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Fitchburg

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February 28, 2019

U. S. Environmental Protection Agency, Region 1
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Mail code OES04-04
Boston, Massachusetts 02109-3912
Attn: Neil Handler

Massachusetts D.E.P., CERO
8 New Bond Street
Worcester, MA 01606
Attn: David Boyer

Subject: Semi-Annual Progress Report
August 2018 – January 2019 Reporting Period
Consent Decree, IX. REPORTING, Paragraph 70

Dear Mr. Handler and Mr. Boyer,

In accordance with Section VII, paragraph 70 of the Remedial Measures of the Consent Decree (Decree) signed by Fitchburg's Mayor on June 1, 2012, this submission provides EPA and the MassDEP with a report on the City's compliance with Section VII during the preceding six months (August 2018 thru January 2019 Reporting Period) as described by Paragraph 70.

The report organization structure is formatted to separately address each relevant section, as it appears in the decree, and includes all pertinent attachments.

As requested in the February 2013 thru July 2013 Reporting Period, the City is not including a GIS map of water resources and topographic features, as the data contained therein has not changed from the original GIS mapping submission and will not likely change in the foreseeable future. In the event there are significant changes in either water resources or topography, the City shall provide GIS mapping submission reflecting those changes in that reporting period's submission with narrative explanation of said changes. Additionally, the City is also not including the "Base Map" GIS map (Map 1 of 4) of parcel & roadways data and municipal boundaries which do not change frequently. In the event there are significant changes in either property parcels divisions or roadways data (most likely due to property subdivision and development), the City shall provide GIS mapping submission reflecting those changes in that reporting period's submission with narrative explanation of said changes.

GIS maps updates, hard copies will be provided together with a printed copy of this report, via U.S. mail. GIS maps updates will also be provided with the electronic submissions (via email) of this report.

Semi-Annual Progress Report
August 2018 through January 2019 Reporting Period

A. SEWER SYSTEM

Staffing

During the reporting period, the Collection System Team was operating at a much reduced capacity, with a team of four operators for a portion of the reporting period, and then a team of two operators. Currently the team consists of one operator. The team has been operating in a reduced capacity since February 2017. Currently, a team member is out on disability, however a new operator joined the Collections Team in February 2019, and a second operator is starting in early March 2019.

With a team of four operators (including one operator out on disability), two positions within the Collections team are still not filled. The City is currently having internal staffing planning discussions to fill these two positions, and use positions on a part time basis to conduct storm drain system work or other work needed within the DPW. The City plans to advertise these two additional job postings for collection system operators in March 2019.

Long-Term Sewer System Preventative Maintenance Plan

The City's Long-Term Sewer System Preventive Maintenance Plan, submitted in January 2012, has been distributed to all collection system operators and copies are maintained in each vehicle for quick reference. This document is a "living/breathing document", and was most recently updated and submitted to the MassDEP and the EPA in March 2017.

Priority Cleaning Plan

The City's Priority Cleaning Plan, submitted in January 2012, has been distributed to all collection system operators and copies are maintained in each vehicle for quick reference. This document is a "living/breathing document", and was most recently updated and submitted to the MassDEP and the EPA in March 2017.

Routine Cleaning Plan

The City's Routine Cleaning Plan, submitted in January 2012, has been distributed to all collection system operators and copies are maintained in each vehicle for quick reference. This document is a "living/breathing document", and was most recently updated and submitted to the MassDEP and the EPA in March 2017.

Geographical Information Systems (GIS) Maps

Three maps were updated for this semi-annual report.

1.) "Combined and Separate Sewers" (Map 2 of 4): The City's sewer system is shown including combined and separated sewers along with pipe sizes and materials. Regulator manholes, combination manholes, and standard sewer manholes are also shown. Lastly, the City is close to completion of sewer rim elevations with its GPS unit. Most of the few remaining manholes to locate are buried and will be uncovered in the coming construction

season. To date we have located 102-percent of all sewer manholes. These locations are shown. Note that the sewer manholes location percentage exceeds 100-percent of sewer manholes, because we have also been locating private manholes during our investigations in order to have a more complete picture of the sanitary system.

2.) "Storm Drainage" (Map 3 of 4): This map depicts record drawing storm drain data including the City's current GPS shots of catch basins and drain manholes. We will continue to locate drain structures but the Wastewater Division's main concentration will be to locate all sewer related infrastructure. As part of the City's MS4 Program, a more aggressive GPS assets location survey program has begun under the DPW - Engineering Division.

4.) "Extraneous Flow Investigation, Remediation, and Capital Projects" (Map 4 of 4): This map includes sewer projects that have been accomplished within the reporting period and projects that are planned following the reporting period. During the reporting period the City conducted multiple spot repairs, raised 18 sewer manhole frames and covers, and also separated additional combination manholes. The locations of these improvements are noted on the map.

Also, contained on this "Extraneous Flow Investigation, Remediation, and Capital Improvement Projects" map (Map 4 of 4) is the City's current status of its sewer cleaning and CCTV program. Pipes are color coded based on their condition rating.

The City is working diligently to separate its combined sewers. In early 2013 the City reported 71,097 feet of combined sewer pipe in its system. As of the close of this reporting period, the City has a total remaining combined sewer length of approximately 44,735 feet.

Capacity, Management, Operation & Maintenance (CMOM) Related Activities, and GIS Maps

The collection operators continue to make progress with CCTV inspections and condition coding all 142 miles (approximate length) of sewer pipe within the City. By the close of the reporting period, the City had condition coded approximately 88% of its sewer system. Production has slowed somewhat on CCTV operations, as the vast majority of pipes remaining to be coded are either located within difficult to access easements, egg-shaped pipes, 6-inch diameter pipes, the main interceptor sewer, or odd-shaped brick conduits. Numerous manholes were also inspected during this reporting period. During combination manhole repair or sewer line repair operations, CCTV operations are suspended due to the staffing need for more crew members to conduct the repairs.

As the majority of the remaining sewers to be inspected are outside of the City's capabilities to inspect, the City has actively been outsourcing this work. During the reporting period, the City completed inspecting 10,878 feet of its 37,000 foot trunk sewer using multi-sensor inspection, starting at the West WWTF. The multi-sensor inspection included TV, Sonar, and Radar, in order to assess pipe ovality, concrete loss, and sediment depth. Data from the multi-sensor inspection was submitted on July 30th, 2018, incorporated into the revised Phase I Sewer System Evaluation Study Report. The City has scheduled additional inspection of its trunk sewer in the next reporting period. The City executed a service agreement task order with our engineering consultant to complete the additional trunk sewer investigation work. The work conducted on the trunk sewer is known as "Phase 4" under the Sewer System Evaluation Survey Scope of Work submitted to EPA and the

MassDEP in June 2016. In addition to the below tabulation of sewers cleaned and CCTV'd to date, a graphical representation of the progress on this effort is also attached to this report.

Cleaning and CCTV status summary of the City's 24 sub-watershed areas are provided below, in Table 1 (Sewer Main Inspection - Total Length Inspected To January 31, 2019):

TABLE 1

SEWER MAIN INSPECTION - TOTAL LENGTH INSPECTED JANUARY 31, 2019

Area Number	Total Cleaned and CCTV'd (LF)	Total Sewer Pipe (LF)	Area Percent Completed
1	41,832	54,431	76.85%
2	20,107	20,613	97.55%
3	39,060	48,778	80.08%
4	33,336	43,090	77.36%
5	23,671	31,017	76.32%
6	14,147	18,714	75.60%
7	15,178	17,423	87.11%
8	23,165	23,916	96.86%
9	21,038	25,065	83.93%
10	12,231	19,429	62.95%
11	26,672	28,320	94.18%
12	19,483	20,328	95.84%
13	32,856	40,698	80.73%
14	31,380	32,367	96.95%
15	30,308	31,530	96.12%
16	29,307	30,901	94.84%
17	29,729	39,067	76.10%
18	49,219	51,201	96.13%
19	18,489	19,886	92.97%
20	43,411	45,409	95.60%
21	24,975	25,222	99.02%
22	44,200	44,526	99.27%
23	19,822	20,875	94.96%
24	17,404	18,666	93.24%
Totals in Feet	**661,020**	**751,472**	**88.0%**
Totals in Miles	**125.2**	**142.3**	**88.0%**

The following table (Table 2) summarizes manhole inspections to date:

TABLE 2			
CITY & WRIGHT-PIERCE SEWER MANHOLE INSPECTION TOTALS			
Inspected by	**Total Inspected**	**Total Manholes**	**Percent of Inspections Completed**
City of Fitchburg	627	3,600	12.05%
Overlap (manholes inspected by both City and Consultant)	46	3,600	1.28%
Consultant	965	3,600	26.81%
Inspection Totals	**1,546**	**3,600**	**42.9%**

Table 2 above includes both City-inspected manholes, as well as past inspections performed by the City's consultant engineers that were conducted in conjunction with past and current projects, including CSS 4D, SSES Phases I and II, and the Beech and Hazel Streets Sewer Separation Project. Between both the City's Engineer, and the City's in-house forces, 42.9% of manholes have been inspected. The City removed manholes inspected during the Hydraulic Model Development from the "inspected totals", as only invert elevations and pipe sizes were noted as part of the study, and not the manhole condition.

The City's past Engineering Consultants has inspected hundreds of manholes for various projects and SSES work. The City and its past Consultant have encountered some difficulty transferring the manhole inspection data from the Consultant's software to the City's GraniteNET system, however all future manhole inspections and pipe inspections conducted by consultants for the City are being conducted in a compatible format for the City's GraniteNET system. This is now a requirement for any consultant or contractor who conducts CCTV work in the City.

Global Positioning Satellite (GPS) System Update

During the past reporting period, the City upgraded its GPS to a faster and more accurate unit made by Stonex. The GPS was purchased in conjunction with the City's DPW - Engineering Division to save costs. The City is continuing to locate all of its sewer manholes, drain manholes and catch basins with its new GPS unit. To date the City has located the following assets:

- 3,243 publicly-owned sewer manholes out of 3,600 – 90.08% completed.
- 2,268 drain manholes (out of an unknown total).
- 3,710 catch basins (out of an unknown total).
- 182 sewer laterals
- 8 sewer clean-outs
- 709 other asset types.

The City's gas company, Unitil, has been CCTV'ing sewer laterals in natural gas project areas, in order to reduce damage to private sewer laterals. As part of these investigations, Unitil marks out the locations of the sewer laterals. The City has been following Unitil and locating the service laterals with the City's GPS, in order to update and improve the City's sewer system map. During

the last reporting period additional laterals were marked out in the north side of the City where Unitil gas work was being conducted.

Service Call Activities

The Collection Operators have been performing service calls for system users with sewer issues. Often the problem is a private matter, as sewer service laterals are private ownership (not City-owned) and the City is not responsible for blockages in private sewer laterals. Nonetheless, the City responds to all calls to determine the cause for the blockage because the cause of a problem for a service call is unknown until the City can investigate the call. Manholes in the street are inspected for surcharging. Inspection frequently includes cleaning the line where the private lateral enters blindly into the public sewer and occasionally includes CCTV'ing the line to look up the private lateral for blockages. If the issue is a private ownership issue, the City will inform the customer that a private infrastructure issue exists and the customer should call a private sewer service or plumbing company.

Following a response to a service call, the collection operators fill out a Service Call Inspection Form which is then inputted in to the City's call-logging software, "See-Click-Fix". SeeClickFix creates a record of the service call including the issue, the date and time, the name and address of the customer, the details of the request and notes on how the matter was handled. If work was performed at the site, SeeClickFix allows entry of who performed the work, and what time the work was completed. The major benefit of SeeClickFix is the ability for residents and business owners to interact with City officials. Constituents can initiate an issue, can see that the City has responded to an issue, and see when an issue is resolved. Also included is a commenting feature which allows residents to express additional information on an issue.

To date, our experience with the SeeClickFix system has been useful in creating an electronic tracking system of service calls. In the next reporting period, the City will be modifying its SeeClickFix forms to better mimic the "SSO Complain Tracking Form" in its Emergency Response Plan, and also it's "Service Call Inspection Form". The City will also be undertaking a web-based training with SeeClickFix, to teach the operators and dispatch how to enter data into SeeClickFix and how to close out an issue.

Asset Management

DPW Wastewater Division adopted the "Asset Management" philosophy and approach to sustain levels of service, while minimizing risk of failure and the corresponding consequence of failure that could result from the failure of a City wastewater infrastructure asset. This methodology will go hand-in-hand with capital planning and financial sustainability of the Wastewater Enterprise, and will help to prioritize and focus the financial resources towards the renewal of assets.

At the end of the previous reporting period, the City received its final asset management model, built on the InfoMaster platform by Innovyze. The model will be a focal point for the City going forward in prioritizing its management and rehabilitation of the collection system. The City has implemented a Microsoft SQL Server in the reporting period in order to have the software loaded on the Wastewater Division's computers. During the reporting period, Innovyze "sunsetted" the InfoMaster platform, and updated the program to "InfoAsset". The City will be conducting a free upgrade to InfoAsset during the reporting period.

Intermittent Stream Connections to Sewer

For five (5) years the City has attempted to gain access to 34 Highview Street, a foreclosed property, to determine if the sanitary lateral from the property was connected to a culverted stream that discharged to the sanitary system. Rehabilitation work has recently been noticed at the property, and the City attempted to gain access to the property during the reporting period, with no success. During the next reporting period the City will work with the Building Department to put a hold on any building permits at the property until access is granted to the Wastewater Division for investigation.

Meter Maintenance

The City has been maintaining its 14 flow meters located at regulator manholes throughout the reporting period. Current meters include 13 ADS Triton Flow meters and one ADS Echo down-looking ultrasonic meter. The table below (Table 3) includes the reporting period's summary of CSO overflows. The reporting period is from August 1, 2018 to January 31, 2019. In accordance with Paragraph 70, Subparagraph d. of the Consent Decree, the City recorded 113 CSO events and total overflow volume of 17,462,431 total gallons. Additional data shown in Table 3 includes notes on whether or not the meter was malfunctioning for a time during the reporting period. During the reporting period, the City had good meter coverage, with little downtime.

TABLE 3 - OVERFLOW DATA FOR REPORTING PERIOD AUGUST 1, 2018 TO JANUARY 31, 2019

Meter	Location	Events	Volume (Gallons)	Notes:
CSO-004	Cleghorn St. at Oak Hill Road	6	29,282	Meter dropped out during event on 1/24/19
CSO-007	Cushing St. at Riverfront Park	1	465	Regulator rehabilitation/closure starting construction Spring 2020
CSO-010	Main St. at River St.	13	3,422,000	Separation project is required to close
CSO-032	543 Main St. at Post Office	19	1,066,111	Separation project is required to close. Meter not responding near end of period.
CSO-039	Water St. at Walnut St.	16	3,528,111	Regulator closure/sewer separation starting construction Spring 2020. Meter issues for 15 days in December.
CSO-041	Benson Rd. near Falulah St.	7	298,000	Installed a downward looking ultrasonic sensor to more accurately calculate overflows. Meter down for December.
CSO-045	Main St. at Oliver/Putnam St.	18	2,517,000	New ADS Echo downlooking sensor installed to assist in calculating overflows in next reporting period
CSO-048	85 Water St.	1	1,178	Regulator closure construction to begin Spring 2020. Reduced overflows since separating CMH upstream in 2018. Meter had connectivity issues for 3 months.

CSO-064	Water St. Easement at former "Halloween World"	18	6,062,244	Regulator on main interceptor sewer. Inflow removal upstream and sewer upsizing necessary for closure.
CSO-076	Birch St. at Heywood St.	3	34,460	Pipe undersized with high I/I in contributory area. No known combined sewer upstream. Issues with connectivity at end of period
CSO-83	Main St. at Prichard St.	11	503,580	Sewer Separation required upstream to close regulator.
	Totals	**113**	**17,462,431**	

The City has also been servicing the meters on a roughly 2-month frequency to help in maintaining high data quality. At times the meter manufacturer (ADS Environmental Services) has conducted visits to the City to troubleshoot problematic meters or conduct new installations.

During December 2018, ADS came to the City to conduct meter maintenance and conduct new meter installations. New meters were installed at the largest Westminster interconnection, the Lunenburg interconnection, and at the industrial flow output line from the Caraustar Paper mill. The purpose of these flow meter installs was to do a short-term "sample check" of flows coming from the communities and paper mill, and any I/I impacts. An ADS Echo level monitor was also installed at CSO-045. The level monitor is very low maintenance as it is an ultrasonic down-looking sensor and only connects wirelessly. The Echo will allow the city to better calculate overflow volumes from CSO-045 by using an automated weir equation method during the next reporting period.

During the reporting period, discussions were had with ADS in an effort to provide better public notification for CSO Events. The technology to provide accurate and instant notification of CSOs is in its infancy, leading the City to explore multiple options for better notification. The City recently signed up for a free 3-month trial period with FlowWorks, which provides public notification and web-based data monitoring for CSOs. During the next reporting period, the City will get the trial up and running to determine if paying for the service is worthwhile.

Sewer Structural Repairs

During the reporting period, the City conducted various structural repairs to strengthen the integrity of its sewer system. The major structural repairs conducted were:

- Replacement of 10 linear feet of sewer on Jackson Avenue at Phelps Street. The sewer in this location was in very poor condition, which led to frequent SSOs. The spot repair addressed the main area of concern by removing a defect which caused rags and solids build-up.
- Replacement of 30-feet of a collapsed 26" x 39" egg-shaped brick sewer on Elm Street. The remaining portions of the sewer segment appear to be in decent condition.

Other collection system repair improvements performed in the period include:

- Replacement of 36 frames and covers, that had defects or that contained vent holes. The covers were replaced during paving or replaced by the Wastewater Division during daily duties.

Post Construction Monitoring Plan & Post Construction Monitoring Report

In late May 2016, the City was approved to proceed with the Post-Construction Monitoring Plan (PCMP) field sampling program. The City requested and received an extension from MassDEP and EPA to extend the performance of PCMP sampling, as working hours, lab hours, and timeliness of events limits the time available to sample a wet weather event to only 4 or 5 hours a day. The City finished the final wet weather sampling within calendar 2017, and the Post-Construction Monitoring Report (PCMR) was submitted for review and approval at the end of February 2018. To date, we have not received a response from either the MassDEP or EPA.

Emergency Response Plan

The City's Emergency Response Plan, submitted in August 2011, subsequently revised in January 2012, has been distributed to all collection system operators and copies are maintained in each vehicle for quick reference. This document is a "living/breathing document", and was most recently updated and submitted to the MassDEP and the EPA in March 2017.

Hydraulic Model & Hydraulic Capacity Assessment

As required under Paragraphs 41 through 46 of the Consent Decree, the City is required to develop a hydraulic model for all pipes in the City 12-inches and larger, and for all CSOs. During the previous reporting period, the City received conditional approval of its Hydraulic Model. The model was approved based on the understanding that additional model runs and analysis would be conducted under the Capacity Assessment Report which was submitted (under separate cover) at the end of August 2018. The City is still waiting to hear from the EPA and the MassDEP on comments for the Capacity Assessment.

Sewer System Evaluation Survey

As required under Paragraphs 26 and 27 of the Consent Decree, the City was required to submit a SSES Scope of Work (SOW) for approval, to conduct an SSES in accordance with the approved SSES SOW, and to submit a SSES report for approval by EPA and MassDEP. The City submitted the draft SSES SOW before the December 31, 2015 deadline. The final SSES SOW was submitted to the MassDEP and EPA on August 12, 2016, and there were subsequent electronic correspondence between the City, Wright-Pierce and MassDEP later in the month of August 2016. However, to date, the City has received neither a formal approval, nor a conditional approval of the SSES Scope of Work. The City has proceeded forward with the phased SSES investigative work entailed in the SSES Scope of Work. As a strategic deviation, largely due to the criticality of the trunk line sewer asset, the City is prioritizing the investigative work associated with the trunk sewer line ("Phase 4" in the Scope of Work), ahead of the "Phase 3" SSES work (meter basins M06, M14, and M18). This trunk line sewer investigative work commenced during the previous reporting period as mentioned under the "CMOM" section on Page 3, and is expected to be completed during the next reporting period. A contract has been executed with the City's Engineering Consultant to conduct the remaining trunk sewer investigation. Currently the Consultant is obtaining quotes and developing sub-agreements with contractors to complete the work. In addition to being a high priority for the City, MassDEP requested a portion of the trunk sewer be inspected as part of their SSES Phase 1 comments.

The SSES Phase 1 report was submitted at the end of 2016. Comments from the MassDEP have been received and will be responded to concurrently with any comments that EPA may have. Investigative work for Phase II of the SSES has been completed, with the report likely to be submitted to the MassDEP and the EPA in the next reporting period.

Combination Manholes Program

There was four rain events during the reporting period that met the criteria necessary to perform combination manhole inspections (2-inches in a 24-hour period). In addition, the City conducted checks after a 1.58 inch rain storm in December. Rainfall data is recorded at the City's primary rain gage at the Department of Public Works. An additional rain gauge is maintained at the east end of the City at the Summer Street Fire Station.

During the reporting period, there were a total of 112 flow transferences to either the drain side, or sewer side of the manholes. These overflows are taking place in a total of 180 remaining combination manholes. Attachment 1 includes all combination sewer manhole checks in the remaining combination manholes.

The NPDES permit states that the City has two years to fix CMHs if they show evidence of transference. In the past, the City has prioritized CMHs that transfer sanitary water to the storm drain over CMHs that transfer storm drain water to the sanitary sewer. As a result, in the past the City has first prioritized those manholes that show evidence of transference to the drain side of a manhole. In the past 4 years however, the City has received multiple prices for separating combination manholes. It has been determined that pricing is very unfavorable when mobilizing and demobilizing multiple times throughout the City to separate manholes. In addition, separating one manhole on a street does not solve transference issues if other combination manholes remain on the same street. Due to the aforementioned reasons, the City has been prioritizing separation of manholes based on location and concentrating in specific areas to receive better pricing, but also drastically reduce the chance for transference from a specific area.

During the reporting period, good progress was made on separating combination manholes throughout the City. Fourteen manholes were separated during the reporting period via in-house forces, the City's paving contractor, and the City's "Combination Manhole Separation Project" contractor. All manholes separated during the reporting period, and also all manholes planned to be separated during the next reporting period are noted on the "***Extraneous Flow Investigation, Remediation, and Capital Improvement Projects***" map (Map 4 of 4). Additional manholes are likely to be separated during the next reporting period that are not shown on the map. The City has currently budgeted over $350,000 for each of the next three fiscal years for combination manhole separation. In Table 4 below, during the reporting period, the following combination manholes were separated:

TABLE 4

CMH No.	Location
111	Lyman Street/Dudley Street Intersection
52	Elm Street, 100 South of Mattson
105	95 Longwood Avenue
101	113 Longwood Avenue
102	Longwood Avenue/Caswell Street Intersection

85	Klondike/Thorndike
47	24 Clearview Avenue
100	Longwood/Lyman
104	148 Longwood Avenue
103	49 Osgood Street
136	Oak Hill Road/England Avenue Intersection
122	26 Macdonald Avenue
132	Oak Hill Road/Bernadette Street Intersection
303	381 Shea Street

The City is also continuing in negotiations with the MassDOT Highway Division, as the City is pursuing separating an additional 6 combination manholes on Lunenburg Street (Route 2A) prior to paving of the road by the state. The City planned to conduct these combination manhole separations during the previous reporting period, however prolonged discussions with MassDOT has delayed this project. The work has been delayed as MassDOT is considering increasing the drain line size in this area, conducting intersection and streetscape improvements on Lunenburg Street, and then possibly conveying ownership of the road to the City. During the reporting period, the City has been in communications with MassDOT to set up a project meeting to discuss the issues on Lunenburg Street. During the last reporting period, steel plates were installed in two of the combination manholes that transferred the most to prevent storm water entering the sanitary system from the drain side of the combination manhole. The remaining combination manholes on Lunenburg Street are at a high enough elevation where water will exit catch basins on the lower manholes before transferring flow over the weir walls on the remaining manholes.

The City also has plans to separate additional combination manholes using DPW crews, many of the combination manholes are shallow in depth, and relatively simple for separation. In the coming reporting period the City expects to make additional progress in separating manholes.

Status of Regulators and Outfalls

During the last reporting period, the City executed an agreement with Weston & Sampson to design the City's next sewer separation and rehabilitation project in the areas of CSO Regulators 039, 007, 048, and 011, for an expected 2020 construction start date. The reasoning for the targeting of these regulators is as follows:

- CSO-039 is one of the most active regulators in the City, and has a history of dry-weather overflow events due to poor regulator configuration leading to blockages. MassDOT is replacing the bridge at CSO Regulator 039's location, prompting the City to coordinate with MassDOT to close the regulator and re-route or replace the sewer suspended from the bridge.
- CSO-007 is located adjacent to the CSO-039 project area and consists of a problematic chamber configuration prone to blockages. The sewer upstream on South Street is also in very poor condition.
- CSO-048 is relatively inactive but is also located within the MassDOT Project area, prompting the City to schedule this regulator's closure.
- CSO-011 is closed, however on an approximate annual basis, basement backups occur due to combined sewer in the former CSO-011 area.

During the current reporting period, the City requested a proposal from the Site Engineer for the City Hall Redevelopment project. The project is "design-build", and is starting construction in Spring 2019. As part of the project, the City is separating the combined sewers around City Call which will remove 8 catch basins with a large amount of inflow from the sanitary system. In addition, roof leaders from the City Hall building and the adjacent property will be directed to the storm drain system.

Subsequent to DEP and EPA approval (or conditional approval) of the City's Capacity Assessment in the next reporting period, the City intends to utilize the hydraulic model as a tool in determining how much combined sewer separation and inflow removal work is necessary for closure of each of the remaining regulators.

Sewer Rate Increase

During the previous reporting period, the City developed a rate study model which incorporated estimated expenses in order to further the City's goals in regard to Consent Decree, NPDES Permit and Clean Water Act Compliance. The rate is expected to increase approximately 42% over five years, and be close to (but under) the 2% Medium Household Income threshold for the City.

On April 17th, 2018, City Council passed an Ordinance revision, amending and adopting the sewer use rates as presented in Table 5 below:

TABLE 5

Minimum Monthly Sewer Use Charges (includes usage of up to and including 300 cubic feet per month)					
Current Rate	June 1, 2018	June 1, 2019	June 1, 2020	June 1, 2021	June 1, 2022
$18.85	$20.36	$21.99	$23.53	$25.17	$26.81

Monthly Sewer Rate to be charged for usage in excess of 300 cubic feet per month						
	Current Rate	June 1, 2018	June 1, 2019	June 1, 2020	June 1, 2021	June 1, 2022
Rate per 100 cubic feet (which equals 748 gallons)	$7.30	$7.88	$8.51	$9.11	$9.75	$10.38

Monthly 'Sewer-Only' Sewer Use Charges					
Current Rate	June 1, 2018	June 1, 2019	June 1, 2020	June 1, 2021	June 1, 2022
$60.83	$65.67	$70.92	$75.92	$81.25	$86.50

B. POTW TREATMENT PLANT

Chemically Enhanced Primary Treatment (CEPT) Upgrade Project

As noted in the City's February 2017 Semi-Annual Remedial Measures reporting on this Consent Decree project, we herein and henceforth limit reporting to operational comment updates, as noted in the following paragraph.

Plant operations have maintained a continuous CEPT mode for the plant process. Wet-weather CEPT operations appear to be increasingly effective, and operations staff appear to have addressed process issues that relate to low pH. The overall compliance of the treatment operation appears to be significantly improved but the SSU Project which began on March 3, 2017 requires us to take a portion of our treatment process offline. The reduced treatment process has lowered our treatment capacity but the plant effluent quality this period remains in compliance with the interim 0.48 ppm phosphorus limit.

Secondary Systems Upgrades (SSU) Project

The SSU Project commenced in February 2017.

The City procured the renewal flood insurance policies certificates, as required by the MassDEP – Division of Municipal Services. The policies effective dates run from January 4, 2019 thru January 4, 2020. The policies were through the National Flood Insurance Program, and were for the following buildings within the Easterly Wastewater Treatment Facility:

Chlorination Building ……...…….. Policy No. 8705863123
Blower Building ……...…. Policy No. 8705863124
Process Building & Primary Gallery ….. Policy No. 8705863125

Through the end of the current reporting period, the SSU Project has progressed to approximately 75% of Substantial Completion (and 70% of Final Completion), and the work completed represents approximately 82% of the construction contract price.

By the SSU Contract's Contract Days, the Project is to be substantially complete within 822 consecutive calendar days, on or before May 15, 2019, and is to be final complete within 974 consecutive calendar days, on or before October 14, 2019.

As the SSU Project progresses, we have seen substantial treatment process improvements as the new *Selector Zones* become operational. The addition of selector zones has enabled us to reduce our chemical addition of Ferric Chloride to the process trains, it has resulted in better settling in the secondary clarifiers and has improved our nutrient removal of Phosphorus and Nitrogen in the plant effluent.

Long-Term Preventative Maintenance Plan

The Long Term Preventative Maintenance Plan has been implemented and practices and protocols contained therein are being carried out. The system is continually being populated with new systems and equipment as work is being performed in an effort to build a completed history of maintenance procedures.

The plan is also reviewed with any new employees to insure they are familiar with the practice and procedures in the plan.

Preventative maintenance work completed between August 1, 2018 and January 31, 2019 included:

August 2018

- Street Lights – repair contactor
- #1 Aeration Blower – Bearings serviced
- MassDEP - Annual inspection
- Main Trunk Line to Siphon – cleared brush and trees
- Du–All Odor Control – replaced leaking ball valve
- CEPT Air Handler – replaced belts
- CEPT Hypo Transfer Pump – replaced pump
- CEPT Flushed & cleaned Poly Systems
- Installing Bay #5 Floor Plates (ongoing)
- West Plant Chemical Building – replaced leaking water meter
- Completed 67 Preventative Maintenance work orders and 13 Demand work orders.

September 2018

- Bay #5 Floor Plate Installation - Completed
- First Stage Yard Hydrants - Repaired
- Chlorine Contact Chamber – Repaired Hypo Leak rapid mixer
- 2nd Stage Aeration Basins – Removed obsolete step gate frames for SSU Project
- Aerated Grit Chamber Blower #2 – Replaced motor bearings & belts
- Primary Galley Sump Pump – Repaired check valve
- Main Channel By-Pass Gate – Adjusted gate
- Bay #4 – Installed new unit heater
- Spiral Staircase – Replaced leaking drain line
- Fournier Quincy Compressor – Replaced drain line
- Completed 65 preventative maintenance work orders and 14 demand work orders.

October 2018

- Primary Scum Skimmer Actuators – Changed oil in preparation for cold season
- Chemical Building – Serviced Chlorine Analyzer, replaced hoses hypo pumps
- East Plant Elevator – Annual State Safety Inspection
- #3 Fournier Press – Replaced vertical restrictors, deflector blocks, Knives and align press
- 1st Stage Invent Mixers – Annual oil change
- #2 Fournier Press – Replaced VFD Drive and Poly Mag Meter
- #2 GBT – Replaced ripped belt and diagnose communication issue
- #2 Fournier Press - Replaced vertical restrictors, deflector blocks, knives and align press
- Bar Rack Room Air Handler – Replaced VFD Drive
- West Plant Boiler – Replaced induced draft belt and adjusted
- #4 Sampler – Diagnose And Repaired flow pacing issue
- Completed 71 preventative maintenance work orders and 13 demand work orders.

November 2018

- #3 Fournier Press – 3-way valve replaced relay
- Du-all Odor Control – Replaced hypo hoses

- #3 Primary Basin – Replaced wear shoes side B, replaced cross collector wear shoes replaced drive chain side A.
- #1 Aerated Grit Chamber - Drained and started grit removal
- Bay #5 – Preparing and painting walls and floor, ongoing
- Bar Rack Area – Replaced O_2 sensors
- Chlorine Contact Chamber Rapid Mixer – Removed rags from impeller
- Septage receiving station – Removed rags and debris from piping
- #2 Fournier Polymer System – Replaced cracked pipe before pressure gage
- Completed 32 preventative maintenance work orders and 14 demand work orders.

December 2018

- #1 Aerated Grit Chamber - Completed grit removal and cleaning
- #2 Aerated Grit Chamber – Drained, cleaned and removed grit
- Aerated Grit Chamber Clamshell Hoist – Annual service inspection
- Bay #5 Painting - Completed
- #1 Fournier Press Poly Pump – Replaced cracked piping
- EPA Audit Visit – Tours, inspection, and meetings
- Process Wing – Replaced motors in wall heater units
- West Plant Chemical Building – Rebuilt city water backflow RPZ valve
- Blend Tank Effluent Valve – Repaired broken pin in operator assembly
- CEPT Building Magnesium Hydroxide Mixer – Repaired mixing shaft to gear drive fastener
- Completed 65 preventative maintenance work orders and 19 demand work orders.

January 2019

- 1st Stage side 2 Clarifier – Repositioned RAS Box seal
- Blend Tank Room – Cleaned and Prepped for painting, Ongoing
- Bay #4 & #5 – Upgraded lighting to high output LED Bulbs
- West Plant Sewer Ejectors – Repaired blower compressors
- Primary Basin #3 Pump – Removed rags and debris from pump
- West Plant Chemical Building – Repaired broken waterline and down sized Backflow RPZ valve
- CEPT Poly Systems – Flushed lines to stages
- Gravity Belt Thickeners Cameras – Replaced video mixer and camera lighting
- 4" Drain line to main channel – Replaced approximately 30 feet of pipe and fittings
- #2 Primary Basin 2B – Repaired long flight drive chain idler adjustment gear assembly
- Completed 60 preventative maintenance work orders and 15 demand work orders.

Other accomplishments of note include:

- Generator service agreement for new Standby Power Electrical Generators at the East WWTF – Assigned with 3 year contract.
- Installed Bay #5 Floor Plates - Completed

Looking forward to the coming six months, the City plans to:

East Plant

- Primary Basin Gear Reducers – Ordered and should arrive near the end of June 2019. Plan to install all 3 this year.
- Incinerator area roof replacement
- 1st stage and Primary building roof replacement
- Lab and Control room upgrade design
- Administration & Process wing reside the exterior
- Secondary Systems Upgrades (SSU) Project started in February 2017 (Ongoing) Completion date October 2019.

Anaerobic Digestion Facility Feasibility Study, for Siting at the Westerly Wastewater Treatment Facility.

To date, Wastewater has continued to be unable to attain a decision consensus from the City, concerning willingness to pursue this long-term treatment sludge residuals management alternative, and the initiative has been "back-burnered". However, there has been sustained interest in the prospective project within the City, and from energy service performance contractor representatives and private development investors interested in exploring Fitchburg as a location to site an anaerobic digestion facility. Additionally, Wastewater has continued to explore alternative approaches that may enable long-term sustainability and costs control with technologies such as low-temperature sludge drying in order to reduce volume and weight, provide disinfection of sludge, and to produce stabilized sludge residuals that are suitable for beneficial reutilization, diverting this treatment byproduct material away from solid waste landfill disposal or incineration disposition pathways.

On a related front, the City and the Town of Westminster are continuing to pursue an expansion of the jointly owned "Fitchburg/Westminster Landfill". An expansion of the landfill's volumetric capacity will correspondingly also extend the landfill's useful life, however such an expansion will only allow a finite term extension, and will not be a long-term, sustainable management practice for the disposal of wastewater treatment sludge residuals. As a result, the DPW – Wastewater Division continues to work with the Mayor's Office, the City's Community Development Office, and the Purchasing Department Office to pursue opportunities for a long-term, sustainable solution for the wastewater treatment sludge residuals and useful repurposing and revitalizing the underutilized Westerly Wastewater Treatment Plant property.

In the next reporting period, the Fitchburg Community Development Department will be submitting a MassDevelopment Technical Assistance Grant application for pursuing an Request For Proposals/Request for Qualifications Development and Process Management for the repurposing of the existing Westerly Wastewater Treatment Facility, for development of an Anaerobic Digestion Facility on the property.

City Ordinance Revisions

In the previous reporting period, on October 10, 2017, the City executed a professional services task with on-call engineering firm, Arcadis, for assistance in reviewing and updated City Ordinances (specifically Chapter 147 – Sewers, and Chapter 154 – Stormwater Management and Erosion Control). The scope also included assistance for development of "Sewer Use Rules &

Regulations" to better assist the DPW- Wastewater Division in the POTW & Collection System operation & management, and regulation of sewer system users.

In July 2016, the City executed a professional service task with on-call engineering firm, Wright-Pierce, to develop technically-based local limits for implementation into the City's Industrial Pretreatment Program for protection of the sewer collection system, the wastewater treatment plant, and City workers. In the previous reporting period (August 2018 – January 2019), the City submitted the final Local Limits Report to USEPA Region 1 for review and approval (submitted August 27th, 2018) to the Office of the EPA Region 1 Industrial Pretreatment Coordinator.

In the reporting period, DPW Wastewater has finalized the language to be presented to City Council, for an updating of City Code ("ordinance").

In the next reporting period, the following ordinance updating milestones are projected:

- The updated ordinance language (petition) was submitted to City Council, and Council referred the petition to the Council's Legislative Affairs Committee.
- The petition will then have a hearing, and the Legislative Affairs Committee will provide a recommendation report to Council-as-a-Whole for voting on the proposed updated ordinance.

Wet-Weather Operations

The City has not introduced any septage or other high strength side streams not associated with plant operations during times that any portion of the flow was bypassing the secondary treatment system, or during times when a secondary system bypass was likely to occur within two hours. The Secondary System Upgrade (SSU) Project began on March 3, 2017. The project requires us to take a portion of our treatment process offline for construction upgrades. This first phase of this project has been completed with the installation of selector zones within the 1st Stage Aeration Tanks (Side 1 and Side 2) on March 14th, 2018. The second phase of the project required us to take 2nd Stage, Side 1 Aeration Tank and Clarifier offline, and this was accomplished on March 16th, 2018 and was completed on October 2, 2018. The last phase of selector zone installation began on October 4, 2019 in 2nd Stage Side 2, and presently remains offline. The reduced treatment process has also lowered our treatment capacity. We are continuing this practice as required, and will conduct periodic review sessions with plant staff to ensure all personnel are aware of wet weather operational procedures.

Since the implementation of the State Point Analysis system, developed by Wright-Pierce, plant operations have seen reductions in the length of time of secondary system bypasses, reduction in E. Coli violations, and reductions in both BOD and TSS violations of the NPDES permit.

C. WASTEWATER MANAGEMENT PLAN

In accordance with the Consent Decree, a first draft of the City's *Wastewater Management Plan* (WWMP) is to be submitted to the EPA and the MassDEP for review and approval. This plan will lay the framework for the City to come into compliance with the Federal Clean Water Act and the terms of the Consent Decree.

The WWMP is required by the Consent Decree to include facility upgrades required to meet seasonal total phosphorus concentration-based limits and collection system upgrades necessary to meet federal water quality standards for combined sewer overflows (CSOs). As part of the WWMP, a CSO Long-Term Control Plan (LTCP) is being created in accordance with EPA's Combined Sewer Overflows Guidance for Long-Term Control Plan, EPA's Coordinating CSO Long-Term Planning with Water Quality Standards Reviews, MassDEP's Guidance for Abatement of Pollution from CSO Discharges, and other relevant state and federal CSO guidance reports.

The Hydraulic Capacity Assessment is a vital component for the creation of the WWMP and LTCP and is expected to be completed on or before September 2, 2018. This submittal date was delayed due to the prolonged process of Hydraulic Model approval review discussions, and supplementary modeling analyses. As a result, the City formally requested a 9-month extension for the WWMP on May 22, 2018. This would extend the WWMP project deadline to March 28, 2019. The City has not received confirmation of acceptance of the extension request from EPA and MassDEP, and Weston & Sampson has been, on behalf of the City, following up monthly with EPA and MassDEP regarding a formal response.

The City's engineering consultant, Weston & Sampson, is currently working on the WWMP project, and the City is preparing to submit the first WWMP deliverable by or before March 28, 2019.

Estimated costs for sewer separation projects and CSO Control Alternatives will be analyzed to determine their extent of social and economic impact on the community. Based on the findings of these steps, recommendations will be formulated for the City's approach for future CSO mitigation. In addition, recommendations for improvements to the Easterly WWTF will be created based on current loads and projected requirements of the City's next NPDES Permit. These tasks will be incorporated into the CSO LTCP.

The Consent Decree's WWMP Remedial Measure also stipulates (via Para. 55.a) that, in developing the WWMP, the City is encouraged to consider evaluating potential Best Management Practices, including the use of all appropriate "green infrastructure" and "low-impact development" techniques currently available to reduce inflow.

WPI Students Team, "Interactive Qualifying Project" (or, "IQP"), Spring 2018

Within the previous reporting period, the City (DPW - Wastewater Division, DPW - Engineering Division, and the Fitchburg Public Schools) collaborated with Worcester Polytechnic Institute (WPI) on a WPI undergraduate students project. The WPI Students project team developed an environmental education program consisting of a Student Workbook and complementary Educator Resource Guide. First and foremost, these materials improved the City of Fitchburg's compliance with the MS4 Permit's first minimum control measure, Public Education and Outreach. Together the Student Workbook and Educator Guide combine interdisciplinary learning and hands-on, outdoor activities to instill environmental stewardship among Fitchburg's younger generations. These project deliverables will continue to be a resource to the Fitchburg Public Schools in their Science, Technology Engineering and Math curriculum, to educate Fitchburg youth in environmental education, including subjects that relate to "green infrastructure".

In addition, in the course of the project, the WPI Students project team also engaged with the Fitchburg High School's Envirothon Team (High School A.P. Science Students) to produce a short educational video, titled "Runoff Randy and the Rain Wranglers", which can be viewed on YouTube at: https://youtu.be/pUpjm0b7YJ4 .

The WPI Students project team also participated in the Boys & Girls Club of Fitchburg and Leominster's Fifth Annual "Central Massachusetts Science Festival", that was held on April 14th, 2018. At the Science Festival, the WPI Students project team had a presentation booth, and focused their activities on stormwater runoff and pollution prevention education.

The students team's project culminated in a project presentation to the Fitchburg Public Schools Committee on April 23, 2018, and the students team's project had a good article written and published in the local newspaper (Sentinel & Enterprise) in an article that ran on April 7, 2018, titled "WPI Students' Stormwater Project to Help Fitchburg".

This project was a great success, and also served to create and strengthen networking bonds between City Departments, the Nashua River Watershed Association, the Fitchburg Conservation Commission, which will help future efforts on the "green infrastructure" development and implementation front.

In the next reporting period, DPW - Wastewater Division will explore an opportunity to partner again with the Fitchburg Public Schools to site and install a "green infrastructure" learning laboratory that can work with the FPS STEM curricula program for Fitchburg students.

Fitchburg City 'Rain Barrels Program', 2018 & 2019

In the previous reporting period, the City (collaboration between the DPW - Wastewater Division, DPW - Engineering Division, and the Fitchburg Conservation Commission) reporting launching a 'Rain Barrels Program' in the Spring of 2018. The City partnered with the 'Great American Rain Barrel Company' to facilitate a program where residents can purchase rain barrels to harvest rainwater runoff from rooftops for beneficial use in irrigating the private property where the runoff was captured, thereby diverting this runoff from the MS4 system, and promoting the infiltration and bioattenuation of the runoff.

In the program's inaugural year, the collaborating City partners offered the rain barrels at discounted purchase pricing, and sold a total of 118 rain barrels, which were distributed to the purchasers in early June 2018. The City partners were pleased with the success of the program's inaugural year, and intend to continue the program in the Spring of 2019. Program planning for the 2019 will be commencing in March 2019.

This 'Rain Barrels Program' will also be a key development and networking tool to help grow 'green infrastructure' in the City into other forms that will serve to help attenuate and infiltrate stormwater runoff on private properties, helping to prevent that water from entering into and adversely affecting both the City's sewer system and the hydraulic loading to the WWTF that is associated with wet weather events.

City Ordinances & "Green Infrastructure"

As noted previously in this report, the development of updated City Ordinances will help to facilitate and encourage the implementation of "green infrastructure" and "low-impact development" techniques. As this City initiative develops, the City's DPW – Wastewater Division will have a key participating and leadership role in this program, which will also involve a number of other program partners from within the City departments and offices, but also with private partners and stakeholders from the community.

D. ILLICIT CONNECTIONS

During the period, the City redirected one illicit connection at 45 Shattuck Street from the drainage system to the sanitary system, using in-house forces.

Going forward, in the course of ongoing and periodic repeat CCTV work, any suspected illicit connections will be identified for further investigation, to confirm or rule out as an illicit connection. If determined to be illicit connections, the area infrastructure will be reviewed and evaluated for the feasibility of redirecting confirmed illicit connections.

E. INTERIM PHOSPHORUS LIMITS

The City has been complying with the interim phosphorus limits contained in Attachment 9b of the Consent Decree and have had a 12-month rolling phosphorus average of 0.48 ppm, which is below the interim phosphorus limit of 0.5 ppm. The City attributes the sustained compliance during our reduced treatment capacity, with respect to interim phosphorus limits compliance, to contributions from the CEPT primary treatment improvements, the State Point system, and the hard work of the plant operations and maintenance personnel.

VIII. SUPPLEMENTAL ENVIRONMENTAL PROJECT (SEP)

No SEP activities took place during the reporting period. Grow-in environmental conditions of the Summer and Fall months of 2018 have continued to be very favorable. Wastewater asserts the project has been a success, and has received the WPA Form 8B – Certificate of Compliance closeout documents for the SEP's Order of Conditions from the Fitchburg Conservation Commission. During the reporting period, Wastewater recorded the WPA Form 8B at the Worcester North Registry of Deeds.

Stabilized Brook Bank, Facing North
(Photo taken 8/24/2018).

Stabilized Brook Bank, Facing South
(Photo taken 8/24/2018).

If there are any comments or questions regarding the above subject please contact the undersigned at (978) 345-9622.

Sincerely,

FITCHBURG DPW, WASTEWATER DIVISION

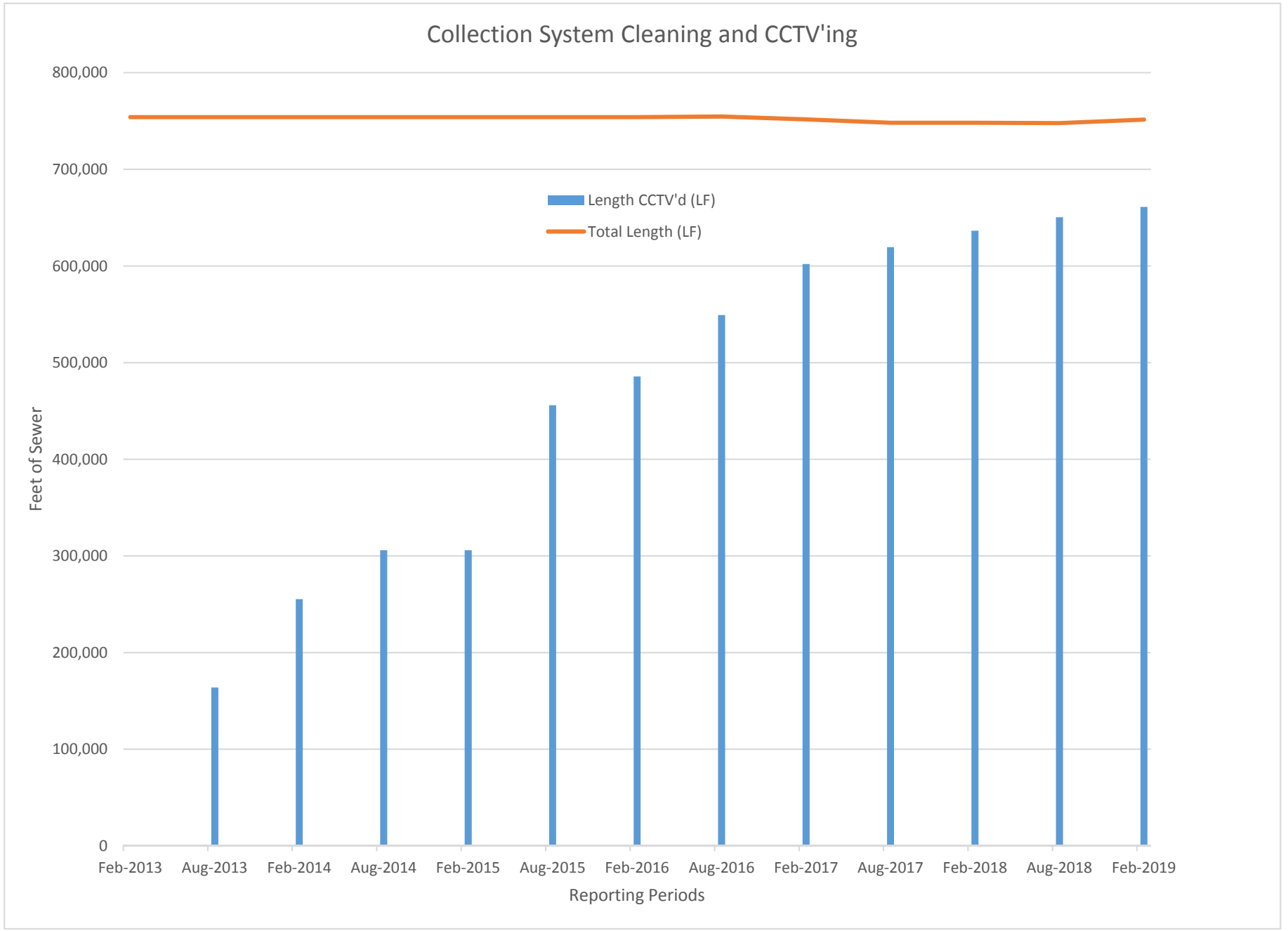
Jeffrey A. Murawski, P.E.
Fitchburg DPW Deputy Commissioner of Wastewater

Electronic & Hard Copy:	Neil Handler, USEPA, Region 1 Office David Boyer, MassDEP, Central Region Office
Electronic copy: (Transmittal letter only)	Chief, Environmental Enforcement Section, DOJ Susan M. Poswistilo, Assistant U.S. Attorney Michael Wagner, U.S.E.P.A. Louis Dundin, Assistant Attorney General, Massachusetts AG
Electronic copy:	Lenny R. Laakso, P.E., Fitchburg Commissioner of Public Works Anthony Maressa, P.E., Sewer System Manager Vincent Pusateri, II, Fitchburg City Solicitor Mary A. Delaney, Fitchburg Chief Procurement Officer Nicholas J. Ericson, P.E., Fitchburg DPW Civil Engineer

"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

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


Collection System Cleaning and CCTV'ing
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
Feet of Sewer
Length CCTV'd (LF)
Total Length (LF)
Feb-2013
Aug-2013
Feb-2014
Aug-2014
Feb-2015
Aug-2015
Feb-2016
Aug-2016
Feb-2017
Aug-2017
Feb-2018
Aug-2018
Feb-2019
Reporting Periods

ATTACHMENT 1 - COMBINATION MANHOLE CHECKS - REMAINING CMHs

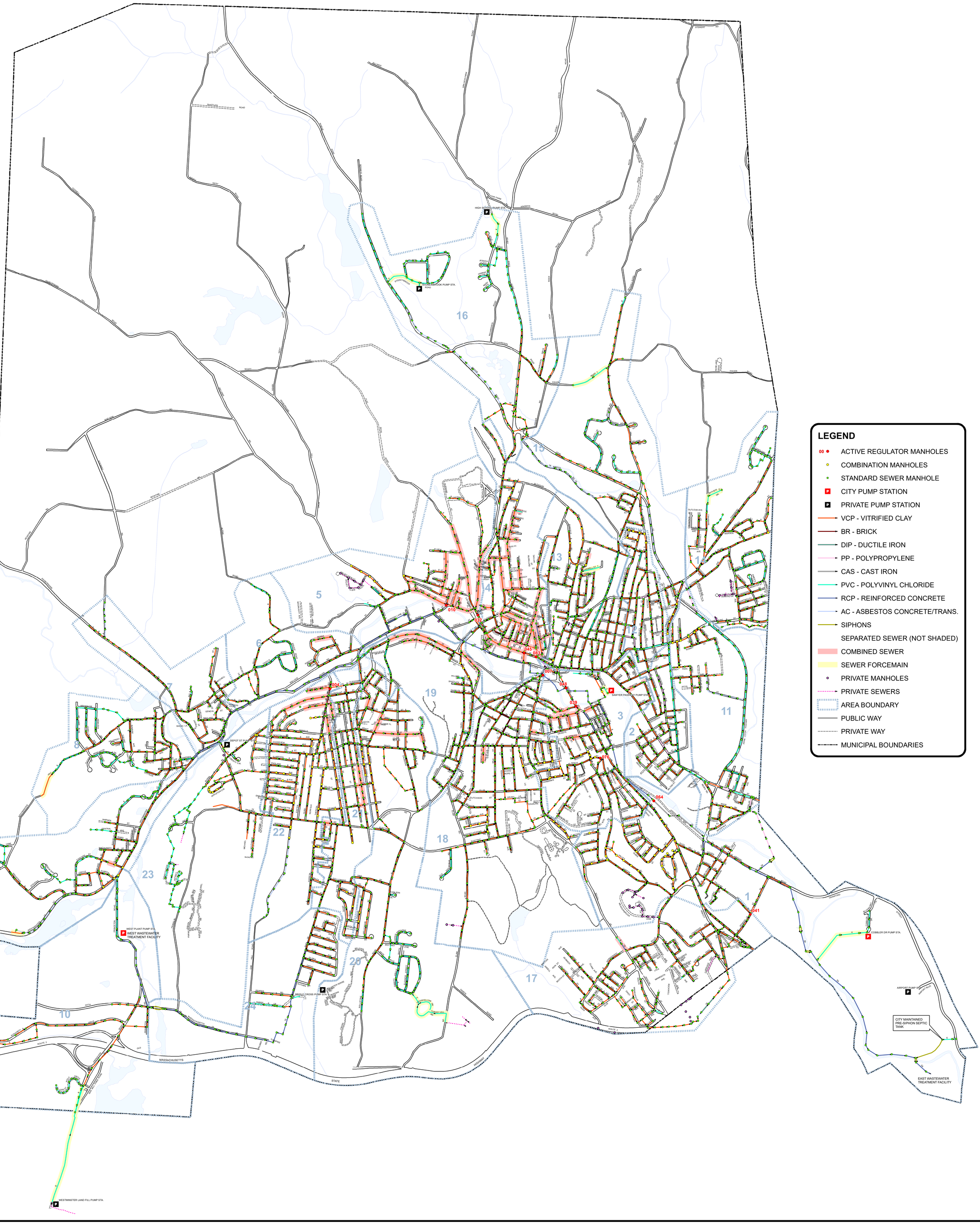
			Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Stantec Checks		Stantec Checks		
			Rain Date: 1/24/19		Rain Date:12/20/18 & 12/21/18		Rain Date:11/3/18		Rain Date: 9/18/18		Rain Date: 8/11/18 & 8/12/18		Rain Date: 4/16/2018		Rain Date:10/26 & 10/30/17		Rain Date: 9/7/17		Rain Date:5/26/17		Rain Date:10/21/2016		Rain Date:09/30/2015		Rain Date: 10/23/ 2014		Rain Date: August 9, 2013		Rain Date: April 20&21, 2012-12		January 1, 2008		April 1, 2008		
			Rainfall: 2.13"		Rainfall: 1.58"		Rainfall: 2.18"		Rainfall: 3.47"		Rainfall: 2.13"		Rainfall: 2.55"		Rainfall: 3.45" & 4.03"		Rainfall: 2.69 in.		Rainfall: 2 in.		Rainfall: 3.17 in.		Rainfall: 3.12 in.		Rainfall: 3.22 in.		Rainfall: 2.3 in.		Rainfall: 2.8 in.		1st Round		2nd Round		
Sub Watershed	CMH#	CMH Location	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Total Overflows
1	3	Albee St/Belli										1														1						1	3
1	5	Albee St/Krysiak Ave Intersection																			1		1				1		1			1	5
1	6	399 Albee St			1			1									1			1		1				1			1		1		9
1	7	219 Albee St			1							1	1						1					1						1		1	6
1	8	364 Albee St									1						1							1				1				1	6
1	40	Canton Street/Valley St Place Easement		1	1						1		1			1			1							1				1			8
1	42	Canton Street, 50 N of Romano									1		1			1	1		1			1								1			7
1	86	27 Krysiak									1						1					1						1					5
1	87	56 Krysiak																	1			1				1			1				4
1	91	Leyte/98 Normandy					1					1									1		1			1		1			1		7
1	92	Leyte/Normandy						1	1		1		1		1			1	1		1								1			1	10
1	93	37 Leyte			1			1			1			1	1								1						1				7
1	94	18 Leyte					1										1		1		1												4
1	95	52 Leyte												1				1		1		1		1						1		1	7
1	96	66 Leyte											1				1		1			1								1	1		6
1	340	Courtyard between 23 and 1 Leyte																															0
1	125	26 Nimitz			1			1			1		1							1	1		1		1								8
1	126	Normandy Rd/Office Entrance				1	1		1						1					1	1										1	1	8
1	127	Normandy Rd/Office Parking Lot							1						1		1		1		1										1		5
1	129	62 Normandy Rd							1						1		1		1				1		1				1		1		9
1	131	123 Normandy					1			1		1		1				1	1		1				1					1			11
1	155	Romano/Canton					1					1				1		1	1							1				1			8
1	156	37 Romano																1	1												1		3
1	167	33 St Paul St									1									1					1						1		4
1	325	56 St. Peter St																															0
1	221	762 Water St					1		1							1				1		1											5
1	222	792 Water St					1			1						1						1					1				1		7
1	341	824 Water Street					1		1			1																					3
1	224	Water/100 N of Duckmill					1		1		1		1			1			1		1			1	1					1		1		11
1	307	73 Valley St					1				1								1			1	1										5
1	308	95 Valley St									1								1		1		1										4
1	309	Easement First CMH																					1										1
1	310	Easement Second CMH at Rock			1																		1										2
1	313	49 Valley St														1			1		1												3
3	18	22 Beekman																			1												1
3	239	38 Birch St													1																		1
3	55	76 Everett St						1													1												2
3	56	Everett St/Maplecrest Ave Intersection																			1												1
3	231	Fairbanks St/Everett St Intersection																				1		1									2
3	57	44 Fairbanks St																				1											1
3	58	Fairbanks St/Maplecrest Ave Intersection																															0
3	235	21 Fairbanks St																			1											1	2
3	169	Salem/St Ant Church			1		1		1		1									1		1	1				1						8
3	232	Salem St/Birch St Intersection																				1	1		1								3
3	172	Salem St/Beekman St Intersection					1														1		1		1		1						5
3	173	65 Sawyer Passway (Quality Fab)				1								1	1						1				1						1	1	7
3	187	South St/Everett St Intersection																															0
3	316	Sawyer Passway at Hayden Pass																			1												1
4	51	Elm St/Marshall Dr Intersection							1		1										1						1						4
4	53	Elm/Mattson						1	1		1							1				1	1				1			1				8
4	117	Marshall St/Dr									1		1								1												3
4	338	491 Main Street (On Oliver St @ Main)																															0
5	39	Caldwell St/Arlington St Intersection											1												1								2
5	146	25 Read St									1																		1				2
5	329	166 Ashburnham Hill Road																1			1												2
5	330	130 Ashburnham Hill Road																															0
5	331	100 Ashburnham Hill Road																			1												1
5	332	88 Ashburnham Hill Road																			1												1
5	333	36 Ashburnham Hill Road																				1											1
5	334	115 Arlington Street																			1												1
9	214	Cascade/Plain																			1						1						2
9	314	Cascade/Overland				1												1		1		1	1		1								6
9	322	Westminster/Overland																1		1					1								3
9	226	Westminster St/Princeton Rd Intersection															1		1		1												3
9	227	Westminster St/Eureka St Intersection				1	1										1		1				1										6
9	342	Westminster St at Cascade St																															0
11	29	Berry St/Hardy Pass Intersection										1									1												2
11	106	Lunenburg/Berry											1																				1
11	107	Lunenburg/Perkins											1			1		1			1		1										5
11	108	Lunenburg St/Garland St Intersection														1		1			1		1				1			1				6
11	109	185 Lunenburg St/Oakland St Intersection																			1												1
11	110	Lunenburg/Redman Pl/171																			1			1									2
11	236	Lunenburg St/Linwood Ave Intersection							1															1								1	3
11	112	37 Mack																		1													1
11	113	49 Mack														1				1													2
12	37	Downstream from 50 Brown Ave																															0
12	76	Highland Ave/Brown Ave Intersection																		1	1						1						3
12	98	Lincoln St/Rogers Ave Intersection									1									1	1						1						4
12	99	320 Lincoln St																		1	1						1						3

ATTACHMENT 1 - COMBINATION MANHOLE CHECKS - REMAINING CMHs

Sub Watershed	CMH#	CMH Location	Fitchburg Checks Rain Date: 1/24/19 Rainfall: 2.13"		Fitchburg Checks Rain Date:12/20/18 & 12/21/18 Rainfall: 1.58"		Fitchburg Checks Rain Date:11/3/18 Rainfall: 2.18"		Fitchburg Checks Rain Date: 9/18/18 Rainfall: 3.47"		Fitchburg Checks Rain Date: 8/11/18 & 8/12/18 Rainfall: 2.13"		Fitchburg Checks Rain Date: 4/16/2018 Rainfall: 2.55"		Fitchburg Checks Rain Date:10/26 & 10/30/17 Rainfall: 3.45" & 4.03"		Fitchburg Checks Rain Date: 9/7/17 Rainfall: 2.69 in.		Fitchburg Checks Rain Date:5/26/17 Rainfall: 2 in.		Fitchburg Checks Rain Date:10/21/2016 Rainfall: 3.17 in.		Fitchburg Checks Rain Date:09/30/2015 Rainfall: 3.12 in.		Fitchburg Checks Rain Date: 10/23/ 2014 Rainfall: 3.22 in.		Fitchburg Checks Rain Date: August 9, 2013 Rainfall: 2.3 in.		Fitchburg Checks Rain Date: April 20&21, 2012-12 Rainfall: 2.8 in.		Stantec Checks January 1, 2008 1st Round		Stantec Checks April 1, 2008 2nd Round		Total Overflows
			Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	
12	147	Rogers Ave/Highland Ave Intersection																1			1		1												3
12	148	Rogers Ave/Brown Ave Intersection																				1		1											2
12	233	32 Rogers Ave																			1			1											2
13	32	436 Blossom St												1		1					1														3
13	33	Blossom/Crescent				1							1					1	1					1							1		1		7
13	242	Blossom St/Ryefield Rd Intersection					1									1			1			1		1										1	6
13	141	Osgood/Longwood														1																			1
13	320	Blossom at Ross													1							1													2
13	158	91 Ryefield						1											1																2
13	159	45 Ryefield											1										1												2
13	339	30 Ryefield / Wendell Rd Intersection											1																						1
14	238	Pearl/Charlton													1					1		1		1							1		1		6
14	317	640 Pearl				1					1		1		1			1		1		1	1		1										9
15	207	Townsend St/Normal Rd Intersection		1								1		1					1				1				1							1	7
15	210	67 Townsend St			1							1		1									1								1		1		6
15	211	91 Townsend St			1									1					1			1	1									1	1		7
15	304	31 Townsend St									1			1							1		1												4
18	61	Forest Hill Rd/J Keating Rd Intersection										1		1					1			1													4
18	62	Forest/Paulsons																				1	1												2
18	63	Forest Hill Rd/Forest Pk Intersection							1											1		1		1									1		5
18	64	Forest Hill Rd/Forest Hill Ave																				1	1												2
18	315	21 Forest Park																		1			1												2
18	73	Henry St/Rainville Ave Intersection																						1											1
18	74*	Henry St/Mountain Ave Intersection																						1											1
18	75	Henry St/Marion Ave Intersection																					1												1
18	118	22 Marion St																					1												1
18	144	31 Putnam Pk												1							1			1											3
18	145	61 Putnam									1										1						1				1				4
18	149	42 Rainville Ave									1							1		1		1					1								5
18	150	68 Rainville																		1		1													2
18	189	500 Old South St											1							1		1	1												4
18	190	480 Old South St																	1		1														2
18	191	Old South St/St. Peter St Intersection															1				1														2
18	192	Old South/Heywood																						1											1
19	151	182 Rollstone																																	0
19	152	Rollstone/100' Fr Shattuck																																	0
19	153	Rollstone/Bruce 50 Downhill																			1			1											2
20	241	377 Beech St																				1													1
20	12	Beech/Alden																			1														1
20	13	429 Beech St																		1															1
20	14	Beech/Delisle																			1						1		1			1	1		5
20	15	490 Beech																			1														1
20	16	Beech/Legros																			1										1				2
20	17	Beech/200 From Franklin																				1													1
20	142	Parker/Thurston																					1												1
20	143	Parker/Thurston		1																			1												2
20	228	184 Woodland St												1						1															2
20	230	Woodland St/Alden St Intersection																				1						1							2
20	344	167 Woodland Street																																	0
20	345	100 Saint Camille St			1																														1
21	44	26 Chabot Drive					1						1						1		1				1						1				6
21	115	427 Madison		1			1													1		1	1												5
21	116	Madison/Cemetery					1							1						1		1	1									1			6
21	123	44 Miami St																																	0
22	46	Clearview Ave/Foch Ave Intersection																			1														1
22	48	174 Columbus																																	0
22	49	152 Columbus																				1	1												2
22	78	Hope St/Fredette St Intersection						1										1		1		1											1		5
22	79	Hurd/St Andrew																			1														1
22	80	60 Hurd St			1																1														2
22	81	94 Hurd St			1																	1	1												3
22	88	150 Legros																			1														1
22	119	39 Maryland Ave			1		1			1				1											1					1					6
22	124	Newtonville/Foch		1																	1														2
22	133	Oak Hill Rd/Exeter St Intersection																			1														1
22	134	Oak Hill Rd/Hurd St Intersection											1																						1
22	135	Oak Hill/Mcdonald																	1			1	1							1					4
22	138	Oak Hill/Daniels 30 feet uphill.																				1													1
22	318	Oak Hill/Jeanette									1										1		1												3
22	139	541 Oak Hill Road											1					1	1		1														4
22	140	570 Oak Hill				1								1					1				1												4
22	157	43 Ronald Ave																																	0
22	160	St. Joseph St/Pratt Rd Intersection																			1														1
22	161	St Joseph/Delisle					1														1						1				1		1		5

ATTACHMENT 1 - COMBINATION MANHOLE CHECKS - REMAINING CMHs

			Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Fitchburg Checks		Stantec Checks		Stantec Checks		
			Rain Date: 1/24/19		Rain Date:12/20/18 & 12/21/18		Rain Date:11/3/18		Rain Date: 9/18/18		Rain Date: 8/11/18 & 8/12/18		Rain Date: 4/16/2018		Rain Date:10/26 & 10/30/17		Rain Date: 9/7/17		Rain Date:5/26/17		Rain Date:10/21/2016		Rain Date:09/30/2015		Rain Date: 10/23/ 2014		Rain Date: August 9, 2013		Rain Date: April 20&21, 2012-12		January 1, 2008		April 1, 2008		
			Rainfall: 2.13"		Rainfall: 1.58"		Rainfall: 2.18"		Rainfall: 3.47"		Rainfall: 2.13"		Rainfall: 2.55"		Rainfall: 3.45" & 4.03"		Rainfall: 2.69 in.		Rainfall: 2 in.		Rainfall: 3.17 in.		Rainfall: 3.12 in.		Rainfall: 3.22 in.		Rainfall: 2.3 in.		Rainfall: 2.8 in.		1st Round		2nd Round		
Sub Watershed	CMH#	CMH Location	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Drain to Sanitary	Sanitary to Drain	Total Overflows
22	162	St Joseph/St Andrew																			1		1				1				1				4
22	163	St Joseph/Legros												1							1								1						3
22	164	153 St Joseph																			1														1
22	165	210 St. Joseph St																	1																1
22	166	282 St Joseph St																				1													1
22	195	Theresa St/St. Andrew St Intersection							1				1					1		1	1			1				1			1		1		9
22	196	Theresa/Legros											1								1						1								3
22	197	Theresa/Deslisle					1		1				1					1	1		1			1	1		1		1				1		11
22	198	Theresa St/Hope St Intersection											1								1														2
22	199	51 Theresa St								1				1				1		1	1			1		1		1							8
22	200	21 Theresa St								1								1		1	1			1		1		1							7
22	201	80 Theresa St					1		1				1					1	1			1	1		1		1				1		1		11
22	203	143 Theresa																			1														1
22	204	192 Theresa St																	1		1			1			1								4
22	302	Newtonville/Oak Hill															1					1													2
22	335	24 York Avenue		1						1												1													3
22	336	44 York Avenue								1				1								1													3
22	337	61 York Avenue							1					1								1													3
22	343	Ronald St at Theresa St																																	0
23	9	97 Appleton Circle												1								1													2
23	10	79 Appleton Circle																	1				1			1									3
23	11	97,105,108 Appleton																	1		1														2
23	59	Fairmount/Leroy							1									1	1			1	1				1								6
23	89	Leroy St/Clearview Ave Intersection																1	1		1		1												4
23	90	Leroy St/Newtonville Ave Intersection						1										1					1				1			1					5
23	300	59 Appleton Circle																			1														1
23	301	80 Appleton Circle																	1		1					1									3
		Totals	0	6	13	7	21	9	17	7	22	10	24	20	10	13	11	23	29	32	71	55	48	26	17	7	27	5	8	4	20	8	24	10	604



City of Fitchburg, Massachusetts

COMBINED AND SEPARATE SEWERS

SEWER MATERIAL AND SIZE

MAP 2 OF 4

February 1, 2019

NORTH

0 0.25 0.5 1 1.5 2 Miles

SCALE: 1 INCH = 1,000 FEET

Prepared by:
The City of Fitchburg Massachusetts,Wastewater, GIS Engineer.

Author: kdupont

Path: P:\WASTE WATER\GIS\GIS Maps\Consent Decree\2019-02 Semi Annual Report\Map_2of4_Infrastructure_1_Sewer.mxd

LEGEND

STORMWATER FEATURES

- DRAIN MANHOLES
- CATCH BASINS
- STORM DRAINS

OTHER DATA

- ROADWAYS
- WATER FEATURES
- MUNICIPAL BOUNDARIES

City of Fitchburg, Massachusetts

STORM DRAINAGE

MAP 3 OF 4

February 1, 2019

NORTH

0 0.25 0.5 1 1.5 2 Miles

SCALE: 1 INCH = 1,000 FEET

Prepared by:
The City of Fitchburg Massachusetts,Wastewater, GIS Engineer.

Author: kdupont

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ASHBY

ASHBURNHAM

WESTMINSTER

LUNENBURG

LEOMINSTER

M13

M14

M20

M 6

SPOT REPAIR AT 56 ELM ST ON COLLAPSED 39" X 26" BRICK SEWER

REMOVE (2) CATCH BASINS FROM SANITARY SYSTEM. INSTALL NEW STORM DRAIN.

ON-GOING DESIGN OF SEWER SEPARATION AT CITY HALL IN PREPARATION FOR RENOVATIONS

SEWER SPOT REPAIR FOR SSO PREVENTION

SPOT REPAIR AT 68 HIGHVIEW ST. FOR BACK-UP PREVENTION

45 SHATTUCK ST. ILLICIT CONNECTION REMOVAL.

ON-GOING DESIGN FOR CSO-039 AREA SEPARATION & CSO-048 & CSO-007 CLOSURES

ON-GOING DESIGN FOR FORMER CSO 011 AREA COMBINED SEWER SEPARATION.

TRUNK SEWER MULTI-SENSOR INSPECTION BETWEEN THESE LOCATIONS

CLEAN AND CCTV SIPHON

CLEAN AND CCTV (4) SIPHONS

ON-GOING EAST WASTEWATER TREATMENT PLANT. SECONDARY SYSTEMS UPGRADE

004 010 032 045 007 048 039 076 064 041

LEGEND

CCTV'D & GRADED SEWERS

- 0 - NO DEFECTS
- 1 - EXCELLENT
- 2 - GOOD
- 3 - FAIR
- 4 - POOR
- 5 - FAIL
- NOT GRADED

PROJECTS

- WORK DURING CURRENT REPORTING PERIOD
- (....) DESCRIPTION OF WORK DURING CURRENT REPORTING PERIOD
- WORK PROPOSED FOLLOWING REPORTING PERIOD
- (....) DESCRIPTION OF WORK FOLLOWING REPORTING PERIOD

SSES

- SSES WORK DURING CURRENT PERIOD

COMBINATION MANHOLES (CMH)

- EXISTING CMH
- CMH SEPARATED DURING CURRENT PERIOD

ACTIVE REGULATORS

- REGULATOR 004
- REGULATOR 007
- REGULATOR 010
- REGULATOR 032
- REGULATOR 039
- REGULATOR 041
- REGULATOR 045
- REGULATOR 048
- REGULATOR 064
- REGULATOR 076
- REGULATOR 083

City of Fitchburg, Massachusetts

EXTRANEOUS FLOW INVESTIGATION, REMEDIATION, AND CAPITAL PROJECTS MAP 4 OF 4

February 1, 2019

NORTH

0 0.25 0.5 1 1.5 2 Miles

SCALE: 1 INCH = 1,000 FEET

Prepared by:
The City of Fitchburg Massachusetts,Wastewater, GIS Engineer.

Author: kdupont

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