

City of
Fitchburg



Department of
Public Works

COMMISSIONER

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STREETS & PARKS

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WASTEWATER

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SEWER COLLECTION

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CEMETERIES

115 Mount Elam Road
978-345-9578
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February 28, 2020

U.S. Environmental Protection Agency
Water Enforcement
OES4-SMR
5 Post Office Square, Suite 100
Boston, MA 02109-3912

Re: CSOs Monitoring & Overflow Report
February 1, 2019 to January 31, 2020 Reporting Period
Consent Decree, VII. REMEDIAL MEASURES, Paragraphs 32 & 33

Dear Sir or Madam:

In accordance with Section VII, Paragraphs 32 and 33 of the Consent Decree (Decree) signed by Fitchburg's Mayor on June 1, 2012, this "Annual Summary of CSOs Monitoring, Overflows Reporting, and Inspection Certification of CSO Outfalls Report" submission addresses the City's compliance with requirements of the Decree (as described by Paragraphs 32 and 33). In addition, weir wall adjustments at CSO locations and dry-weather CSO's will be discussed. The report covers the period from February 1, 2019 to January 31, 2020.

MONITORING SITES

The City of Fitchburg has maintained a total of 11 CSO Regulator Sites, all of which are metered.

The Collections Team of the City's DPW - Wastewater Division continued to monitor meters throughout the city during the reporting period, and also monitored the City's 174 remaining combination manholes with tell-tale blocks for USEPA and Massachusetts Department of Environmental Protection (MADEP) reporting purposes. During the reporting period, the City monitored regulators with ADS Environmental, Inc. Triton+ (Triton) flow meters, the latest meter offered by ADS. The City has an on-call agreement with ADS to assist the City in troubleshooting problematic meters, installing meters in difficult sites, or for training purposes. The City maintains two ADS "Rain Alert III" rain gauges, one at the John Fitch Highway Fire Station, and one at the DPW Building. In December 2018, the City also installed an ADS "Echo" level sensor in CSO Regulator 045. The "Echo" sensor is ultrasonic, with no equipment in the flow. The sensor allows the City to monitor the water level in the regulator chamber to help determine when an overflow over the weir wall is occurring. The City used the "Echo" sensor during this reporting period to calculate overflow volumes from the regulator using a simplified weir equation.

During the previous reporting period, the City had flow meters installed at all of its remaining open overflow regulators. This report discusses the overflows recorded at each metered site, issues that occurred during the reporting period, and proposed future metering changes. The City experienced some data quality and meter downtime issues during the period, which prompted the City to have ADS visit all the sites in the City to conduct maintenance and repairs near the end of the reporting period.

As stated above, the City maintains two ADS RainAlert III rain gauges, one at DPW and one on the John Fitch Highway Fire Station. The rain gauges logged a total of 43.89-inches of rainfall during the reporting period.

In order to most accurately calculate CSO volumes, a variety of methods were used. The City has worked closely with ADS to determine the most accurate way to calculate overflow volume, as CSO volume is notoriously difficult to obtain due to vastly different hydraulics at each CSO, and the variability of differing rain events. The City is frequently reviewing data and methods to calculate overflow volume, and revising calculation methods as appropriate. Some of the City's CSO sites were calculated using a "silt-method". With this method, if the incoming pipe is large, and the crown of the pipe is above the weir wall elevation, a "silt-level" is set on the flow meter to match the weir wall elevation. Any flow that that is recorded over this elevation is a CSO. Other sites were calculated using a velocity vs. depth relationship. Plotting the data on a scattergraph, and using ADS' "Iso-Q" lines, the maximum amount of flow that passes through the regulator prior to an overflow can be interpolated. This flow rate is then subtracted from the total flow rate, resulting in the CSO volume.

At other sites, a more traditional method of using a weir wall equation or Manning's Equation in Excel were used. Manning's Equation for open channel flow was used when a depth of water was known at an overflow pipe. The broad-crested rectangular weir equation was utilized when known depths overtopped weir walls. When the capacity of the downstream pipe was exceeded, the overflow calculation methodology was changed to the Hazen-Williams' Equation for pressurized pipe.

SUMMARY OF RESULTS

Table 1 includes the summary of overflows. The flow meters logged 145 overflow events totaling 16,066,944 gallons. Additional data shown in Table 1 includes notes regarding the operational status of the meter.

Table 2 contains annual rainfall data. Daily total, average intensity, peak hour intensity and duration of storm are provided.

Table 3 contains the meters' overflow detail. Overflow event dates, calculated gallons of overflow and duration of overflow are all provided. Daily rainfall is also provided for the reviewer's convenience.

DISCUSSION OF CSO SITES

CSO-004 (Cleghorn Street at Oak Hill Road)

CSO-004 is a regulator manhole consisting of a 55" x 36" combined brick influent pipe, a 12" sanitary effluent pipe, and a 55" x 36" brick overflow pipe. A brick weir wall directs all flow to the 12" sanitary pipe. When this regulator does overflow, the 12" sanitary becomes inundated and water overtops the weir wall. Overflows discharge to the Nashua River. Further sewer separation upstream is required in order to close this regulator. The downstream pipe may also need to be upsized as it flows close to half full during dry weather. A volume for one event was missed due to a data drop. Occasionally, as the sensors age, data can be 'dropped' during large events. In circumstances where meter experiences a few dropped events, the City investigates, inspects the meter & sensor, and replaces the \$1,700 sensor if necessary.

CSO-004 Highlights
5 Overflow Events
4,761 gal. Overflow
0.34 hr. Duration
94% Meter Coverage
System type: Combined

CSO-007 (Cushing Street at Riverfront Park)

CSO-007 consists of a regulator manhole that includes two influent pipes (a 16" from Laurel Street and a 12" from South Street), two 8" effluent pipes to a 45" interceptor, and an 18" overflow core in the side of the chamber.

CSO 007 Highlights
0 Overflow Events
0 gal. Overflow
0 Hour Duration
90% Meter Coverage
System Type: Separate

This regulator is scheduled for closure in 2020, as part of the CSOs 007, 011, 039, and 048 Combined Sewer Separation Project.

CSO-010 (Main Street at River Street)

CSO-010 consists of a regulator manhole with a 15" influent pipe, 12" effluent pipe and a 15" overflow pipe discharge, with a weir wall between the overflow pipe and dry-weather flow. A significant amount of combined sewer upstream overwhelms the 12" effluent pipe during intense rainfall causing weir wall overtopping. With a large number of combined sewer areas upstream that contribute to this regulator, the City plans to complete closure of this regulator around 2025, in accordance with the Wastewater Management Plan submitted during the reporting period.

CSO 010 Highlights
19 Overflow Events
2,229,000 gal. Overflow
10.25 hr. Duration
92% Meter Coverage
System type: Combined

CSO-032 (543 Main Street at Post Office)

The CSO-032 regulator contains an 18" combined influent pipe, an 8" sanitary throttle discharge pipe, and an 18" overflow to the drainage system. Due to a number of combined pipes upstream of this regulator, the 8" throttle pipe becomes overwhelmed during heavy rainfall events and overflows to the drainage system via a small weir wall. One dry-weather overflow event was experienced at this site during the reporting period, due to rag and debris blockage of the choke point at the effluent pipe. Meter battery

CSO 032 Highlights
26 Overflow Events
2,314,320 gal Overflow
100.45 hr. Duration
85% Meter Coverage
System Type: Combined

issues were experienced during the beginning of the reporting period, and during August. With a large number of combined sewer areas upstream that contribute to this regulator, the City plans to complete closure of this regulator around 2025, in accordance with the Wastewater Management Plan submitted during the reporting period.

CSO-039 (Water Street at Walnut Street)

CSO-039 is a regulator manhole that consists of a 20" influent, an 8" effluent and an 18" overflow.

CSO 039 Highlights 29 Overflow Events 3,603,000 gal. Overflow 116 hr. Duration 96% Meter Coverage System Type: Combined

MassDOT is planning to replace the bridge where this regulator is located in calendar year 2021, which will affect this regulator. This regulator is scheduled for closure in 2020, as part of the CSOs 007, 011, 039, and 048 Combined Sewer Separation Project. One dry-weather overflow was recorded during the reporting period. Due to frequent past DWOs at this site, the City conducted a spot repair on the severely deteriorated pipe downstream of the regulator to eliminate blockages. Since the spot repair, frequent cleanings of the regulator have no longer been needed due to the elimination of solid hang-up points.

CSO-041 (Benson Street at Falulah Street)

CSO-041 consists of a regulator manhole with a 12" influent, a 10" effluent, and an 18" overflow. In past reporting periods, the City has experienced periodic overflows at this location. The contributing area to the regulator is fully separated, which correlates to high inflow in the contributing collection system. During the metering period, the data analysis by the City's engineering consultant revealed that high inflow is an issue in this portion of the City's sewer system. A minimum of 4 catch basins have been confirmed to tie into the sanitary system in the basin upstream of this regulator. During the SSES Phase II study of this area, it was determined that the base flow pipe is undersized, and will need to be upsized in order to close the overflow. An ultrasonic down-looking level sensor is installed in this regulator to provide more reliable overflow data. The new sensor measures flow depth, and allows for calculation of overflows using a weir method.

CSO 041 Highlights 5 Overflow Events 8,000 gal. Overflow 1.75 Hr. Duration 100% Meter Coverage System Type: Separated

CSO-045 (Main Street at Oliver/Putnam Street)

Regulator CSO-045 consists of a chamber with numerous inlets and outlets, and adjacent catch basins tied into the chamber, and has a large number of combined sewer areas upstream of this regulator. The basic construction of the chamber consists of a 30" diameter drain on one edge of the chamber, a sewer line on the adjacent edge (12" dia. inlet, 15" dia. outlet), with a weir wall between the drain and sewer. In addition, there is a 26" x 39" inlet sewer that bridges the drain and discharges to the sewer side of the chamber. Overflows consist of flow topping the weir wall, bridge sewer, and also a 26" x 39" overflow outlet line. Both weir walls in the chamber are within an inch of each other in overflow elevation. The City plans to complete closure of this regulator around 2025, in accordance with the Wastewater Management Plan submitted during the reporting period. During the reporting

CSO 045 Highlights 33 Overflow Events 3,799,709 gal. Overflow 34.26 Hr. Duration 100% Meter Coverage System Type: Combined

period, the City used an installed ADS “Echo” ultrasonic sensor to calculate overflow monitoring via a weir equation.

CSO-048 (85 Water Street at Market Basket)

CSO-048 consists of an 18” influent pipe, an 8” throttle and an 18” overflow.

This regulator is scheduled for closure in 2020, as part of the CSOs 007, 011, 039, and 048 Combined Sewer Separation Project.

CSO 048 Highlights 0 Overflow Events 0 gal. Overflow 0 Hr. Duration 100% Meter Coverage System Type: Separated

There are no known areas of combined sewer that lead to this regulator. Few overflow events have occurred at this location during the six years the regulator has been monitored. The events that have occurred are of a relatively low volume, and a low height over the weir wall, therefore closing of the regulator would should add minimal additional flow to the main interceptor sewer. The separation of a combination manhole upstream is believed to be the reason for the significant reduction in overflows at the site.

CSO-064 (Water Street Easement Grit Chamber)

CSO-064 is located within a former grit/siphon chamber on the trunk sewer. Upstream of the regulator, the sewer is 48” diameter and downstream it is 30” diameter, creating a bottleneck. The opening of the overflow is currently a partially plugged outlet pipe, which essentially creates a weir wall, with approximately a 15” diameter opening. In order to fully close this regulator, additional sewer separation work and inflow removal will be required upstream.

Approximately 60% of the collection system is located upstream of this regulator location. During the past year, the meter experienced intermittent data drop issues during the middle of the reporting period.

CSO 064 Highlights 15 Overflow Events 3,821,065 gal. Overflow 25.25 Hr. Duration 89% Meter Coverage System Type: Combined/Separated

During the reporting period, the City’s Capacity Assessment Report was submitted to the EPA and the MassDEP for review. During the capacity assessment, hydraulic model runs confirmed that upsizing the trunk sewer downstream of the regulator will allow for closure of the regulator. In accordance with the City’s submitted WWMP, the regulator is slated for closure in 2030.

CSO-076 (Birch Street at Heywood Street)

The CSO-076 regulator manhole consists of a 10” influent, 10” effluent, and a 12” overflow.

The contributing collection system area upstream of regulator CSO-076 contains areas of high infiltration, and sewers of poor construction, which lead to large quantities of suspected infiltration. In addition, the base flow pipe is undersized. It is anticipated that inflow and infiltration

CSO 076 Highlights 3 Overflow Events 3,900 gal. Overflow 0.08 Hr. Duration 98% Meter Coverage System Type: Separated

removal upstream will reduce the amount of overflows at this location. There is no known combined sewer upstream of this regulator.

Due to unreliability of having the flow sensor in the overflow pipe, the City replaced the sensor with an ultrasonic down-looking sensor to monitor surcharge height in the manhole, in order to use a Manning's equation to calculate overflow volume. It is expected that this change will provide greater accuracy in overflow reporting. The sensor was installed towards the end of the reporting period.

CSO-083 (Main Street at Prichard Street)

The regulator manhole consists of a 12" x 18" brick combined sewer for an inlet, a 15" VC effluent pipe, and a 12" overflow.

CSO 083 Highlights 10 Overflow Events 283,190 gal. Overflow 2.5 Hr. Duration 96% Meter Coverage System Type: Combined

About half of the upstream contribution area is combined sewer, constructed in the late 1800s to early 1900s. With a large number of combined sewer areas upstream that contribute to this regulator, the City plans to complete closure of this regulator around 2025, in accordance with the Wastewater Management Plan submitted during the reporting period.

WEIR WALL ELEVATION ADJUSTMENTS AND REGULATOR CLOSURES

No weir wall adjustments were made during the reporting year, as we believe that we have maximized the existing capacity in the collection system based on surcharge heights within regulator manholes without causing customer back-ups. In addition, the City has a 10-year plan to close all the remaining regulators within the city in accordance with the WWMP, minimizing the need to perform wide-spread weir wall adjustments. Nonetheless, the City will specifically look at modifying weir walls in CSO-010, CSO-004, and CSO-032 during the next reporting period.

DRY-WEATHER OVERFLOWS

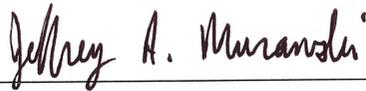
Dry-weather overflows (DWOs) are associated with blockages that occur in the sanitary system and cause an overflow either over a weir wall or through a relief pipe in a combination manhole or a regulator manhole. The City experienced two DWOs during the reporting period.

One DWO occurred at CSO-032, which is a problematic regulator due to its configuration. The City will be investigating adjusting this weir wall height in the next reporting period to allow more head pressure to prevent debris build up. In addition, the City has installed an ADS Echo at this location to provide alarms on surcharging, allowing the City to react to an SSO before it occurs. The DWO released 502,320 gallons to the drainage system, lasted 60.70 hours, and occurred between March 15th and March 18th, 2019. The DWO immediately followed a CSO event.

A second DWO occurred at the problematic CSO-039 regulator. Poor downstream pipe condition has led to frequent DWOs at this regulator over the years. During the reporting period, the pipe finally collapsed and the city conducted an emergency repair to reconnect the pipe to the bridge abutment. Since this repair, no DWOs have occurred and no debris cleanings have been needed at the regulator. Furthermore, the regulator is scheduled for closure in 2020. The DWO released 470,000 gallons to the Nashua River, lasted 59 hours, and occurred between March 15th and March 18th, 2019. The DWO immediately followed a CSO event.

If you have any questions regarding this report, please contact the Fitchburg Sewer System Manager, Anthony W. Maressa, P.E., at 978-829-1916, or the undersigned.

Very Truly Yours,



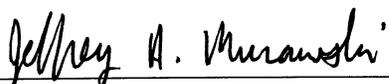
Jeffrey A. Murawski, P.E.
Fitchburg DPW Deputy Commissioner of Wastewater

Electronic & Hard Copy: Neil Handler, USEPA, Region 1 Office
David Boyer, P.E., MassDEP, Central Region Office

Electronic copy:
(Transmittal letter only) Chief, Environmental Enforcement Section, DOJ
Susan M. Poswistilo, Assistant U.S. Attorney
Michael Wagner, USEPA
Louis Dundin, Assistant Attorney General, Massachusetts AG
Vincent Pusateri, II, Fitchburg City Solicitor

Electronic copy: File

"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."



Jeffrey A. Murawski, P.E.
Fitchburg DPW Deputy Commissioner of Wastewater

Table 1: Summary of Overflows

CSO SUMMARY FEBRUARY 1, 2019 TO JANUARY 31, 2020

Meter	Location	Events	Volume (Gallons)	Notes
CSO-004	Cleghorn St at Oak Hill Road	5	4,761	94% coverage
CSO-007	Cushing St at Riverfront Park	0	0	90% coverage. Scheduled for closure in 2020
CSO-010	Main St. at River St.	19	2,229,000	92% coverage. Meter issues at end of period.
CSO-032	543 Main St at Post Office	26	2,314,320	85% coverage. Meter issues at end of period.
CSO-039	Water St at Walnut St.	29	3,603,000	96% coverage. Scheduled for closure in 2020.
CSO-041	Benson Rd. near Falulah St.	5	8,000	100% coverage. New downlooking used for increased accuracy. Data drop on 1 event.
CSO-045	Main St. at Oliver/Putnam St.	33	3,799,709	100% coverage using Echo downlooking sensor.
CSO-048	85 Water St at Market Basket	0	0	100% coverage. Scheduled for closure in 2020.
CSO-064	Water St. Easement at Chamber	15	3,821,065	89% coverage. No data near end of September/beginning of October
CSO-076	Birch St. at Heywood Street	3	3,900	98% coverage. Data reliability issues due to sensor in dry pipe. Switched to ultrasonic sensor at end of period.
CSO-083	Main St. at Prichard St.	10	283,190	96% coverage
Totals		145	16,066,945	

Table 2 - Rainfall: 2/1/2019 to 1/31/2020

Date	Daily Total	Duration	Average Intensity	Peak Hour
	(inches)	(HR:MM)	(in/hr)	(in/hr)
2/6/2019	0.43	4:25	0.10	0.12
2/7/2019	0.09	1:45	0.07	0.07
2/8/2019	0.16	2:15	0.02	0.10
2/13/2019	0.77	3:00	0.25	0.40
2/18/2019	0.07	1:30	0.04	0.05
2/21/2019	0.51	1:30	0.26	0.34
2/24/2019	0.66	8:00	0.08	0.15
2/28/2019	0.10	0:40	0.15	0.10
3/2/2019	0.08	1:00	0.08	0.08
3/4/2019	0.61	3:20	0.07	0.22
3/11/2019	0.53	15:00	0.04	0.11
3/15/2019	0.31	1:30	0.16	0.24
4/6/2019	0.11	2:30	0.03	0.06
4/8/2019	0.64	7:15	0.02	0.13
4/9/2019	0.17	1:45	0.13	0.13
4/13/2019	0.51	8:30	0.03	0.15
4/14/2019	0.13	0:30	0.14	0.07
4/15/2019	1.47	15:30	0.05	0.61
4/20/2019	0.48	3:15	0.27	0.24
4/22/2019	1.04	6:45	0.13	0.20
4/23/2019	0.26	2:00	0.11	0.14
4/24/2019	0.12	1:45	0.09	0.09
4/26/2019	1.10	17:45	0.05	0.35
4/27/2019	0.51	4:45	0.09	0.24
5/2/2019	0.23	13:15	0.01	0.05
5/3/2019	0.16	1:30	0.08	0.12
5/4/2019	0.06	1:00	0.06	0.06
5/7/2019	0.16	3:00	0.05	0.09
5/12/2019	0.12	3:30	0.02	0.05
5/13/2019	0.48	5:45	0.07	0.13
5/17/2019	0.12	3:25	0.02	0.06
5/19/2019	0.24	0:45	0.32	0.24
5/23/2019	0.23	0:45	0.31	0.23
5/26/2019	0.16	0:30	0.32	0.16
5/28/2019	0.49	7:00	0.06	0.10
6/2/2019	0.84	5:00	0.17	0.22
6/5 & 6/6/2019	0.83	2:30	0.20	0.57
6/11/2019	0.61	8:30	0.04	0.17
6/13/2019	0.28	3:45	0.07	0.12
6/16/2019	0.66	8:15	0.02	0.16
6/20/2019	0.45	6:00	0.07	0.18
6/25/2019	0.54	8:15	0.16	0.26
6/29/2019	0.33	0:15	1.32	0.33
6/30/2019	0.10	0:15	0.40	0.10
7/6/2019	0.39	2:45	0.15	0.39
7/11/2019	0.15	0:15	0.40	0.10
7/12/2019	0.21	1:15	0.05	0.13
7/17/2019	0.13	1:30	0.07	0.09
7/22 & 7/23/2019	3.07	19:45	0.12	0.59
7/31/2019	0.08	0:30	0.16	0.08
8/7/2019	0.67	3:45	0.15	0.22
8/10/2019	0.07	0:05	0.84	0.07

Table 2 - Rainfall: 2/1/2019 to 1/31/2020

Date	Daily Total	Duration	Average Intensity	Peak Hour
	(inches)	(HR:MM)	(in/hr)	(in/hr)
8/17/2019	0.45	1:15	0.11	0.43
8/19/2019	0.39	0:15	1.56	0.39
8/21/2019	0.67	1:45	0.05	0.52
8/28/2019	0.86	8:00	0.11	0.21
9/4/2019	0.45	0:45	0.60	0.45
9/7/2019	0.08	0:30	0.16	0.08
9/12/2019	0.08	3:00	0.03	0.03
9/14/2019	0.15	0:30	0.30	0.10
9/24/2019	0.08	3:00	0.16	0.08
9/26/2019	0.22	1:30	0.07	0.05
10/2/2019	0.21	1:00	0.21	0.21
10/3/2019	0.12	1:00	0.12	0.12
10/4/2019	0.11	4:00	0.03	0.05
10/7/2019	0.93	3:45	0.23	0.25
10/16 & 10/17/2019	2.69	9:30	0.15	0.61
10/20/2019	0.10	2:15	0.01	0.06
10/22 & 10/23/2019	0.66	12:00	0.06	0.21
10/27/2019	1.26	10:15	0.03	0.19
10/31/2019	0.60	6:45	0.07	0.22
11/1/2019	0.13	3:45	1.95	0.04
11/7/2019	0.36	8:15	0.01	0.08
11/19/2019	0.42	4:15	0.03	0.14
11/20/2019	0.14	11:20	0.01	0.02
11/22/2019	0.08	1:15	0.02	0.07
11/24/2019	1.56	17:00	0.09	0.23
11/27/2019	0.27	3:00	0.08	0.11
12/7/2019	0.07	2:45	0.03	0.04
12/9/2019	0.96	3:35	0.06	0.07
12/10/2019	0.29	15:00	0.06	0.13
12/11/2019	0.27	12:30	0.01	0.11
12/13 & 12/14/2019	2.48	15:00	0.13	0.25
12/18/2019	0.43	2:35	0.17	0.20
12/29 & 12/30/19	0.57	11:40	0.05	0.10
12/31/2019	0.56	1:20	0.04	0.08
1/2/2020	0.23	4:30	0.05	0.09
1/3/2020	0.14	4:00	0.04	0.06
1/4/2020	0.16	2:45	0.01	0.04
1/16/2020	0.37	1:10	0.32	0.36
1/19/2020	0.49	2:10	0.23	0.36
1/25/2020	1.08	6:30	0.17	0.46
Total	43.89			

TABLE 3: METER OVERFLOW DATA SUMMARY**CSO SUMMARY****CSO-004 - Cleghorn St. at Oak Hill Rd.**

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
1.47	1	-	-	4/15/19
1.1	1	3,793	0.17	4/26/19
0.83	1	968	0.17	6/6/19
3.07	1	-	-	7/22/19
1.08	1	data drop	-	1/25/20
Totals	5	4,761	0.34	

CSO-007 - Cushing Street at Riverfront Park

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
No recorded events during reporting period				
Totals	0	0	0	

CSO-010 - Main Street at River Street

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
0.31	1	36,000	0.25	3/15/19
1.47	1	343,000	0.5	4/15/19
0.48	1	2,000	0.25	4/20/19
1.1	1	166,000	0.75	4/26/19
0.23	1	2,000	0.25	5/23/19
0.84	1	232,000	1.75	6/2/19
0.83	1	315,000	0.50	6/6/19
0.61	1	65,000	0.25	6/11/19
0.54	1	48,000	0.25	6/25/19
0.33	1	16,000	0.5	6/29/19
0.39	1	78,000	0.25	7/6/19
3.07	1	267,000	1	7/22/19
3.07	1	43,000	0.5	7/23/19
0.45	1	130,000	0.75	8/17/19
0.39	1	120,000	0.5	8/19/19
0.67	1	253,000	0.5	8/21/19
0.86	1	35,000	0.5	8/28/19
0.45	1	64,000	0.50	9/4/19
2.69	1	14,000	0.50	10/17/19
Totals	19	2,229,000	10.25	

TABLE 3: METER OVERFLOW DATA SUMMARY

CSO-032 - Main St. at Post Office (542 Main St.)

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
0.31	1	502,320	60.70	3/15-3/18/19*
1.47	1	70,000	1.75	4/15/2019
0.48	1	9,000	1	04/20/19
1.1	1	73,000	3.25	04/26/19
0.24	1	20,000	0.75	05/19/19
0.84	1	55,000	2.50	06/02/19
0.83	1	75,000	1.50	06/06/19
0.61	1	42,000	1.25	06/11/19
0.54	1	22,000	1	06/25/19
0.33	1	22,000	0.50	06/29/19
0.39	1	14,000	0.50	07/06/19
3.07	1	228,000	4.75	7/22-7/23/19
0.67	1	27,000	1.25	08/07/19
0.07	1	7,000	0.25	08/10/19
0.45	1	21,000	0.75	08/17/19
0.39	1	27,000	0.50	08/19/19
0.86	1	31,000	1.50	08/28/19
0.45	1	28,000	0.50	09/04/19
2.69	1	130,000	3.25	10/17/19
0.66	1	5,000	0.75	10/23/19
1.26	1	89,000	2.50	10/27/19
0.6	1	14,000	1	10/31/19
1.56	1	26,000	1.00	11/24/19
0.56	1	641,000	3.25	12/10-12/11/19
2.48	1	60,000	3.25	12/14/19
1.08	1	76,000	1.25	01/25/20
Totals	26	2,314,320	100.45	

*Dry-Weather Overflow Event

TABLE 3: METER OVERFLOW DATA SUMMARY

CSO-039 - Water St at Walnut St

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
0.31	1	470,000	59	3/15-3/18/2019*
0.64	1	33,000	2.00	04/08/19
1.47	1	471,000	1.75	04/15/19
0.48	1	51,000	3.00	04/20/19
1.1	1	221,000	4.50	04/26/19
0.48	1	28,000	4.25	05/13/19
0.24	1	6,000	0.25	05/19/19
0.84	1	24,000	0.25	06/02/19
0.83	1	15,000	0.75	06/06/19
0.54	1	2,000	0.25	06/25/19
0.33	1	28,000	0.50	06/29/19
0.39	1	41,000	0.50	07/06/19
0.21	1	17,000	0.50	07/12/19
3.07	1	322,000	7.00	7/22-7/23/2019
0.67	1	45,000	2.00	08/07/19
0.45	1	46,000	0.75	08/17/19
0.39	1	28,000	0.50	08/19/19
0.67	1	32,000	0.25	8/21/2019
0.86	1	57,000	1.00	08/28/19
0.45	1	71,000	0.50	09/04/19
0.93	1	109,000	4.50	10/07/19
2.69	1	593,000	3.75	10/17/19
0.66	1	20,000	0.50	10/23/19
1.26	1	65,000	1.75	10/27/19
0.6	1	4,000	0.25	10/31/19
0.42	1	4,000	1.25	11/19/19
1.56	1	59,000	1.75	11/24/19
2.48	1	506,000	10.25	12/14/19
1.08	1	235,000	2.50	01/25/20
Totals	29	3,603,000	116	

*Combination CSO/Dry-Weather Overflow Event

CSO-041 - Benson St. at Falullah St.

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
1.47	1	3,000	0.75	04/15/19
0.84	1	2,000	0.25	06/02/19
0.33	1	1,000	0.25	06/29/19
0.15	1	2,000	0.25	07/11/19
3.07	1	Data Drop	0.25	07/22/19
Totals	5	8,000	1.75	

TABLE 3: METER OVERFLOW DATA SUMMARY

CSO-045 - Main St. at Oliver/Putnam St.

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
1.47	1	141,293	1.33	04/15/19
0.48	1	11,730	0.17	04/20/19
1.04	1	2,177	0.08	04/22/19
1.1	1	49,080	0.92	04/26/19
0.51	1	31,001	0.42	04/27/19
0.23	1	5,369	0.08	05/23/19
0.84	1	100,090	1.17	06/02/19
0.83	1	96,235	0.50	06/06/19
0.61	1	14,854	0.17	06/11/19
0.54	1	24,590	0.25	06/25/19
0.33	1	42,417	0.25	06/29/19
0.39	1	72,673	0.42	07/06/19
0.15	1	78	0.08	07/11/19
0.21	1	6,096	0.33	07/12/19
3.07	1	489,859	3.68	7/22/2019 & 7/23/19
0.67	1	15,902	1.33	08/07/19
0.07	1	60	0.08	8/10/19
0.45	1	133,200	0.75	08/17/19
0.39	1	86,107	0.33	08/19/19
0.67	1	117,207	0.25	08/21/19
0.86	1	49,205	0.75	08/28/19
0.45	1	66,827	0.42	09/04/19
0.6	1	46,003	0.92	10/07/19
2.69	1	884,985	4.75	10/17/19
0.66	1	14,648	0.33	10/23/19
1.26	1	15,787	1.58	10/27/19
0.6	1	5,365	0.42	10/31/19
0.42	1	2,272	0.08	11/19/19
1.56	1	109,668	1.33	11/24/19
0.27	1	4,048	0.17	11/27/19
0.29	1	5,723	0.92	12/10/19
2.48	1	753,278	7.67	12/14/19
1.08	1	401,884	2.33	01/25/20
Totals	33	3,799,709	34.26	

CSO-048 - 85 Water St at Market Basket

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
No Recorded Events				
Totals	0	0	0.00	

TABLE 3: METER OVERFLOW DATA SUMMARY

CSO-064 - Water Street Easement at Chamber

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
0.31	1	160,683	1.25	03/15/19
1.47	1	530,610	3.00	04/15/19
0.48	1	13,587	0.17	04/20/19
1.04	1	15,909	0.25	04/22/19
1.1	1	224,686	1.50	04/26/19
0.51	1	270,127	2.17	04/27/19
0.84	1	168,361	0.83	06/02/19
0.83	1	152,949	0.67	06/06/19
0.54	1	46,878	0.33	06/25/19
0.33	1	15,372	0.17	06/29/19
3.07	1	213,397	1.58	07/23/19
2.69	1	442,639	2.92	10/17/19
1.56	1	120,953	0.92	11/24/19
2.48	1	1,102,930	7.50	12/14/19
1.08	1	341,984	2.00	01/25/20
Totals	15	3,821,065	25.25	

CSO-076 - Birch St at Heywood St

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
1.47	1	3,900	0.083	4/15/19
3.07	1	data drop	-	7/22/19
0.39	1	data drop	-	8/19/19
Totals	3	3,900	0.08	

CSO-083 - Main St. at Prichard St.

Rainfall (in.)	Events (No.)	Volume (Gallons)	Duration (Hours)	Date
1.47	1	46,170	0.42	4/15/19
1.1	1	24,910	0.25	4/26/19
0.84	1	37,610	0.33	6/2/19
0.83	1	49,660	0.42	6/6/19
3.07	1	37,715	0.33	7/22/19
0.45	1	11,185	0.08	8/17/19
0.39	1	24,660	0.17	8/19/19
0.45	1	25,000	0.17	9/4/19
2.69	1	26,280	0.33	10/17/19
2.48	1	data drop	-	12/14/19
Totals	10	283,190	2.50	