011 are temporarily plugged
 CAM 400 Permanently closed on March 31, 2011

April 2013 Daily Rainfall and Combined Sewer Overflows

April	Rain Gauges		Alewife Brook					Charles River			Total
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001 Foch St. @ Alewife Alewife Brook	CAM 002 Mass Ave. @ Alewife Alewife Brook	CAM 401B Columbus @ Mass Ave. Alewife Brook	CAM 004 Concord Ave @ Rotary Alewife Brook	401A Sherman St. Alewife Brook	CAM 005 Lowell St. @ Mt. Auburn St Charles River	CAM 007 Hawthorne St. @ Memorial Dr. Charles River	CAM 017 Edwin Land Blvd. @ Binney St. Charles River	
	(in)	(in)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	
1	0.12	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-137,312.10	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-49,414.60	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-42,247.20	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.06	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.19	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.04	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.35	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.38	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.13	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.37	1.24	0.00	0.00	0.00	0.00	0.00	0.00	-228,973.89	0.00	0.00

Alewife Brook outfall CAM002B is temporarily plugged
 Charles River outfalls CAM009 and CAM011 are temporarily plugged
 CAM 400 Permanently closed on March 31, 2011

May 2013 Daily Rainfall and Combined Sewer Overflows

May	Rain Gauges		Alewife Brook					Charles River			Total
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001 Foch St. @ Alewife Brook	CAM 002 Mass Ave. @ Alewife Brook	CAM 401B Columbus @ Mass Ave. Alewife Brook	CAM 004 Concord Ave @ Rotary Alewife Brook	401A Sherman St. Alewife Brook	CAM 005 Lowell St. @ Mt. Auburn St Charles River	CAM 007 Hawthorne St. @ Memorial Dr. Charles River	CAM 017 Edwin Land Blvd. @ Binney St. Charles River	
	(in)	(in)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.37	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.61	0.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-1,112.93	0.00	0.00
11	0.02	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.04	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.17	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.04	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.01	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.05	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.05	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.57	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.34	0.25	0.00	0.00	0.00	0.00	0.00	0.00	-7,062.10	0.00	0.00
26	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-155.49	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.84	0.90	0.00	5,533.00	0.00	231,110.00	199,220.00	0.00	0.00	0.00	435,863.00
30	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-46,610.49	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-170,428.05	0.00	0.00
Total	3.22	3.31	0.00	5,533.00	0.00	231,110.00	199,220.00	0.00	-225,369.06	0.00	0.00

Alewife Brook outfall CAM002B is temporarily plugged
 Charles River outfalls CAM009 and CAM011 are temporarily plugged
 CAM 400 Permanently closed on March 31, 2011

June 2013 Daily Rainfall and Combined Sewer Overflows

June	Rain Gauges		Alewife Brook					Charles River			Total
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001	CAM 002	CAM 401B	CAM 004	401A	CAM 005	CAM 007	CAM 017	
	(in)	(in)	Foch St. @ Alewife Alewife Brook (GPD)	Mass Ave. @ Alewife Alewife Brook (GPD)	Columbus @ Mass Ave. Alewife Brook (GPD)	Concord Ave @ Rotary Alewife Brook (GPD)	Sherman St. Alewife Brook (GPD)	Lowell St. @ Mt. Auburn St Charles River (GPD)	Hawthorne St. @ Memorial Dr. Charles River (GPD)	Edwin Land Blvd. @ Binney St. Charles River (GPD)	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-176,166.16	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-201,086.28	0.00	0.00
3	0.71	0.31	0.00	0.00	0.00	0.00	0.00	0.00	-69,854.42	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-139,758.74	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-140,306.43	0.00	0.00
6	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-117,493.62	0.00	0.00
7	3.07	2.40	0.00	409,980.00	0.00	1,932,970.00	713,540.00	42,922.00	-93,622.98	0.00	3,099,412.00
8	0.54	0.61	0.00	0.00	0.00	0.00	0.00	0.00	-23,208.75	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-37,284.48	0.00	0.00
10	0.88	0.60	0.00	0.00	0.00	0.00	0.00	0.00	-69,858.14	0.00	0.00
11	1.38	1.16	0.00	0.00	1,714.05	45,170.00	0.00	58,020.00	-21,497.02	0.00	104,904.05
12	0.07	0.04	0.00	0.00	0.00	0.00	0.00	0.00	-25,750.27	0.00	0.00
13	0.72	0.61	0.00	0.00	0.00	0.00	0.00	0.00	-6,534.19	0.00	0.00
14	1.02	1.07	1,060.00	0.00	9,405.82	0.00	0.00	0.00	-38,092.38	0.00	10,465.82
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-50,426.08	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-30,637.80	0.00	0.00
17	0.43	0.28	0.00	0.00	0.00	0.00	0.00	0.00	-19,228.61	0.00	0.00
18	0.63	0.73	0.00	0.00	7,295.00	120,920.00	0.00	146,520.00	-26,861.31	0.00	274,735.00
19	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	-5,819.36	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-10,124.29	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-26,409.76	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-50,939.37	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-56,687.20	0.00	0.00
24	0.33	0.10	0.00	0.00	0.00	0.00	0.00	0.00	-25,400.49	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-43,392.05	0.00	0.00
26	0.04	0.10	0.00	0.00	0.00	0.00	0.00	0.00	-48,986.80	0.00	0.00
27	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	-33,512.58	0.00	0.00
28	0.45	0.34	0.00	0.00	0.00	0.00	0.00	0.00	-15,328.00	0.00	0.00
29	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-24,493.41	0.00	0.00
30	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-15,545.31	0.00	0.00
Total	10.50	8.40	1,060.00	409,980.00	18,414.87	2,099,060.00	713,540.00	247,462.00	-1,644,306.26	0.00	0.00

Alewife Brook outfall CAM002B is temporarily plugged
 Charles River outfalls CAM009 and CAM011 are temporarily plugged
 CAM 400 Permanently closed on March 31, 2011

July 2013 Daily Rainfall and Combined Sewer Overflows

July	Rain Gauges		Alewife Brook					Charles River			Total (GPD)
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001 Foch St. @ Alewife Alewife Brook	CAM 002 Mass Ave. @ Alewife Alewife Brook	CAM 401B Columbus @ Mass Ave. Alewife Brook	CAM 004 Concord Ave @ Rotary Alewife Brook	401A Sherman St. Alewife Brook	CAM 005 Lowell St. @ Mt. Auburn St Charles River	CAM 007 Hawthorne St. @ Memorial Dr. Charles River	CAM 017 Edwin Land Blvd. @ Binney St. Charles River	
	(in)	(in)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	
1	0.03	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-7,097.95	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-33,240.75	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-61,786.45	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-80,470.49	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-59,407.93	0.00	0.00
7	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-71,424.40	0.00	0.00
8	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-22,364.50	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-5,944.48	0.00	0.00
10	0.01	0.03	0.00	0.00	0.00	0.00	0.00	0.00	-537.20	0.00	0.00
11	0.17	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-43,067.42	0.00	0.00
13	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	-17,913.04	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-33,363.52	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-53,640.25	0.00	0.00
16	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-49,059.05	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-84,077.18	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-59,246.17	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-81,692.69	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-16,434.05	0.00	0.00
21	0.01	0.09	0.00	0.00	0.00	0.00	0.00	0.00	-32,894.07	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-28,721.36	0.00	0.00
23	1.76	1.27	0.00	0.00	26,301.00	430,860.00	334,590.00	1,703.00	-807.87	0.00	793,454.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.27	0.37	0.00	0.00	0.00	0.00	0.00	0.00	-8,708.73	0.00	0.00
26	1.00	0.74	0.00	0.00	0.00	0.00	0.00	0.00	-603.13	0.00	0.00
27	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-2,927.44	0.00	0.00
28	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-21,735.48	0.00	0.00
29	0.33	0.16	0.00	0.00	0.00	0.00	0.00	0.00	-13,663.10	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-7,759.21	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-19,026.16	0.00	0.00
Total	3.61	2.97	0.00	0.00	26,301.00	430,860.00	334,590.00	1,703.00	-917,614.06	0.00	793,454.00

Alewife Brook outfall CAM002B is temporarily plugged

Charles River outfalls CAM009 and CAM011 are temporarily plugged

CAM 400 Permanently closed on March 31, 2011

August 2013 Daily Rainfall and Combined Sewer Overflows

August	Rain Gauges		Alewife Brook					Charles River			Total
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001	CAM 002	CAM 401B	CAM 004	401A	CAM 005	CAM 007	CAM 017	
	(in)	(in)	Foch St. @ Alewife Brook (GPD)	Mass Ave. @ Alewife Brook (GPD)	Columbus @ Mass Ave. Alewife Brook (GPD)	Concord Ave @ Rotary Alewife Brook (GPD)	Sherman St. Alewife Brook (GPD)	Lowell St. @ Mt. Auburn St Charles River (GPD)	Hawthorne St. @ Memorial Dr. Charles River (GPD)	Edwin Land Blvd. @ Binney St. Charles River (GPD)	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-6,300.04	0.00	0.00
2	0.13	0.37	0.00	0.00	29,780.00	0.00	0.00	0.00	0.00	0.00	29,780.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-9,215.87	0.00	0.00
4	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	-16,793.57	0.00	0.00
5	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-2,460.43	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-30,099.99	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-31,937.06	0.00	0.00
8	0.07	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	1.62	1.14	0.00	3,990.00	161,077.00	564,250.00	303,270.00	0.00	-1,958.17	0.00	1,032,587.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-12,445.46	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-17,893.58	0.00	0.00
13	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	-1,005.34	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-24,711.48	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-20,058.27	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-20,103.36	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-36,351.13	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-39,103.48	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-56,141.98	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-28,694.78	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-49,055.45	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-18,536.65	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-6,980.06	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-4,543.63	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-20,854.63	0.00	0.00
26	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-9,215.50	0.00	0.00
27	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1,702.06	0.00	0.00
31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-420.30	0.00	0.00
Total	1.84	1.60	0.00	3,990.00	190,857.00	564,250.00	303,270.00	0.00	-466,582.25	0.00	1,062,367.00

Alewife Brook outfall CAM002B is temporarily plugged
 Charles River outfalls CAM009 and CAM011 are temporarily plugged
 CAM 400 Permanently closed on March 31, 2011



September 2013 Daily Rainfall and Combined Sewer Overflows

September	Rain Gauges		Alewife Brook					Charles River			Total (GPD)
	DPW 147 Hampshire Street (in)	USGS Fresh Pond (in)	CAM 001 Foch St. @ Alewife Brook (GPD)	CAM 002 Mass Ave. @ Alewife Brook (GPD)	CAM 401B Columbus @ Mass Ave. Alewife Brook (GPD)	CAM 004 Concord Ave @ Rotary Alewife Brook (GPD)	401A Sherman St. Alewife Brook (GPD)	CAM 005 Lowell St. @ Mt. Auburn St Charles River (GPD)	CAM 007 Hawthorne St. @ Memorial Dr. Charles River (GPD)	CAM 017 Edwin Land Blvd. @ Binney St. Charles River (GPD)	
	1	0.38	0.24	0.00	0.00	0.00	0.00	0.00	0.00	-4,499.05	
2	0.38	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-124.10	0.00	0.00
5	0.09	0.05	0.00	0.00	0.00	0.00	0.00	0.00	-18,745.09	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-34,214.94	0.00	0.00
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-30,584.48	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-22,198.71	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-34,943.00	0.00	0.00
10	0.03	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.57	0.86	0.00	116,005.00	127,382.00	1,182,900.00	610,340.00	0.00	0.00	0.00	2,036,627.00
13	0.39	0.09	0.00	0.00	3,638.00	0.00	0.00	0.00	0.00	0.00	3,638.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.37	0.54	0.00	0.00	0.00	71,900.00	67,650.00	0.00	0.00	0.00	139,550.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	2.21	1.87	0.00	116,005.00	131,020.00	1,254,800.00	677,990.00	0.00	-145,309.37	0.00	2,179,815.00

Alewife Brook outfall CAM002B is temporarily plugged
Charles River outfalls CAM009 and CAM011 are temporarily plugged
CAM 400 Permanently closed on March 31, 2011

October 2013 Daily Rainfall and Combined Sewer Overflows

October	Rain Gauges		Alewife Brook					Charles River			Total
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001	CAM 002	CAM 401B	CAM 004	401A	CAM 005	CAM 007	CAM 017	
	(in)	(in)	Foch St. @ Alewife Alewife Brook	Mass Ave. @ Alewife Alewife Brook	Columbus @ Mass Ave. Alewife Brook	Concord Ave @ Rotary Alewife Brook	Sherman St. Alewife Brook	Lowell St. @ Mt. Auburn St Charles River	Hawthorne St. @ Memorial Dr. Charles River	Edwin Land Blvd. @ Binney St. Charles River	
1	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.31	0.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.11	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.05	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0.03	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.61	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Alewife Brook outfall CAM002B is temporarily plugged
 Charles River outfalls CAM009 and CAM011 are temporarily plugged
 CAM 400 Permanently closed on March 31, 2011

November 2013 Daily Rainfall and Combined Sewer Overflows

November	Rain Gauges		Alewife Brook					Charles River			Total
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001 Foch St. @ Alewife Brook	CAM 002 Mass Ave. @ Alewife Brook	CAM 401B Columbus @ Mass Ave. Alewife Brook	CAM 004 Concord Ave @ Rotary Alewife Brook	401A Sherman St. Alewife Brook	CAM 005 Lowell St. @ Mt. Auburn St Charles River	CAM 007 Hawthorne St. @ Memorial Dr. Charles River	CAM 017 Edwin Land Blvd. @ Binney St. Charles River	
	(in)	(in)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	
1	0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.08	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.04	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.15	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.25	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.10	0.27	0.00	0.00	18,590.00	0.00	0.00	0.00	0.00	0.00	18,590.00
27	1.79	1.48	0.00	0.00	165,002.00	82,510.00	75,800.00	0.00	0.00	0.00	323,312.00
28	0.00	0.00	0.00	0.00	275,729.00	0.00	0.00	0.00	0.00	0.00	275,729.00
29	0.00	0.00	0.00	0.00	173,204.00	0.00	0.00	0.00	0.00	0.00	173,204.00
30	0.00	0.00	0.00	0.00	218,228.00	0.00	0.00	0.00	0.00	0.00	218,228.00
											0.00
Total	2.72	2.25	0.00	0.00	850,753.00	82,510.00	75,800.00	0.00	0.00	0.00	1,009,063.00

Alewife Brook outfall CAM002B is temporarily plugged
 Charles River outfalls CAM009 and CAM011 are temporarily plugged
 CAM 400 Permanently closed on March 31, 2011

December 2013 Daily Rainfall and Combined Sewer Overflows

December	Rain Gauges		Alewife Brook					Charles River			Total
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001	CAM 002	CAM 401B	CAM 004	401A	CAM 005	CAM 007	CAM 017	
	(in)	(in)	Foch St. @ Alewife Brook (GPD)	Mass Ave. @ Alewife Brook (GPD)	Columbus @ Mass Ave. Alewife Brook (GPD)	Concord Ave @ Rotary Alewife Brook (GPD)	Sherman St. Alewife Brook (GPD)	Lowell St. @ Mt. Auburn St Charles River (GPD)	Hawthorne St. @ Memorial Dr. Charles River (GPD)	Edwin Land Blvd. @ Binney St. Charles River (GPD)	
1	0.27	0.18	0.00	0.00	495,947.00	0.00	0.00	0.00	0.00	0.00	495,947.00
2	0	0.01	0.00	0.00	173,694.00	0.00	0.00	0.00	0.00	0.00	173,694.00
3	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.3	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.43	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.07	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.22	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	0.64	0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17	0.53	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0	0.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19	0	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
21	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
23	0.68	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0	1.23	0.00	0.00	388,359.00	506,070.00	298,130.00	0.00	0.00	0.00	0.00
30	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
31	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	3.30	4.41	0.00	0.00	1,058,000.00	506,070.00	298,130.00	0.00	0.00	0.00	0.00

Alewife Brook outfall CAM002B is temporarily plugged
 Charles River outfalls CAM009 and CAM011 are temporarily plugged
 CAM 400 Permanently closed on March 31, 2011

Month	Rain Gauges		Alewife Brook					Charles River				Total
	DPW 147 Hampshire Street	USGS Fresh Pond	CAM 001	CAM 002	CAM 401B	CAM 004	401A	CAM 005	CAM 007		CAM 017	
	(in)	(in)	Foch St. @ Alewife Alewife Brook	Mass Ave. @ Alewife Alewife Brook	Columbus @ Mass Ave. Alewife Brook	Concord Ave @ Rotary Alewife Brook	Sherman St. Alewife Brook	Lowell St. @ Mt. Auburn St Charles River	Hawthorne St. @ Memorial Dr. Charles River		Edwin Land Blvd. @ Binney St. Charles River	
(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	(GPD)	
January	1.08	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
February	5.26	3.78	0.00	0.00	0.00	0.00	0.00	0.00	-122,481.47	0.00	0.00	0.00
March	1.65	2.46	0.00	0.00	0.00	0.00	0.00	0.00	-178,240.85	0.00	0.00	0.00
April	1.37	1.24	0.00	0.00	0.00	0.00	0.00	0.00	-228,973.89	0.00	0.00	0.00
May	3.22	3.31	0.00	5,533.00	0.00	231,110.00	199,220.00	0.00	-225,369.06	0.00	0.00	435,863.00
June	10.50	8.40	1,060.00	409,980.00	18,414.87	2,099,060.00	713,540.00	247,462.00	-1,644,306.26	0.00	0.00	3,489,516.87
July	3.61	2.97	0.00	0.00	26,301.00	430,860.00	334,590.00	1,703.00	-917,614.06	0.00	0.00	793,454.00
August	1.84	1.60	0.00	3,990.00	190,857.00	564,250.00	303,270.00	0.00	-466,582.25	0.00	0.00	1,062,367.00
September	2.21	1.87	0.00	116,005.00	131,020.00	1,254,800.00	677,990.00	0.00	-145,309.37	0.00	0.00	2,179,815.00
October	0.61	0.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
November	2.72	2.25	0.00	0.00	850,753.00	82,510.00	75,800.00	0.00	0.00	0.00	0.00	1,009,063.00
December	3.30	4.41	0.00	0.00	1,058,000.00	506,070.00	298,130.00	0.00	0.00	0.00	0.00	1,862,200.00
Total	37.37	33.56	1,060.00	535,508.00	2,275,345.87	5,168,660.00	2,602,540.00	249,155.00	-3,928,877.23	0.00	0.00	10,832,278.87