City of
Fitchburg

Department of
Public Works

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August 31, 2017

U. S. Environmental Protection Agency, Region 1
5 Post Office Square, Suite 100
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, P.E.

Subject: Semi Annual Progress Report
February 2017 – July 2017 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 (February 2017 through July 2017 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. This reporting period, the City is including an update of the "Base Map" GIS map of parcel & roadways data and municipal boundaries (which do not change frequently, and has not been updated in recent Semi-Annual Reporting submissions).

GIS maps updates, hard copies will be provided together with a printed copy of this report, via U.S. mail on or before August 31, 2017. GIS maps updates will also be provided with the electronic submissions (via email) of this report.

Semi-Annual Progress Report
February 2017 through July 2017 Reporting Period

A. SEWER SYSTEM

Staffing

During the reporting period, the collection system team was operating at a reduced capacity for the reporting period. In February 2017, the team lost one Collections Operator, and in May of 2017 an additional operator left the Wastewater Division. Typically one team is fielded each day to conduct CMOM work, structural improvements to the system, or meter maintenance. The City is currently in collective bargaining negotiations with the Local 39 Laborer's union, of which the Collections field team are members. The City will reassess the need for filling the two vacant collections positions at the conclusion of these contract negotiations.

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 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 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 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.) Base Map: The base map was updated, with adjustments to the roadway layer for several streets to better fit the parcels layer, and street status for several other streets were changed from "private roads" to "public roads".

2.) Infrastructure – 1: 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 continuing to acquire sewer rim elevations with its Leica GPS unit. To date we have located 98.19-percent of all sewer manholes. These locations are shown.

3.) Infrastructure – 2: 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 department's main concentration will be to locate all sewer related infrastructure.

4.) Extraneous Flow Investigation, Remediation, and Capital Improvement Projects: 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 completed most of the field work on Phase II of its Sewer System Evaluation Survey, completed the majority of work on the Beech and Hazel Street Area Sewer Separation Project, and additional combination manhole separations. The locations of the manhole separations are noted on the map.

The "Base Map", Map 1 of 4, which has been omitted from this submission, has been reserved for future updating, as required, and Maps 2 thru 4 (Infrastructure – 1 thru Extraneous Flow Investigation, Remediation, and Capital Improvement Projects) have retained their prior sheet enumeration.

Other activities include numerous sewer repair projects. Also, contained on this "Extraneous Flow Investigation, Remediation, and Capital Improvement Projects" map 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 separated approximately an additional 5,100 feet under the Beech Street and Hazel Street Sewer Separation project, for a total remaining combined sewer length of approximately 48,500 feet.

Capacity, Management, Operation & Maintenance (CMOM) Related Activities, and Geographical Information Systems (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 82.8% of its sewer system. Production has slowed somewhat on CCTV operations, as the vast majority of pipes remaining to be coded are difficult to access easements, egg shaped pipes, the main interceptor sewer, or odd shaped brick pipes. Numerous manholes were also inspected during this reporting period. During spot 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 is in the process of outsourcing this work. In the next reporting period, the City will be conducting multi-sensor inspection of approximately 7,000 feet of its trunk sewer, starting at the West WWTF. The multi-sensor inspection will include TV, Sonar, and Radar, in order to assess pipe ovality, concrete loss, and sediment depth. In addition to the below tabulation of sewers cleaned and CCTV'd to date, a graphical representation of the progress on this effort is attached to this report.

The following table summarizes the cleaning and CCTV status of the City's 24 sub-watershed areas.

SEWER MAIN INSPECTION TOTAL LENGTH INSPECTED TO JULY 31, 2017

Area Number	Total Cleaned and CCTV'd (LF)	Total Sewer Pipe (LF)	Area Percent Completed
1	27,922	54,675	51.07%
2	16,758	20,606	81.33%
3	36,580	48,615	75.24%
4	31,823	42,992	74.02%
5	24,047	30,759	78.18%
6	13,540	18,713	72.36%
7	15,083	17,423	86.57%
8	23,165	23,916	96.86%
9	21,038	25,065	83.93%
10	12,231	19,429	62.95%
11	17,923	28,321	63.29%
12	19,280	20,216	95.37%
13	32,674	40,656	80.37%
14	31,382	32,367	96.96%
15	30,064	31,520	95.38%
16	29,628	30,902	95.88%
17	26,956	39,640	68.00%
18	48,259	51,102	94.44%
19	18,292	19,906	91.89%
20	40,657	45,518	89.32%
21	24,076	25,219	95.47%
22	44,163	44,488	99.27%
23	16,439	17,491	93.99%
24	17,394	18,656	93.24%
Totals in Feet	619,374	748,195	82.8%
Totals in Miles	117.3	141.7	82.8%

The following table summarizes manhole inspections to date:

SEWER MANHOLE INSPECTIONS THROUGH JULY 31, 2017

Area Number	Total Inspected	Total by Area	Area Percent Completed
1	104	208	50.00%
2	18	98	18.37%
3	147	230	63.91%
4	49	215	22.79%
5	13	144	9.03%
6	29	96	30.21%

7	0	96	0.00%
8	0	122	0.00%
9	2	132	1.52%
10	0	85	0.00%
11	0	132	0.00%
12	0	92	0.00%
13	6	220	2.73%
14	0	163	0.00%
15	0	136	0.00%
16	0	151	0.00%
17	0	192	0.00%
18	0	251	0.00%
19	0	107	0.00%
20	0	217	0.00%
21	0	130	0.00%
22	0	206	0.00%
23	0	94	0.00%
24	0	73	0.00%
Manhole Totals:	**368**	**3,590**	**10.3%**

The City has inspected an additional 7.9% of manholes since the last reporting period. It should be noted that the above summary of sewer manhole condition assessment inspections only includes those performed by City personnel. In the next Semi-Annual Report, we will update this tabulation to include both the newly inspected manholes (inspected during the next reporting period), as well as past inspections performed by the City's engineer (Wright-Pierce), that was conducted in conjunction with past projects, including CSS 4D, the field investigative work associated with the hydraulic model development and the SSES Phases I and II, and with the Beech and Hazel Streets Sewer Separation Project.

During the reporting period, the City upgraded its CCTV/Condition coding software from GraniteXP to GraniteNET. With the purchase of the new camera van system, the City was eligible to upgrade to the newest CCTV software provided by CUES for a few thousand dollars. The City also purchased a tablet and GraniteNET Manhole Module package, to inspect sewer manholes, logging manholes inspection data with a tablet mobile device. During the historically slow winter months, the City will be able to field two crews for manhole inspections, which will increase our productivity.

The City made some progress with manhole inspections during the reporting period, as shown in the above table. The City's Engineering Consultant (Wright-Pierce) has inspected hundreds of manholes for various projects and SSES work. The City and its consultant have encountered some difficulty transferring the manhole inspection data from the Consultant's software to the City's GraniteNET system, however it is anticipated that during the next reporting period this will be completed. The City is also requiring that all additional manhole inspections and pipe inspection work conducted in the City are in GraniteNET format, to enable seamless data transfer to the City's database.

Global Positioning Satellite (GPS) System Update

Among other assets, the City is locating all of its sewer manhole, drain manholes and catch basins with its Leica GPS unit. To date the City has located the following assets:

- 3524 sewer manholes out of 3,610 (From record drawings) – 98.19% completed.
- 1,821 drain manholes (out of an unknown total).
- 3,504 catch basins (out of an unknown total).
- 110 Sewer Laterals
- 591 ground shot locations.
- 382 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.

Service Call Activities

The Collection Operators have been performing service calls for system users with blocked service laterals. 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.

Asset Management

Within a recent, past reporting period, 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.

During the previous reporting period, the City contracted with Wright-Pierce to assist the City in setting up an Asset Management Program for its sewer system and treatment plant. As part of the Contract, Wright-Pierce and the City investigated multiple software platforms that could replace Cartegraph and its service request capabilities, but also provide Wastewater with Asset Management benefits. At the end of the previous reporting period, the City had scheduled two vendor presentations: Innovyze for its InfoMaster software program, and Cues for GraniteNET. After the presentations, Wright-Pierce provided a technical memorandum report to the City. Since the conclusion of the screening process of potential software programs, the City, through its Purchasing Department, contracted with software provider, Innovyze, for procurement their InfoMaster software program.

Also within the previous reporting period, DPW Wastewater was informed by the City's insurer Massachusetts Interlocal Insurance Association (MIIA), that Wastewater has been a selected recipient for $10,000 in grant funding, through MIIA's FY-17 "Risk Management and Loss Control Grants" program, for partially funding the Asset Management software procurement.

The City anticipates that the final asset management model development, and implementation for the InfoMaster software program will take place within the next reporting period. In addition, in the next reporting period, the undersigned Wastewater Deputy Commissioner will complete a Professional Certificate Registration Course in Asset Management Planning through the Institute of Public Works Engineering Australasia (IPWEA), which will include as part of the certification coursework the drafting development of an Asset Management Plan for the Fitchburg Wastewater Enterprise.

Beech and Hazel Streets Sewer Separation Project

The Hazel Street Separation Project was conceptualized as the result of the closure of CSO-036 at 98 Laurel Street, and possibly CSO-007 at Riverfront Park. When the Contractor closed CSO-036 during the Summer of 2013, as part of the CSS 2B, 3C and CSO 038 Modifications Project, the City experienced an SSO at this site shortly thereafter. The City investigated this matter and discovered 13 additional catch basins in the Hazel Street area, upstream and tributary to CSO-036, tied into the system. The 12-inch pipe at the CSO regulator did not have the capacity to convey the combined flow.

Due to time availability constraints of in-house staff, the City contracted Wright-Pierce to design, bid, and provide construction phase services for sewer separation within the Hazel Street area and Beech Street area. Upon Wright-Pierce's initial investigations in the previous reporting period, they identified the Hazel Street area separation might be larger than initially assumed. Wright-Pierce determined that numerous additional areas of combined sewer contributed to the CSO-036 catchment area. These areas consisted of combined sewer on Wilson Street, Pratt Road, and Hazel Street.

During the current reporting period, the Contractor completed the majority of the project. Regulator 036 was closed on May 25, 2017. The combined sewer separation on Beech Street was

nearly completed as of the end of July 2017. By September 1, 2017 the project will reach final completion.

Intermittent Stream Connections to Sewer

In accordance with Paragraph 25 of the Consent Decree, the City issued a report in March 2014 stating the City was unaware of any intermittent streams that were connected to its sanitary sewer system. On May 13, 2014, the City discovered a potential intermittent stream associated with 34 Highview Street. Record drawings indicate a culvert entrance to the sanitary system in the middle of the backyard of this property. The culvert entrance no longer is visible due to landscaping completed at the property, which leads the City to believe the stream is minimally active, if it all.

During CCTV investigation of the culvert, the City discovered that potential lateral services were connected to the culvert. The Wastewater Division is actively working with the City's Board of Health to coordinate property access, which has been difficult. The property has been abandoned for at least five years. As of the writing of this report, the Board of Health has confirmed the City can obtain access to the property, which will hopefully allow for dye testing to be conducted in the next reporting period. After the dye test, the City will determine the possibility and necessity of removing this potential intermittent stream from the sanitary system, and that we will have positive confirmation as to whether or not there are sewer services connected to the culvert.

Two intermittent streams run in high groundwater conditions or wet weather on Beech Street. These streams runoff the adjacent hillside and into catch basins which enter the combined sewer on Beech Street. With the completion of the Beech Street Separation project by the end of August 2017, these streams will be directed to the new storm sewer system.

Meter Maintenance

The City has been maintaining its 13 flow meters located at regulator manholes throughout the reporting period. Current meters include 13 ADS Triton Flow meters. The two tables below include the reporting period's summary of overflows. The reporting period is from February 1, 2017 to July 31, 2017. In accordance with Paragraph 70, Subparagraph d. of the Consent Decree, the City recorded 85 CSO events and total overflow volume of 6,525,961 total gallons. At the risk of penalty, the City certifies that it has performed all calculations in good faith. Additional data shown in Table 1 and 2 includes notes on whether or not the meter was broken for a time during the reporting period. During the reporting period, the City had very good meter coverage, with some meters experiencing 100% uptime.

Table 1 - Triton Meters for Reporting Period February 1, 2017 to July 31, 2017

Meter	Location	Events	Volume (Gallons)	Notes:
CSO-004	Cleghorn St. at Oak Hill Road	2	2,000	
CSO-007	Cushing St. at Riverfront Park	0	0	Possible closure during next reporting period. No known combined sewer upstream.

CSO-010	Main St. at River St.	9	255,003	Issues with meter connectivity early during reporting period.
CSO-032	543 Main St. at Post Office	19	433,696	Velocity not working for extended period, calculated overflows using weir method.
CSO-036	98 Laurel St.	0	0	CLOSED May 25, 2017
CSO-039	Water St. at Walnut St.	16	372,100	Likely next combined sewer area to be targeted for separation due to bridge replacement at regulator.
CSO-041	Benson Rd. near Falulah St.	1	6,000	Meter not working during last two weeks of reporting. Upstream area targeted under SSES Phase II.
CSO-45	Main St. at Oliver/Putnam St.	15	1,472,000	Meter not working near end of reporting period.
CSO-048	85 Water St.	0	0	No known combined sewer upstream. Cleaning of upstream combination manhole may have reduced CSOs.
CSO-064	Water St. Easement at former "Halloween World"	12	2,452,116	Regulator on main interceptor sewer. Inflow removal upstream necessary for closure.
CSO-076	Birch St. at Heywood St.	3	1,277,000	Pipe undersized, and suspected high I/I in contributory area. No known combined sewer upstream.
CSO-83	Main St. at Prichard St.	8	256,046	
	Totals	**85**	**6,525,961**	

The City has also been servicing the meters on a roughly 3-week frequency to maintain the meters in optimum condition.

During the reporting period, the City has also executed an On-Call Agreement with ADS Environmental Services, the meter manufacturer, to provide services and expertise on an "as-needed" basis to the City. By having a contract in place, with the City will be able to have ADS respond to meter sites that are having issues beyond the capability of the City's staff to troubleshoot.

During the next reporting period, the City is anticipating migrating to a web-based system for its CSO Monitoring. This web-based system will allow for data storage, more reliable alarming, and better public notification for CSO Events.

Sewer Structural Repairs

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

- Replacement of 12-linear feet of a 12-inch diameter collapsed line on Prospect Street.
- Replacement of 8-linear feet of a 6-inch diameter clay pipe on Plymouth Street due to solids accumulation and root intrusion.

- Replacement of 8-linear feet of a 10inch diameter clay pipe on East Street due to severe fractures, and proposed road paving.
- Replacement of 5-linear feet of an 8-inch diameter line on Olin Drive due to root intrusion and a history of SSOs.
- Replacement of 10-feet of an 8-inch diameter line on Water Street due to a severely offset joint which limited pipe capacity for CSO-039.
- Sewer spot liner on Chabot Street to repair a hole.
- Two spot repairs on Laurel Street, upstream of CSO-036 in a severely defected pipe.

Other collection system repair improvements performed in the period include:

- Replacement of 7 frames and covers that were defected or contained vent holes.
- Replacement of 9 locking frames and covers on Will Thompson Way that were seized shut.
- Removal of two catch basins from the CSO-10 combined system on Chestnut Street.
- Repair of a deteriorated invert on Wanoosnoc Road that was causing solids build up and potential SSOs.

During the reporting period, the City installed a HighTide monitoring system at the Cobbler Drive Pump Station. The HighTide system is currently in place at the Sawyer Passway Pump Station, and has performed very well. Installation of the HighTide system at the Cobbler Drive Station has allowed for monitoring of pump performance and alarms via a hosted-website. The City can now log into one website and view performance data and alarms for both of its pump stations. The City will also save approximately $600 per year on cell connectivity charges.

During the reporting period, the city also completed the purchase of a sewer spot liner repair system. The spot liner system will allow the City to conduct trenchless structural repair of lines from 8 to 10-inch in diameter. The City foresees using this system in areas of deep sewers and high traffic areas. The City also will receive a box truck in the next reporting period to store all the lining equipment.

Post Construction Monitoring Plan

In late May 2016, the City was approved to proceed with the Post-Construction Monitoring Plan (PCMP) field sampling program. The received an extension to conduct 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. In the next reporting period, the City only requires one additional wet weather event sampling to complete its PCMP sampling. The City anticipates that final wet weather sampling will be performed within calendar 2017, such that the Post-Construction Monitoring Report (PCMR) shall be submitted for review and approval with the February 2018 Semi-Annual Remedial Measures Report Submission.

Emergency Response Plan

The City's Emergency Response Plan, submitted in August 2011, and last 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 updated and submitted to the MassDEP and the EPA in March 2017.

Hydraulic Model

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. During the previous reporting period, the City received and responded to comments from both MassDEP and the EPA on its draft Hydraulic Model report. During the next reporting period, the City plans to schedule a meeting with the EPA to discuss the accuracy and calibration of the model related to remaining CSOs. It is anticipated that the final model report will be submitted within the next reporting period for final comments from the MassDEP and the EPA.

Sewer System Evaluation Survey

As required under Paragraphs 26 and 27 of the Consent Decree, the City is 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 December 31, 2015 deadline. The final SSES SOW was submitted to the MassDEP and EPA on August 12, 2016 (the previous reporting period), and there was subsequent electronic correspondence between the City, Wright-Pierce and MassDEP later in the month of August 2016. However, to date, the City has not 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 intends to prioritize 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 is planned to commence in the next Semi-Annual Reporting Period.

The SSES Phase 1 report was submitted at the end of 2016. At this time, the City is waiting comments from the EPA on this report. Comments from the MassDEP have been received and will be responded to concurrently with any comments the EPA may have.

The SSES Phase 2 work started during the reporting period, and is currently on-going. The Phase 2 work is concentrated in meter basins M13, M6, M14, M20. The draft report will be submitted at the end of 2017.

Combination Manholes Program

There was one rain event (May 26, 2017) during the reporting period that has met the criteria necessary to perform combination manholes inspections (2-inches in a 24-hour period).

During the reporting period, there were a total of **80 flow transferences** to either the drain side, or sewer side of the manholes. These overflows are taking place in a total of **216 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, the City will has first prioritized those manholes that show evidence of transference to the drain side of a manhole. In the past three 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 multiples 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. In the future, the City plans on prioritizing 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. All the remaining manholes have displayed transference and thus have to be separated.

During the reporting period, good progress has been made on separating combination manholes throughout the City. Fifteen manholes have been separated during the reporting period via the City's "Combination Manhole Separation" construction contract, and two manholes were separated during the Hazel Street Separation project. 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. During the reporting period, the following combination manholes were separated:

CMH No.	Sewer Sub-Area	Location
202	22	104 Theresa Street
30	11	38 Berry Street
209	15	119 Townsend Street
60	23	532 Fairmount Street
20	3	Belmont Street/Mt. Carmel Street Intersection
34a	13	470 Blossom Street
212	15	172 Townsend Street
223	1	Water Street/Krysiak Avenue Intersection
28	1	252 Belmont Street
128	1	Water Street/Normandy Road Intersection
225	10	Westminster St, 30' West of Princeton Road
83	14	Klondike Avenue/Lawton Avenue Intersection
84	14	Klondike Avenue/Dartmouth Street Intersection
175	19	45 Shattuck Street
N/A	19	Shattuck Street at Hazel Street

The City is in internal discussions of possibly reorganizing its approach to combination manhole separation during the next years. The City has received very favorable pricing under its Chapter 90 Paving Contract, with costs about 50% less, on average, than the current Combination Manhole Separation Contract. In the coming reporting period, the City has planned four combination manhole separations using this Chapter 90 Contract.

The City is also in permit 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 in the next reporting period, however a prolonged review process by MassDOT has delayed this project, and it may not be able to be fit into the 2017 construction season.

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 significant progress in separating additional manholes.

Status of Regulators and Outfalls

During the reporting period, the City closed Regulator CSO-036 as a result of the Beech Street and Hazel Street separation project. They City hopes to be able to close Regulator CSO-007 during the next reporting period, as there are no known combined sewers upstream of Regulator CSO-007.

In the coming reporting period, the City plans to make adjustments to maximize the collection system capacity at Regulator CSO-064. Additional combined sewer separation work and inflow removal is required upstream to close this regulator.

With the hopeful final completion and acceptance of the sewer system hydraulic model next reporting period, the City intends to utilize the model and upcoming Capacity Assessment Report as a tool in determining how much combined sewer separation and inflow removal work is necessary for closure of each of the remaining regulators.

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 implemented a continuous CEPT mode, using primarily polymer to enhance the removal rates at all times. Wet-weather CEPT operations appears 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 Secondary System Upgrade (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 0.5 ppm phosphorus limit.

Secondary Systems Upgrades (SSU) Project

During the reporting period, the project construction commenced. Through the end of the reporting period, 21% of the days to Substantial Completion and 18% of the contract days to Final Completion have elapsed, and approximately 13% of the construction contract price has been invoiced. In the reporting period, work performed has included:

- Demolition work in 2nd Stage Gallery, Primary Gallery, 1st Stage Gallery, and 1st Stage Aeration Tank No. 2;
- Test pit location of 48-inch diameter, 2nd Stage influent line;

- Formed, tied and anchored reinforcing steel, and poured selector zone walls in 1st Stage Aeration Tank No. 2;
- Saw-cut new 3′ x 5′ opening into Center Channel for new gate;
- Formed, tied and anchored reinforcing steel, and poured Center Channel cut-off wall;
- Installed new EPDM rubber roof on 2nd Stage Pump Station, and replaced section of plugged roof drain;
- Installed new 15-inch storm drain and drain manholes, to relocate drains away from the new generator platform;
- Installed new (relocated) section of 6-inch DI settled effluent (SE) piping, and completed tie-in to existing;
- Encased chlorine solution line in concrete, where line crosses beneath the generator foundation;
- Formed, tied and anchored reinforcing steel, and poured generator foundation and platform; installed electrical conduits from electrical vaults to switchgear; installed electrical vaults and concrete encased duct banks between vaults and generator;
- Prepped walls surface of 1st Stage Aeration Tank No. 2 for cementitious wall coating;
- Prepped interior walls of 1st Stage Secondary Clarifier No. 2 for surface coating;
- Completed re-piping of two 6-inch Primary Sludge lines;
- Installed new frames for grating over the valve vaults in the pump gallery, in the 1st Stage Pump Station; and
- Continued installation of electric manholes, electric handholes, and electric duct banks between electric manholes/handholes.

The City received the MassDEP – Division of Municipal Services required flood insurance policies certificates on December 13, 2016. The policies effective dates run from January 4, 2017 thru January 4, 2018. 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

Policies will be renewed, such that insurance coverage is provided throughout the construction project.

By the SSU Contractor's most recent full project construction schedule (received August 23, 2017), the Project is to be substantially complete on or before May 14, 2019, and is to be final complete on or before October 15, 2019.

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 February 1, 2017 and July 31, 2017 included:

February 2017

- Pure Air Odor control: Replaced belts.
- Plant Air Compressor: Replaced Pressure switch.
- #2 Fournier Press: Started rebuild.
- Decommissioned Degritters: Start dismantling.
- Boiler Repairs: Repaired gas leak on #2 boiler; made modifications on Motor #1 Boiler.
- Completed 54 preventative maintenance work orders and 8 demand work orders.

March 2017

- #2 Fournier Press Rebuild (ongoing).
- 2nd Stage Aeration Basin, Side #1: Repaired air leaks in diffuser grids.
- Emergency Generator: Replaced cooling water solenoid valve.
- 1st Stage, #3 RAS Pump: Replaced motor & reworked base.
- SSU Project: Weekly & Monthly Meetings; shut down Settled Effluent system for tie-in.
- Aeration Blowers #9 & #10: Replaced VFD cooling Fans.
- CEPT Building, Ferric System: Preventative maintenance - replaced pumps' peristaltic hoses.
- Chlorine Contact Chamber Rapid Mixer: Preventative maintenance - added glycol.
- #3 Primary Basin: Replaced cross collector drive chain shear pin; replaced key in Skimmer Actuator Basin 3A.
- Interior painting (ongoing).
- Headworks Aeration Grit Chamber: Started Cleaning.
- Completed 56 preventative maintenance work orders and 26 demand work orders.

April 2017

- #1 Fournier Press: Replaced Flushing Water Actuators, in Cells 1 & 6.
- #2 Fournier Press Rebuild (Completed).
- #3 Fournier Press: Started rebuild.
- Headworks Aeration Grit Chamber Cleaning (Completed).
- #3 Primary Basin 3B: Repositioned Skimmings Trough.
- Blower Building: Repaired roof leak.
- Interior Painting (ongoing).
- 2nd Stage Hypochlorite Transfer Line: Repaired line leak.
- #1 Vulcan Wash Press: Replaced #3 Wash Valve.
- SSU Construction Project Progress Meetings (ongoing)
- Completed 60 preventative maintenance work orders and 21 demand work orders.

May 2017

- #3 Fournier Press Rebuild (Completed).
- #1 Gravity Belt Thickener Penn Valley Pump: Replaced drive shaft bearings.
- Water Main Feeding Facility: Repaired water main break.
- Bay #4 Screw Conveyor: Repaired broken screw.
- CEPT Building, Ferric Chloride Influent Pumps, #2 Ferric Pump: Replaced pump.

- Fire Alarm: Replaced batteries.
- #4 Penn Valley TWAS Pump: Replaced gaskets.
- Headworks Aeration Grit Chamber Blower #3: Replaced blower.
- Interior Galley Lighting: Upgraded to energy efficient LED bulbs in fixtures.
- SSU Construction Project Progress Meetings (ongoing).
- Completed 61 preventative maintenance work orders and 18 demand work orders.

June 2017

- Gravity Thickener Primary Sludge Transfer Pump: Set clearances, and repaired oiler.
- 2nd Stage #2 Wasting Pump: Replaced coupling element.
- Backflow Preventers: Bi-Annual tests performed.
- Cobbler Drive Pump Station: Installed new Hi-Tide monitoring system.
- CEPT Hypochlorite Fill Station: Repaired leak.
- #1 Franklin Miller Grinder, annual inspection: Swapped out cutter pack.
- #4 Franklin Miller Grinder, annual inspection: Swapped out cutter pack.
- Wet Well Pump: Replaced brushes.
- #3 Fournier Press Flocculator: Repaired polymer leak at check valve.
- Chemical Building: Repaired Sodium Bisulfite leak.
- Aeration Basins: Flushed polymer lines to basins.
- #1 Gravity Thickener: Drained, cleaned, and replaced valves to tank.
- Bay #4 Screw Conveyor: Replaced gate air cylinder.
- Sodium Bisulfite Tank: Replaced level transmitter.
- 2nd Stage Aeration Basin: Repaired all aeration air zone valve stanchions.
- Access Drives Street Lights: Upgraded to energy efficient LED bulbs in fixtures.
- SSU Construction Project Progress Meetings (ongoing).
- Completed 69 preventative maintenance work orders and 15 demand work orders.

July 2017

- Du-All Odor Control System: Replaced check valve caustic line .
- Pure Air Odor Control: Replaced media.
- Decommissioned Degritters: Dismantling completed.
- #3 Aeration Blower: Replaced coupling element.
- #2 Vulcan Wash Press: Replaced Screw Conveyor Screw.
- Fournier Presses: Preventative maintenance torqued all cells covers.
- HIPPO CMMS Program: Software updated.
- 2nd Stage Clarifier, Side #2: Repair skimming's paddle swing arm.
- #2 Primary Basin: Replaced long flight drive chain, on Side "A".
- Aeration Blower Filter: Replace roll media.
- SSU Construction Project Progress Meetings (ongoing).
- Completed 60 preventative maintenance work orders and 22 demand work orders.

Other accomplishments of note include:

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

In the previous reporting period, DPW Wastewater briefed the Mayor on the Final Feasibility Report and the next steps if the project was to go forward. Due to a

flaw/deficiency in the Final Feasibility Report deliverable, the financial worthiness as the best financial option for the City was not clearly demonstrated.

To date, Wastewater has been unable to attain a decision consensus from the City, concerning willingness to pursue this long-term treatment sludge residuals management alternative. Wastewater has continued discussions with energy service performance contractor representatives, and MassCEC, for an "energy service contract" (or "ESCO") procurement solution for the contemplated anaerobic digestion facility in Fitchburg.

In this reporting period, at the Mayor's request, a tour of the Greater Lawrence Sanitary District Wastewater Treatment Facility's Anaerobic Digestion operation, and Digestate Drying and Pelletizing operation was coordinated. The GLSD tour was held in early June, and was attended by the Mayor, the Chair of the Water/Wastewater Commission, and several other City of Fitchburg Officials.

At the end of the reporting period, a meeting was coordinated, between City officials and representatives of a private developer of a prospective AD facility, that would preferably design, permit, build, own, operate and maintain the facility privately within the City. The meeting was a "concept meeting" to gauge possibilities and mutual interests in this pathway to realizing an AD facility in Fitchburg. In this model, the City (DPW Wastewater Division) would be an "anchor client" providing wastewater treatment sludge residuals as an organics feed substrate to the facility's AD operation, where the City (Wastewater) would benefit from a sustainable, affordable long-term management solution for treatment sludge residuals, and the City could also benefit from power purchasing agreements for low-cost electricity and tax revenues. There would also be potential for the operation to be sited in an area where recovered heat and electric supply could be networked to commercial/industrial development in near proximity of the AD facility.

Wastewater's hope is that City decision consensus will be attained in the next planning period, so that appropriate long-term planning and budgeting can be made for the City's selected long-term treatment sludge residuals management alternative.

City Ordinance Revision, to Strengthen City Code Relative to the Prevention of Fats, Oils, and Grease ("FOG") Discharges to the City Sewer System.

In the reporting period, DPW Wastewater has continued with collaborative teaming with the Board of Health, the Building Department, the Economic Development Director and representation of City Council, in the updating of City Code ("ordinance") in order to better regulate sewer customer classes that are pervasive FOG generators. Due to the political perception of adversely impacting local business, and being deemed "business unfriendly", the approach has been careful, methodical, and engaged the input of key City Offices and City Authorities. Within this reporting period, Wastewater and City Departments Collaboration Team have engaged City Councilors prior to messaging outreach on the subject, prior to initiating and controlling the messaging outreach (rather than being reactive to messaging initiated from sources outside the City Offices). Feedback received from Councilors prompted us to solicit "state of the industry" questionnaires to those entities who held Health Department issued Food Permits.

Questionnaire responses have been submitted more slowly than anticipated, but this information is assisting the City in gauging the magnitude of the FOG issue. This data base development will identify those commercial kitchen establishments, and the best management practices (BMPs) implemented to prevent discharge of FOG to the sewers, and the management practices being implemented to properly own, operate and maintain those BMPs.

Within the next reporting period, Wastewater anticipates, finalizing compilation and analysis of all questionnaire responses, and to resume the process to pursue engagement of stakeholders (focus on those to be regulated), and to initiate the process for a petition to amend the City Ordinances for improved FOG regulation.

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

East Plant

- Upgrade to high speed internet, and upgrade the plant's phones system.
- Install Paging Phones, Horns and Speakers: CEPT Building, Headworks Grit Chamber Room, Headworks Control Room, Headworks Blower Room, Odor Control Room, Blend Tank Room and Gravity Belt Thickeners Room.

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. The first phase of the project requires taking off half of 1st Stage treatment process, Side 2 Aeration Tank and Clarifier, and is noted in our offline equipment attachment. 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

The Consent Decree requires that the City submit to EPA and the MassDEP for review and approval a Wastewater Management Plan ("WWMP") by July 1, 2018. In order to comply with the milestone schedule, the City has solicited engineering services proposals for the scope of work required under the Consent Decree, and has awarded a multi-year on-call engineering services contract, for engineering services needed for continued compliance with the Consent Decree, and state statute 314 CMR 12, *Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers*. This contract (succeeding contract to

Wright-Pierce's 5-year term On-Call Wastewater Collection Engineering Services contract) was awarded to Weston & Sampson Engineers on June 15, 2017.

Separately, the City solicited engineering services proposals for performance of a Comprehensive Wastewater Management Plan. The City awarded this service contract, to on-call engineer Tighe & Bond.

D. ILLICIT CONNECTIONS

Within the reporting period, there were no discovered and confirmed illicit connections during the Beech and Hazel Street Sewer Separation Project to be redirected.

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 0.5 ppm, equal to 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 Spring and early Summer months of the reporting period have been favorable, and the stream bank dormant-live stake plantings have had a good survival rate, and are showing growth. Wastewater asserts the project has been a success, and is seeking to closeout the Order of Conditions with the Fitchburg Conservation Commission.

View of Stake Plantings in the Slope (Mixture of Black & Purple Willow Species) Showing Growth, After Installed as Dormant, Live Rooted Woody Cuttings.

Stabilized Brook Bank, Facing South.

If there are any comments or questions regarding the above subject please feel free to give me a call 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

ATTACHMENT 1 - COMBINATION SEWER MANHOLES CHECKS

			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		
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	Total Overflows
1	3	Albee St/Bell								1								1	2
1	4	Albee St/Nimitz	1		1			1	1		1		1		1		1		7
1	5	Albee St/Krysiak Ave Intersection			1		1				1		1					1	5
1	6	399 Albee St		1		1				1	1				1		1		5
1	7	219 Albee St	1					1									1		2
1	8	364 Albee St						1							1			1	4
1	40	Canton Street/Valley St Place Easement	1								1						1		2
1	42	Canton Street, 50 N of Romano	1				1										1		2
1	43	225 Canton St	1				1			1			1				1		4
1	86	27 Krysiak				1	1						1						3
1	87	56 Krysiak	1			1					1				1				3
1	91	Leyte/98 Normandy			1		1				1		1				1		5
1	92	Leyte/Normandy	1		1										1			1	3
1	93	37 Leyte						1							1				2
1	94	18 Leyte	1			1													1
1	95	52 Leyte		1		1		1								1		1	4
1	96	66 Leyte		1		1										1	1		3
1	125	26 Nimitz		1	1		1		1										3
1	126	Normandy Rd/Office Entrance		1	1											1	1		3
1	127	Normandy Rd/Office Parking Lot	1		1											1			2
1	129	62 Normandy Rd	1					1	1		1				1		1		5
1	131	123 Normandy		1	1		1		1					1			1		5
1	154	Romano/Belmont					1				1								2
1	155	Romano/Canton		1	1					1					1				3
1	156	37 Romano		1	1												1		2
1	167	33 St Paul St				1				1							1		3
1	221	762 Water St		1		1													1
1	222	792 Water St				1			1			1					1		4
1	224	Water/100 N of Duckmill	1		1			1	1						1		1		5
1	307	73 Valley St	1			1	1												2
1	308	95 Valley St	1		1		1												2
1	309	Easement First CMH					1												1
1	310	Easement Second CMH at Rock					1												1
1	313	49 Valley St		1	1														1
3	18	22 Beekman			1														1
3	239	38 Birch St																	0
3	19	Belmont St/Capone St Intersection						1											1
3	55	76 Everett St			1														1
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								3
3	232	Salem St/Birch St Intersection				1	1		1										3
3	172	Salem St/Beekman St Intersection			1		1		1		1								4
3	173	65 Sawyer Passway (Quality Fab)			1				1							1		1	4
3	187	South St/Everett St Intersection																	0
3	234	South St/Fairbanks St Intersection		1	1					1									2
3	326	Boulder Dr between Beemer's and ATM				1	1												2
3	316	Sawyer Passway at Hayden Pass			1														1
4	51	Elm St/Marshall Dr Intersection			1						1								2
4	52	Elm St, 100 S of Mattson			1		1												2
4	53	Elm/Mattson				1	1				1				1				4
4	117	Marshall St/Dr			1														1
4	338	491 Main Street (On Oliver St @ Main)																	
5	39	Caldwell St/Arlington St Intersection							1										1
5	146	25 Read St												1					1
5	329	166 Ashburnham Hill Road			1														1
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										3
9	322	Westminster/Overland		1		1			1										2
9	226	Westminster St/Princeton Rd Intersection		1	1														1
9	227	Westminster St/Eureka St Intersection		1		1		1											2
11	29	Berry St/Hardy Pass Intersection			1														1
11	106	Lunenburg/Berry																	0
11	107	Lunenburg/Perkins			1		1												2
11	108	Lunenburg St/Garland St Intersection			1		1				1				1				4
11	109	185 Lunenburg St/Oakland St Intersection			1														1

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			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		
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	Total Overflows
11	110	Lunenburg/Redman Pl/171			1			1											2
11	236	Lunenburg St/Linwood Ave Intersection						1										1	2
11	112	37 Mack				1													1
11	113	49 Mack				1													1
11	114	25 Mack Rd		1														1	1
11	325	Summer/Poplar on N. side of road.				1													1
12	37	Downstream from 50 Brown Ave																	0
12	38	Upstream 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								3
12	99	320 Lincoln St				1	1				1								3
12	147	Rogers Ave/Highland Ave Intersection			1		1												2
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
13	33	Blossom/Cresent	1					1							1		1		3
13	242	Blossom St/Ryefield Rd Intersection	1			1		1										1	3
13	100	Longwood/Lyman				1													1
13	101	113 Longwood				1									1		1		3
13	102	Longwood Ave/Caswell St Intersection			1														1
13	104	148 Longwood Ave																	0
13	105	95 Longwood Ave						1			1						1		3
13	111	Lyman St/Dudley St Intersection			1														1
13	103	49 Osgood St																	0
13	141	Osgood/Longwood																	0
13	320	Blossom at Ross				1													1
13	158	91 Ryefield	1					1											0
13	159	45 Ryefield					1												1
13	339	30 Ryefield / Wendell Rd Intersection																	
14	45	18 Charlton Dr		1		1		1				1	1						4
14	85	Klondike/Thorndike	1		1		1				1								3
14	238	Pearl/Charlton		1		1		1							1		1		4
14	317	640 Pearl		1		1	1		1										3
15	205	Townsend St/Pearl St Intersection					1					1		1				1	4
15	206	Townsend St/JF Highway Intersection		1		1		1			1				1		1		5
15	207	Townsend St/Normal Rd Intersection	1				1				1							1	3
15	208	45 Townsend		1	1										1			1	3
15	210	67 Townsend St					1								1		1		3
15	211	91 Townsend St	1			1	1									1	1		4
15	213	162 Townsend St		1	1			1				1			1			1	5
15	304	31 Townsend St			1		1												2
18	240	Ellis/Kingsbury		1		1		1		1									3
18	61	Forest Hill Rd/J Keating Rd Intersection	1			1													1
18	62	Forest/Paulsons				1	1												2
18	63	Forest Hill Rd/Forest Pk Intersection		1		1		1									1		3
18	64	Forest Hill Rd/Forest Hill Ave				1	1												2
18	315	21 Forest Park		1			1											1	1
18	73	Henry St/Ranville 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											2
18	145	61 Putnam			1						1				1				3
18	149	42 Rainville Ave		1		1					1								2
18	150	68 Rainville		1		1													1
18	188	South/Old South																	0
18	189	500 Old South St		1		1	1												2
18	190	480 Old South St	1		1														1
18	191	Old South St/St. Peter St Intersection			1														1
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															0
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	67 Parker St					1												1
20	228	184 Woodland St		1															0
20	230	Woodland St/Alden St Intersection				1						1							2

ATTACHMENT 1 - COMBINATION SEWER MANHOLES CHECKS

Sub Watershed	CMH#	CMH Location	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 ro Drain	Drain to Sanitary	Sanitary ro Drain	Drain to Sanitary	Sanitary ro Drain	Drain to Sanitary	Sanitary ro Drain	Drain to Sanitary	Sanitary ro Drain	Drain to Sanitary	Sanitary ro Drain	Drain to Sanitary	Sanitary ro Drain	Drain to Sanitary	Sanitary ro Drain	
21	44	26 Chabot Drive	1		1				1						1				3
21	115	427 Maddison		1		1	1												2
21	116	Madison/Cemetery		1		1	1									1			3
21	123	44 Miami St																	0
21	176	441 Shea St, 40' NE of Hollywood		1		1													1
21	77	Hollywood St/Shea St Intersection	1			1	1		1		1								4
21	178	331 Shea St		1		1													1
21	179	400 Shea St		1															0
21	180	Shea/50 SW of Bernard				1	1						1		1				4
21	181	Shea St, 20' NE of Miles	1			1													1
21	182	S' N of Shea St/Ronald St Intersection		1		1													1
21	183	S' S of Shea St/Ronald St Intersection	1			1													1
21	186	303 Shea St	1					1											1
21	303	381 Shea St		1		1													1
22	46	Clearview Ave/Foch Ave Intersection			1														1
22	47	24 Clearview Ave				1													1
22	48	174 Columbus																	0
22	49	152 Columbus				1	1												2
22	54	70 Elmwood Ave					1				1			1	1				4
22	78	Hope St/Fredette St Intersection		1		1											1		2
22	79	Hurd/St Andrew			1														1
22	80	60 Hurd St			1														1
22	81	94 Hurd St				1	1												2
22	88	150 Legros			1														1
22	119	39 Maryland Ave							1					1					2
22	120	57 Maryland Ave			1					1			1		1				4
22	122	26 Macdonald Ave			1														1
22	124	Newtonville/Foch			1														1
22	132	Oak Hill Rd/Bernadette St Intersection			1														1
22	133	Oak Hill Rd/Exeter St Intersection			1														1
22	134	Oak Hill Rd/Hurd St Intersection																	0
22	135	Oak Hill/Mcdonald	1			1	1							1					3
22	136	Oak Hill Road/England Ave Intersection				1													1
22	137	Oak Hill Road/Elmwood Ave Intersection																	0
22	138	Oak Hill/Daniels 30 feet uphill.				1													1
22	318	Oak Hill/Jeanette			1		1												2
22	139	541 Oak Hill Road	1		1														1
22	140	570 Oak Hill	1				1												1
22	157	43 Ronald Ave																	0
22	160	St. Joseph St/Pratt Rd Intersection			1														1
22	161	St Joseph/Deilslie			1						1				1		1		4
22	162	St Joseph/St Andrew			1		1				1				1				4
22	163	St Joseph/Legros			1								1						2
22	164	153 St Joseph			1														1
22	165	210 St. Joseph St		1															0
22	166	282 St Joseph St				1													1
22	195	Theresa St/St. Andrew St Intersection		1	1			1				1			1		1		5
22	196	Theresa/Legros			1						1								2
22	197	Theresa/Deslisle	1		1			1	1		1		1				1		6
22	198	Theresa St/Hope St Intersection			1														1
22	199	51 Theresa St		1	1			1		1		1							4
22	200	21 Theresa St		1	1			1		1		1							4
22	201	80 Theresa St	1			1	1		1		1				1		1		6
22	203	143 Theresa			1														1
22	204	192 Theresa St	1		1			1			1								3
22	302	Newtonville/Oak Hill				1													1
22	305	53 England St																	0
22	335	24 York Avenue				1													1
22	336	44 York Avenue				1													1
22	337	61 York Avenue				1													1
23	9	97 Appleton Circle				1													1
23	10	79 Appleton Circle	1				1			1									2
23	11	97,105,108 Appleton	1		1														1
23	59	Fairmount/Leroy	1			1	1				1								3
23	89	Leroy St/Clearview Ave Intersection	1		1		1												2
23	90	Leroy St/Newtonville Ave Intersection					1				1			1					3
23	300	59 Appleton Circle			1														1
23	301	80 Appleton Circle		1	1					1									2
		Totals	36	44	82	72	57	34	19	11	34	8	13	6	28	8	29	14	415

ASHBY

ASHBURNHAM

WESTMINSTER

LUNENBURG

LEOMINSTER

WESTMINSTER

Legend

- PUBLIC WAY
- PRIVATE WAY
- MUNICIPAL BOUNDARIES
- PRIVATE PROPERTY DELINEATIONS

City of Fitchburg, Massachusetts

BASE MAP

PARCEL & ROADWAY DATA
MUNICIPAL BOUNDARIES
MAP 1 OF 4

August 1, 2017

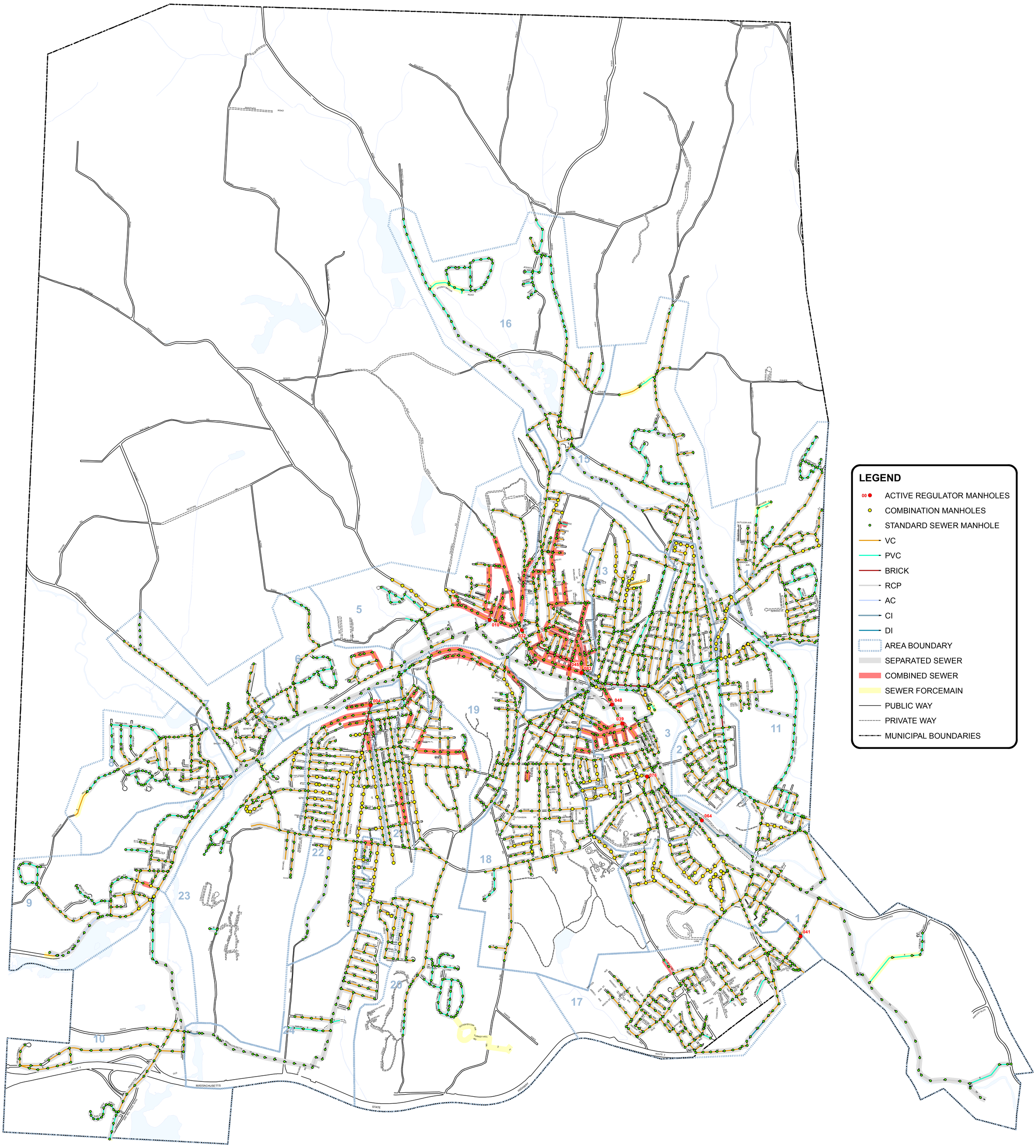
NORTH

0 0.25 0.5 1 1.5 2 Miles

SCALE: 1 INCH = 1,000 FEET

Author: kdupont

Path: P:\WASTE WATER\GIS\GIS Maps\Consent Decree\2017-08 Semi Annual Report\1of4_Fitchburg_BaseMap1.mxd



City of Fitchburg, Massachusetts

INFRASTRUCTURE - 1

COMBINED AND SEPARATE SEWERS, SEWER MATERIAL AND SIZE MAP 2 OF 4

August 1, 2017

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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LEGEND

STORM WATER DATA CURRENT GPS AND RECORD DRAWING STORM DRAIN LOCATION DATA

- DMH (GPS LOC.)
- CATCH BASIN (GPS LOC.)
- STORM DRAIN (REC. DRAWING LOC.)
- Roadways

OTHER DATA

- WATER FEATURES
- MUNICIPAL BOUNDARIES

NOTE: ARROWS INDICATE FLOW DIRECTION

City of Fitchburg, Massachusetts

INFRASTRUCTURE - 2

STORM DRAINAGE

MAP 3 OF 4

August 1, 2017

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

WESTMINSTER

M13

M 6

M14

M20

TWO CATCH BASINS REMOVED FROM COMBINED SYSTEM AND CONNECTED TO THE STORM DRAIN SYSTEM

SEWER SPOT REPAIR

REMOVE CATCH BASIN FROM COMBINED SYSTEM

REMOVE ILLICIT CONNECTION MERRIAM PKWY. AT ELM ST.

SEWER SPOT REPAIR

BEECH ST. / KIMBALL ST. EXTRANEOUS FLOW REMOVAL PROJECT (ON GOING)

INTERMITTENT CONTINUOUS STREAM REMOVAL 34 HIGHVIEW ST.

SEWER SPOT REPAIRS TO SEVERELY CRACKED PIPE

REGULATOR 007 CLOSURE

HAZEL ST. AREA EXTRANEOUS FLOW REMOVAL PROJECT

REGULATOR 036 CLOSED

SEWER SPOT REPAIR TO REMOVE OFFSET JOINT AND INCREASE PIPE CAPACITY TO REDUCE CSOS.

SEWER SPOT REPAIR

SEWER SPOT LINER TO REPAIR HOLE

CCTV AND CONDITION MAIN TRUNK LINE AND SIPHONS FROM REG. 064 TO EWWTP

REBUILD SMH INVERT TO PREVENT SSO CONDITIONS

SEWER SPOT REPAIR

MANHOLE INSTALLATION FOR SSO PREVENTION

COBBLER DRIVE PUMP STATION - UPGRADE ALARM AND LEVEL SENSING EQUIPMENT

EAST WASTE WATER TREATMENT PLANT - SECONDARY SYSTEMS UPGRADE (ON GOING)

010 032 045 083 004 048 039 076 064 041

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
- CMH SEPARATED DURING FOLLOWING PERIOD

OPEN 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

August 1, 2017

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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