Stormwater Management Plan
2018 Annual Report

Town of Belchertown
Belchertown, Massachusetts

April 2018

FUSS & O'NEILL

1550 Main Street, Suite 400
Springfield, MA 01103

Project No. 2002548.A45

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General Information

Stormwater Management Plan
2018 Annual Report
Town of Belchertown

Municipality/Organization: Town of Belchertown

EPA NPDES Permit Number: MA041002

Annual Report Number and Reporting Period: Report #15: May 1, 2017 through April 30, 2018

Contact Person:
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Self Assessment:

The Town of Belchertown has completed the required self-assessment and has determined that the municipality is in compliance with all permit conditions.

Certification:

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

Signature: _____

Printed Name: STEVEN J. WILLIAMS

Title: Public Works Director

Date: 04/27/2018

1 Introduction

The Town of Belchertown developed a Stormwater Management Plan (SWMP) to comply with the *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4 General Permit)* issued jointly by the United States Environmental Protection Agency (USEPA) and the Massachusetts Department of Environmental Protection (MA DEP) (effective May 1, 2003, expiring upon issuance of a new MS4 permit). The Town was granted coverage under this permit (MAR041002) on September 12, 2003. The Phase II regulated area in Belchertown consists of an approximately 8.2-square mile area that extends through the southwest portion of the Town between routes 21 and 181, then northward along route 9 to the northwest corner of the Town. The General Permit requires the Town to prepare an Annual Report. This document constitutes the Town's Annual Report and summarizes the activities conducted to satisfy the permit requirements, modifications to the plan, and activities scheduled for the upcoming year. A copy of the modified SWMP Summary is included as *Appendix A*.

2 Public Education and Outreach

2.1 School Programs

As described in the SWMP, the Belchertown public school system provides numerous environmental educational programs in its curriculum. These programs will continue to be an integral part of the science curriculum and foster an appreciation for and a sense of responsibility for the environment. All schools participate in recycling programs. During the Year 9 permit year the schools changed over to a single stream recycling program. Overall, approximately 2,600 students received environmental-related education as a regular part of the school curriculum.

In Year 15, the Science Department continued to conduct classes and experiments at the Foley Field/Lake Wallace property. Teachers from the high school and Swift River schools periodically visit the site with classes during the spring.

The community also continues to develop the Lake Wallace Project, which would create a natural outdoor environment that offers students a unique learning opportunity outside of the classroom, allows the incorporation of real-life teaching strategies into the curriculum, creates a safe haven that is accessible to the community for varied leisure and recreational uses, and maintains a natural resource which is aesthetically pleasing and that becomes a "jewel" of the community. Initial plans for a fully-accessible trail between State Street and Foley Field have been completed; additional optional designs exist for an education center ("Living Laboratory"). Funding is currently being sought for construction of the trail and for a reserve fund for trail maintenance.

2.2 Educational Materials Distributed

Copies of the SWMP have been distributed to the public schools and the Town library as an educational resource. The SWMP also identified numerous educational resources for students and teachers. A stormwater link was created on the Town's website which includes links to copies of the annual reports

dating back to 2013. Additionally, a stormwater flyer was developed in 2007 to inform citizens and the development community about the Town's Stormwater Bylaw and low impact development (LID) practices. The flyer continued to be distributed in 2017 and is available on the Town website (a copy was provided with the 2007 annual report).

The Conservation Commission distributed a flyer that describes wetlands protection in Belchertown. The flyer includes details regarding impacts of lawn chemicals on wetlands when conveyed by stormwater (a copy was included in the 2010 annual report). The Conservation Commission distributed a second brochure on wetland protection during Year 9 (a copy was included in the 2011 annual report). In Year 15 (as in Years 12-14), the Town posted an informational advertisement on wetlands protection in *The Sentinel* newspaper. The same advertisement has also been linked to the Town's website since February 7, 2014 (see *Appendix B* for a copy). Wetland education also appeared on the local cable channel, Channel 191(5) BCTV.

As described in *Section 6*, the Town adopted a Stormwater and LID Bylaw and associated regulations in January 2008. A checklist and flowchart were prepared to assist citizens and developers in determining whether the new bylaw applies to their project. This flow chart has been available since permit year 10. Copies of these documents were included in the 2009 annual report.

The Town worked with Pioneer Valley Planning Commission to complete a LID Guidance Document in June 2008 that is currently available to local land use boards, municipal staff, the development community, and the public. A copy of this document was included in the 2009 annual report. The documents are also available on the Town website (link provided to Pioneer Valley Planning Commission page).

The Town also participates in the Connecticut River Stormwater Committee. This Committee worked to create additional stormwater messaging targeting dog owners as well as messaging aimed at increasing the general awareness of stormwater related issues and permit compliance by the general public. Door hangers were designed to be modified for use in each member community to elevate the visibility and increase understanding about stormwater among residents and businesses. The Committee also promoted the "Pioneer Valley Soak up the Rain" education campaign (a local version of the EPA's New England campaign (see *Appendix C* for additional info).

Educational material promoting recycling was disseminated to Belchertown residents with transfer station stickers. This campaign also appeared in *The Sentinel* newspaper (see *Appendix B* for a copy).

2.3 Citizen Groups

The following local citizen groups and organizations have been identified in the SWMP as providing public education resources on stormwater quality issues or as organizations that could provide a public outreach avenue in developing stormwater awareness and developing partnerships with the public:

- Connecticut River Conservancy (formerly the Connecticut River Watershed Council)
- Pioneer Valley Planning Commission
- Tri-Lakes Association

- Belchertown Land Trust

These groups continue to provide and/or have the capacity to provide public education resources on stormwater quality issues and continue to exist as support for future stormwater education programs in Belchertown.

2.4 Modifications to Plan

No changes to the Public Education and Outreach Components of the SWMP are proposed at this time.

2.5 Activities Schedule for Next Year

The current MS4 General Permit expired at the end of Year 5. All MS4s in Massachusetts are now covered under an administratively extended version of the prior general permit (MAR041002) until the new permit becomes effective. The effective date of the new permit has been postponed by the EPA until July 1, 2018, pending judicial review. Belchertown plans to implement requirements of the new permit once it goes into effect, including modifications to the SWMP according to the timelines and dates required in the new MS4 General Permit.

3 Public Participation

3.1 Community Activities

The Town of Belchertown Conservation Commission, working with the Pioneer Valley Planning Commission (PVPC) and DPW, was awarded a $50,000 stormwater grant from DEP to study the creation of a Stormwater Utility. A contract has been signed for the project and a kickoff meeting was scheduled for April, 2018. As the current Stormwater Authority, the Commission is working with the Stormwater Committee in exploring the feasibility of implementing a stormwater utility in Belchertown. If adopted this would finance both general maintenance of the drainage system and compliance with the new MS4 General Permit proposed to go into effect in July 2018. The Town is also working with PVPC to amend its bylaws and land use regulations so that they comply with the upcoming MS4 General Permit.

The Town is also moving forward with the $42,000 319 Non-Point Source Pollutant Discharge Grant awarded to the Commission and DPW in Year 13 through the Massachusetts Department of Environmental Protection, Bureau of Water Resources. The grant contract is in place and the kickoff meeting was held March 22, 2018. This project proposes to provide treatment of stormwater from pipes and direct surface runoff that discharge directly into Lake Arcadia. Currently there are two catch basins and a series of overland flows that discharge directly into the lake. The work at Lake Arcadia is located on Federal Street along the southwest shore near the intersection of Metacomet Street. A 604B Water Quality grant was awarded to the Town in 2012 to investigate water quality issues and identify any potential stormwater runoff issues surrounding the lakes area. This one location was identified as an area of great concern (see *Appendix C* for additional information).

In addition, the Commission has been working to protect lands within the Town. In Year 15, the Conservation Commission was awarded a $343,636.00 grant through the Local Acquisitions for Natural Diversity, (LAND) Grant program of the Mass. Executive Office of Energy and Environmental Affairs for the Mader Town Forest. This 86 acre property, in the vicinity of the Holland Glen Conservation Area, consists of a steep hillside with scenic vistas, a popular place for hiking, and a recharge area for Jabish Brook - a water supply for Belchertown and the City of Springfield. This property also has numerous vernal pools located within its boundaries. The conservation goal for this property is to protect a large tract of contiguous forestland, to be designated as a Town Forest, to improve outdoor recreation opportunities, support the local timber economy, preserve wildlife habitat, and protect drinking water supplies.

The Conservation Commission has also been involved in numerous conservation area stewardship projects, collaborating with both private and public organizations, as well as individuals. New trails have been blazed on the Reed Conservation Area and an updated trail map has been created. The Jabish Brook Conservation trails have been improved, cleared and maintained, and the Holland Glen Conservation Area is being surveyed to determine property lines for a future parking area and new trail construction.

The Commission has been actively working with the Tri-lakes Association (which focuses on Lake Arcadia, Lake Metacomet, and Holland Pond) and the Belchertown Lake Committee to address the annual and long-range management strategies needed to meet recreational, habitat, aesthetic, water quality and other agreed-upon goals for Belchertown's lacustrine habitats.

The updated 2013-2020 Open Space and Recreation Plan, (OSRP) will continue to qualify Belchertown for numerous State grant opportunities. The 2013-2020 Open Space and Recreation goals and objectives for 2018 will continue to incorporate data reflecting community concerns for the Town and provide Belchertown with the resources, recreational management guidelines and strategies for the next three years.

On April 22, 2017, the Department of Public Works (DPW) sponsored an Earth Day trash collection. The DPW provided town recyclable trash bags to residents wishing to partake in the collection of roadside trash. A total of 210 small trash bags were given out to 11 participants (including one 4-H club) who collected trash in various locations throughout the town. 1.53 tons of trash was collected and disposed of at the town's Transfer Station (see *Appendix C* for additional information and newspaper advertisements).

3.2 School Programs

Students in the Belchertown public schools are encouraged to volunteer in environmental activities over the summer vacation, in addition to after-school activities. Some of these ongoing programs include:

- An annual science fair open to the public
- Arbor Day ceremonies
- A trail cleanup event coordinated by the Science Department

3.3 Boy and Girl Scouts of America

Boys and girls may be involved in the Scout programs from ages 5 to 17. Scouts are involved in various community service programs and are available to assist with implementation of the Town's stormwater management program.

3.4 Stormwater Management Committee

In 2003, the Town established a Stormwater Management Committee to develop and implement the SWMP. The Committee consists of the following individuals:

- Gary Brougham, Town Administrator
- Steven Williams, DPW Director
- LeeAnne Connolly, Conservation Commission Administrator (Year 2017)
- Erica Cross, Conservation Commission Administration (Year 2018)
- Judy Metcalf, Direction of Public Health, Quabbin Health District
- Doug Albertson, Town Planner
- Paul Adzima, Building Inspector
- Ted Bock, Fire Chief
- John Whelihan, Board of Assessors
- Patti Gambarini, Pioneer Valley Planning Commission
- Citizen Representative - currently vacant (searching for a new member)

Members of the committee met three times during Year 15 on May 5, June 13, and October 19, 2017, to discuss various aspects of the implementation of the forthcoming (but currently stayed) MS4 General Permit. Topics of these meetings included ongoing Stormwater Mapping, progress on the IDDE Bylaw and associated regulations, and the Town's stormwater program on the whole (see *Appendix C* for meeting minutes). The Town received its first application under the Stormwater bylaw in Year 5 and has continued to receive applications since, with 33 applications in Year 15.

3.5 Public Meetings

The SWMP and Phase II Stormwater Program were presented at a Board of Selectmen's meeting on January 29, 2003. Notice of the meeting was published in a local newspaper approximately one week prior to the meeting. The presentation was taped and aired on the local public access television station. This and previous annual reports are made available to the public on the Town of Belchertown website.

The Stormwater Management Committee met regularly in 2017. The Committee plans to continue to meet in 2018 to help coordinate the implementation of the various additional requirements expected in the new MS4 General Permit.

The Belchertown Conservation Commission held fifty-two (52) hearings under the Wetlands Protection Act; twenty-three (23) of these were Requests for Determination, thirty (30) were Notices of Intent, one (1) application was withdrawn, one (1) was for an amended Order of Conditions, and two (2) were for

extended Orders of Conditions. The Commission issued five (5) Emergency Certificates for the protection of public health and safety.

Additionally, the Town has been working with the Connecticut River Stormwater Committee to create an IDDE bylaw. The bylaw was approved at the May 8, 2017 Annual Town Meeting. The advertisement placed in *The Sentinel* newspaper, an informational handout explaining the importance of the IDDE bylaw, and a copy of the adopted IDDE bylaw can all be found in *Appendix C*.

In Year 8, the Town of Belchertown was designated a "Green Community" under the Massachusetts Department of Energy Resources program. The goals of the program include maximizing energy efficiency in public buildings, including schools, city halls, and public works and public safety buildings; generating clean energy from renewable sources; and managing rising energy costs. The Highway Department's efforts towards saving energy have not only met the required 20% goal in decreased consumption but exceeded it, submitting a 21 % decrease in permit Year 12 (the fifth and final year of reporting). During Year 13, Belchertown was awarded for its achievement as only one of eight cities/towns to have achieved this requirement, having reached its reduction goals each and every year of the program's five year benchmark.

In March 2015, the Department of Public Works was able to apply for and receive a Green Community Competitive Grant through the Department of Energy Resources (DOER). On June 30, 2015 the Department was awarded $53,022 for an electronic fuel management system, new exterior storm windows for the Town's Freedom and Recreation Centers, and funds for a new boiler for the Old Town Hall. In June 2017, the Town was awarded an additional $195,358 from DOER for an LED Lighting Conversion Project. The grant provided for removal of existing lighting and installation of 377 new interior and exterior LED lighting fixtures across fourteen (14) town-owned buildings. Energy savings from the project are expected to result in a 54% annual reduction in energy, with associated annual cost savings of $25,000. All of these Green Community grants have been fulfilled (see *Appendix C* for additional information).

In 2017, Belchertown received $15,000 in funding through the Massachusetts Municipal Vulnerability Preparedness grant program (MVP). As part of the MVP process, Belchertown contracted with Fuss & O'Neill as its MVP provider to bring together Town officials and other community stakeholders in a multi-step planning process designed to address climate change preparedness. The Town hosted its MVP Core Team meeting on February 12, 2018. The meeting was attended by 10 individuals, including members of the Planning Board, School Department, DPW, Conservation, Health, and Police Departments. The Town's Community Resilience Building workshop was hosted on April 20, 2018 and brought together a similarly diverse group of stakeholders who identified specific priorities relative to the Town's infrastructure, environmental, and societal concerns related to climate change. A report on the MVP planning process and all identified priorities will be available in late June, 2018. Having completed these stages of the MVP process, Belchertown is now eligible for additional state funding sources that have been earmarked specifically for MVP communities.

3.6 Citizen Groups

In Year 15, the Town continued to work with several citizen groups including the Pioneer Valley Planning Commission and Tri-Lakes Association.

In Year 8, the Pioneer Valley Planning Commission began revising the regional land use plan, Valley Vision. The plan was adopted in Year 13 and the Pioneer Valley Planning Commission continues to review major projects for compliance with this document. PVPC is also working on, as noted above, a stormwater utility project and updating Town by-laws for compliance with the construction and post-construction portions of the upcoming MS4 General Permit. The regulatory review and updating is currently underway while the stormwater utility project will begin in spring 2018.

The Belchertown Lakes Committee is responsible for the protection of public health, environment and the general welfare of the lakes within the Town. The Committee met eight (8) times in 2017 and has been working with the Tri-Lakes Association, Town departments and local residents to meet recreational, habitat, aesthetic, water quality and other agreed-upon goals for the Town's waterbodies. Over the last 5 to 10 years, data for the Tri-Lakes area has shown a continued increase in water quality and a decline in nutrient over-loading and nuisance vegetation.

During 2017, the Belchertown Lakes Committee worked with Aquatic Ecosystem Research (AER) to make recommendations for long term management for all lakes. Sampling initiatives were conducted in Lake Arcadia, Lake Metacomet and Holland Pond of the Tri-Lakes System. These assessments will help to determine management recommendations for 2018. In addition, channel enhancement between Holland Pond and Lake Arcadia was conducted by Solitude Lake Management in early Fall to increase the water flow between both waterbodies. Some of the planned work was postponed until spring 2018 due to very low water levels (additional information can be found in *Appendix C*).

3.7 Modifications to the SWMP

No changes to the Public Participation components of the SWMP are proposed at this time.

3.8 Activities Planned for Next Year

The current MS4 General Permit expired at the end of Year 5. All MS4s in Massachusetts are now covered under an administratively extended version of the prior general permit (MAR041002) until the new permit becomes effective. The effective date of the new permit has been postponed by the EPA until July 1, 2018, pending judicial review. Belchertown plans to implement requirements of the new permit once it goes into effect, including modifications to the SWMP according to the timelines and dates required in the new MS4 General Permit.

4 Illicit Discharge Detection and Elimination

4.1 Activities Conducted

A preliminary storm sewer outfall map showing stormwater outfalls within the Phase II regulated area had been prepared using the town's Geographic Information System (GIS) data (which included storm drainage layers) as well as an initial outfall inventory performed by DPW staff during March 2003. In Year 14, DPW staff, in conjunction with a consultant, worked to update the Town's storm sewer outfall mapping to include outfalls within the revised 'Urbanized Area' generated by the 2010 Census. In Year 15, the Town hired a consultant to further update stormwater mapping to include interconnections and municipally-owned stormwater treatment structures. The consultant also completed an initial inventory and drafted a priority ranking of outfalls to assess illicit discharge potential. The draft outfall inventory and priority ranking is included in *Appendix D*.

The Town has also begun dry-weather screenings of municipally owned outfalls for detection of illicit discharges. Sixty (60) outfalls were screened during Year 15, with field work completed on March 6, 2018. The Town anticipates having the remainder of municipally owned outfalls screened during dry weather in 2018.

A regulatory review was completed relative to illicit discharge detection and elimination in Belchertown. As noted above, the new IDDE bylaw was voted on and approved at the Annual Town Meeting on May 8, 2017 and is included in *Appendix C*. Additional pre-existing regulatory mechanisms that address non-stormwater discharges include the revised Stormwater Management Standards that were incorporated into the Massachusetts Wetlands Protection Act, and the Belchertown Board of Health regulations. The former, which is administered and enforced by the Conservation Commission, specifically prohibits all non-stormwater discharges (with limited exceptions) to wetlands and watercourses or to stormwater management systems which discharge to wetlands and watercourses. The Board of Health regulations address non-stormwater discharges relative to protection of public health and the environment.

4.2 Modifications to the SWMP

No changes to the Illicit Discharge Detection and Elimination component of the SWMP are proposed at this time.

4.3 Activities Planned for Next Year

The current MS4 General Permit expired at the end of Year 5. All MS4s in Massachusetts are now covered under an administratively extended version of the prior general permit (MAR041002) until the new permit becomes effective. The effective date of the new permit has been postponed by the EPA until July 1, 2018, pending judicial review. Belchertown plans to implement requirements of the new permit once it goes into effect, including modifications to the SWMP according to the timelines and dates required in the new MS4 General Permit.

Further review of existing land use regulations is expected to be conducted by the Pioneer Valley Planning Commission in 2018. In addition, the Town anticipates taking action on any dry weather discharges discovered during screenings.

5 Construction Site Runoff Controls

5.1 Activities Conducted

The Commission reviewed and commented on all septic system installation permits, site plan reviews, subdivision applications, Approval Not Required (ANR) plans, and Chapter 61, 61A and 61B withdrawal requests that occurred in the Town in Year 15. Overall, review was conducted for 113 projects, including thirty-two (32) new building lots created along existing town roads through ANR plans, one (1) definitive subdivision plan, and five (5) site plan approvals. In addition, the Commission also reviewed the applications for all forest cutting plans and the Yearly Operational Plans for vegetation management for the Massachusetts Electric Company, National Grid, and the New England Central Railroad Company.

The Town of Belchertown has adopted a Stormwater Bylaw that regulates construction and post-construction stormwater runoff for new development and redevelopment projects. The bylaw provides a clear set of stormwater management goals, standards, and design criteria to minimize the adverse impacts of stormwater runoff from land development projects. The bylaw also promotes LID and sustainable design practices. Copies of the existing bylaw, associated regulations, and permit application materials were included with prior annual reports. In Year 8, the Town began the process of revising the Stormwater Management Regulations (a copy of the proposed amendments to the regulations was provided in the 2011 annual report). The Connecticut River Stormwater Coommittee reviewed the Town's bylaws and regulations for compliance with the existing and new MS4 General Permits in Year 14.

The Stormwater Bylaw addresses construction site runoff and erosion and sediment controls, including inspections and enforcement. Starting in July of 2009, the Conservation Commission administrator, under the guidance of the conservation commission, was assigned as the Stormwater Authority for the Town. Projects subject to the new bylaw are documented by the Conservation Commission (the Stormwater Authority) and by Reviewing Boards. There were 33 stormwater permit applications in Year 15. The Department of Public Works also continued to review the Stormwater Management applications annually (see *Appendix E* for additional documentation).

In Year 15, the Conservation Commission conducted numerous site visits to monitor ongoing projects throughout the year, including housing lots, subdivisions currently under construction, ANR lots, and stormwater site visits. In addition, the Commission has dealt with several outstanding enforcement issues and has been concentrating their efforts to bring these projects back into compliance (see *Appendix E* for additional documentation). The Commission continues to work with various Town departments for the Belchertown State School redevelopment project and is currently working with the project manager and the adjoining Lampson Brook Farm to provide protection, passive recreational access, environmental education and agricultural opportunities for this large undeveloped area. The

Commission is also working with the Planning Board and the Recreation Department to create a handicapped accessible trail around Lake Wallace.

5.2 Modifications to the SWMP

At this time, no changes to the Construction Site Runoff components of the SWMP are proposed.

5.3 Activities Planned for Next Year

The current MS4 General Permit expired at the end of Year 5. All MS4s in Massachusetts are now covered under an administratively extended version of the prior general permit (MAR041002) until the new permit becomes effective. The effective date of the new permit has been postponed by the EPA until July 1, 2018, pending judicial review. Belchertown plans to implement requirements of the new permit once it goes into effect, including modifications to the SWMP according to the timelines and dates required in the new MS4 General Permit.

The Connecticut River Stormwater Committee previously reviewed the Town's bylaws and regulations for compliance with the existing and new MS4 General Permits and proposed changes to the Town's Stormwater Bylaw. Proposed changes will be revisited once the new permit goes into effect.

The Town will also continue to have site plans reviewed by a consultant to determine compliance with the proposed Stormwater Bylaw.

6 Post-Construction Stormwater Management

6.1 Activities Conducted

As described in *Section 5.1*, a number of the new development and redevelopment projects that were constructed in Belchertown during the previous year included post-construction stormwater management controls to satisfy the performance standards in the Wetlands Protection Act and 401 Water Quality regulations and the *Massachusetts Stormwater Handbook*.

Specific information on the number of projects and the types of post-construction stormwater management measures was not tracked this year. Activities conducted and their method of tracking will largely be determined as stormwater management permit applications are received.

The Stormwater Bylaw addresses post-construction stormwater management and erosion and sediment controls, including inspections and enforcement. Projects subject to the bylaw will be documented by the Conservation Commission (the Stormwater Authority) and by Reviewing Boards. See *Section 5.1* for more information on permit applications and approvals. The Connecticut River Stormwater Committee reviewed the Town's bylaws and regulations for compliance with the existing and new MS4 General Permits in Year 14.

6.2 Modifications to the SWMP

At this time, no changes to the Post-Construction Stormwater Management component of the SWMP are proposed.

6.3 Activities Planned Next Year

The current MS4 General Permit expired at the end of Year 5. All MS4s in Massachusetts are now covered under an administratively extended version of the prior general permit (MAR041002) until the new permit becomes effective. The effective date of the new permit has been postponed by the EPA until July 1, 2018, pending judicial review. Belchertown plans to implement requirements of the new permit once it goes into effect, including modifications to the SWMP according to the timelines and dates required in the new MS4 General Permit.

As noted in *Section 5.3*, changes to the Town's Stormwater Bylaw that were proposed after review by The Connecticut River Stormwater Committee will be revisited once the new permit goes into effect. The Town will also continue to have site plans reviewed by a consultant to determine compliance with the proposed Stormwater Bylaw.

7 Pollution Prevention/Good Housekeeping

The focus of this minimum control measure is to ensure that municipal operation and maintenance activities associated with facilities and infrastructure (e.g., roads and storm drainage system) within the regulated area are performed in a manner that prevents or reduces the discharge of pollutants to stormwater. There were no municipal facilities located within Belchertown's Phase II regulated area based on the 2000 Census, however, the Town is aware of municipal facilities that are within the revised 'Urbanized Area' based on the 2010 Census. Activities at other municipally-owned facilities are also addressed in this annual report as they relate to the requirements of this minimum measure.

7.1 Employee Training

Twenty-eight (28) Town staff (consisting of DPW Highway, Maintenance, and Waste Water Treatment Plant staff) received environmental-related training this year. The Belchertown Safety Committee also organized departmental training in topics including: Chainsaw Skills and Safety, CPR and First Aid, OSHA 10, Cold Weather Safety, Ladder Safety, Personal Protective Equipment, 3 Point Contact, Tick-Borne Disease, Removing Snow from Rooftops, Confined Space Safety, Electrical Safety, Excavation/Trench Safety, Bloodborne Pathogens, Respiratory Protection, and Hazard Communication.

Stormwater training for DPW and other Town employees was conducted on April 4, 2018. The training was conducted in conjunction with annual training required by the EPA industrial stormwater permit program for the highway garage and wastewater treatment plant. The training included education on

goals/objectives of the Phase II program, pollution prevention for public works activities, waste management, and good housekeeping. A copy of the employee attendance log for this and other highway trainings are included in *Appendix F*.

7.2 Street Sweeping

All of the streets within the regulated area were swept at least once during the reporting year. A street sweeping log has been developed by the Town to record the names of the streets swept and the amount of street sweepings recovered. A copy of this log is included in *Appendix G*. All of the roads in Belchertown were swept by the Town using a Town-owned sweeper (2005 Elgin Pelican) or through contract with Split Excavating. Approximately 895 yards of material were recovered throughout the Town. A majority of the roads that were not swept by the Town are privately-owned or State-owned. The DPW continues to follow a program for managing and disposing of street sweepings consistent with the Massachusetts solid waste regulations and applicable DEP guidance.

7.3 Catch Basin Cleaning

Appendix G includes a cleaning report listing the streets where catch basins were cleaned in Year 15. In 2017, the Town contracted with Eastern Pipe for catch basin cleaning. 120 hours were spent cleaning approximately 380 Town basins at a cost to the community of approximately $26,280 (not including disposal costs). The Belchertown DPW inspected a representative cross-section of the catch basins within the regulated area to confirm proper cleaning. Approximately 111 tons of catch basin spoils were collected in Year 15 with a disposal cost of approximately $9,292.83.

7.4 Stormwater BMP Inspection and Maintenance

All of the facilities (45) were inspected in Year 15. Brush and other vegetation within Town-owned detention basins were cut as needed (see cleaning log in *Appendix H*).

7.5 Deicer Material Storage

Salt is stored at the DPW maintenance garage inside two dedicated salt storage buildings, constructed in 2004 and 2012. Approximately 2,555 tons of salt and 1,320 cubic yards of sand were used in the winter of 2017-2018. Liquid deicers are no longer used in Belchertown – salt is pretreated instead.

7.6 Preventative Maintenance

DPW staff conducts weekly inspections of the waste oil collection area at the highway garage. Eleven facility inspections related to the garage's Spill Prevention, Control, and Countermeasure (SPCC) plan were also completed in Year 15 (see *Appendix I* for inspection reports). Routine maintenance of the Town's fleet of equipment and vehicles is also performed at the highway garage.

During 2017, DPW contracted with a consultant to conduct field investigations aimed at identifying sewer drainage areas within the Town's system with excessive infiltration and inflow. Fieldwork concluded on June 1, 2017, and a 101 page report was completed in March 2018 (*Appendix J).* Other sewerage collection system work completed during 2017 included visual inspections of trouble areas, video inspections, and cleaning of approximately 8,000 feet of collection system. Roots and protruding service taps were removed on 6,900 feet of central sewer lines. In addition, sewerage pumping station corrective maintenance was conducted, such as lighting upgrades and piping improvements to aid in maintenance and emergency bypass pumping.

7.7 Transfer Station

The Transfer Station and Recycling Center accepts household trash, recyclables, yard waste, waste motor oil, tires, appliances and bulky items such as furniture and mattresses. In 2017, approximately 928 tons of general recyclables, 92 tons of scrap metal, 3 tons of textiles/clothing, 15 tons of electronics/computers, 1,750 gallons of waste oil, 576 tons of paper and cardboard, and 438 tires were collected.

In Year 15, Belchertown hosted a hazardous waste collection event on September 16th. The Town also publicized the Pioneer Valley Reciprocal hazardous waste collection events in neighboring communities (see *Appendix J* for supporting documents).

7.8 Modification to the SWMP

At this time, no changes to the Pollution Prevention / Good Housekeeping components of the SWMP are proposed.

7.9 Activities Planned Next Year

The current MS4 General Permit expired at the end of Year 5. All MS4s in Massachusetts are now covered under an administratively extended version of the prior general permit (MAR041002) until the new permit becomes effective. The effective date of the new permit has been postponed by the EPA until July 1, 2018, pending judicial review. Belchertown plans to implement requirements of the new permit once it goes into effect, including modifications to the SWMP according to the timelines and dates required in the new MS4 General Permit.

Appendix A

Revised Stormwater Management Plan Summary

FUSS & O'NEILL

STORMWATER MANAGEMENT PLAN SUMMARY
TOWN OF BELCHERTOWN

BMP ID	Minimum Control Measure Best Management Practice (BMP) Description	Permit Year	Measurable Goal	Responsible Party
1	**Public Education and Outreach**			
1.1	Continue existing school educational programs.	1-15	The number of students receiving stormwater education as a regular part of the school curriculum. The number of programs offered.	Stormwater Committee, School Department
1.2	Provide schools with a copy of the education resources sections of the Plan. Make copies of the stormwater management plan available in the Town library.	1	Distributed plan copies to the schools. Distributed plan copies to the Town library.	Stormwater Committee
1.3	Create a stormwater link on the Town's website, including an electronic version of the stormwater management plan.	2	Created a stormwater link on the Town's website.	Stormwater Committee, MIS Department
1.4	Prepare a general stormwater overview and summary of the Phase II program for distribution as a newspaper flyer, or cable access television announcement. Continue to add materials to the Town's stormwater website.	3	The number of materials created and distributed or the number of stormwater-related articles published. Materials added to Town website.	Stormwater Committee, School Department
1.5	Distribute outreach materials on septic system maintenance, illicit discharges, proper lawn care, yard waste and pet waste disposal, or other issues identified by the Town within the regulated area.	15	The number of materials created and distributed to Town residents.	Stormwater Committee, Board of Health, DPW
1.6	Add a new link to the existing Board of Health website with guidance or recommendations on proper septic system maintenance.	13	Provided septic system maintenance guidance materials on Board of Health website.	Stormwater Committee, Board of Health, MIS Department
2	**Public Participation/Involvement**			
2.1	Form a Stormwater Committee to assist in developing the Phase II stormwater management plan and to coordinate implementation activities.	1	Formed a stormwater committee.	Stormwater Committee
2.2	Make the stormwater management plan available for public review and advertise/hold a public meeting.	1	Made plan available for public review and held public meeting in accordance with state public notice requirements.	Stormwater Committee
2.3	Continue existing school environmental outreach programs.	1-15	The number of students involved in environmental outreach programs. The number of programs offered.	Stormwater Committee, School Department
2.4	Expand Stormwater Committee to include interested citizens and other Town board members. The committee could assist the Town with recruiting and directing resources to implement recommended measures.	4	The number of additional stormwater committee members recruited.	Stormwater Committee
3	**Illicit Discharge Detection and Elimination**			
3.1	Create a storm sewer outfall map showing stormwater outfalls within the Phase II regulated area.	1	Created a storm sewer outfall map.	Stormwater Committee, DPW, MIS Department

3.2	Finalize storm outfall map and conduct dry weather outfall screening within regulated area.	3	Finalized outfall map and conducted dry weather screening of outfalls. Number of outfalls screened.	Stormwater Committee, DPW, Board of Health
3.3	Inspect outfalls with potential illicit discharges (as identified from initial dry weather screening), conduct outfall sampling, and track sources of illicit discharges.	3-15	Conducted source tracking of stormwater outfalls. Identified sources of illicit discharges.	Stormwater Committee, DPW, Board of Health
3.4	Eliminate a certain number or percentage of illicit discharges whose sources are identified.	3-15	Eliminated a certain number or percentage of illicit discharges whose sources were identified.	Stormwater Committee, DPW, Board of Health
3.5	Review model illicit discharge by-law to assess its applicability and feasibility for adoption in Belchertown. Modify existing by-laws to address the illicit discharge regulatory mechanism requirement.	4-5	Reviewed, drafted, and adopted illicit discharge by-law.	Stormwater Committee, DPW, Board of Health
3.6	Educational materials developed for minimum control measure 1 (Public Education and Outreach) to address illicit discharge detection and elimination.	3-15	Disseminated educational materials (e.g. newspaper flyer) on illicit discharge detection and elimination (see BMP 1.6) to the public.	Stormwater Committee, DPW, Board of Health
3.7	Update the storm sewer outfall map as needed (e.g., new census mapping).	3-15	Update the storm sewer map as needed	Stormwater Committee, DPW, MIS Department
4	**Construction Site Runoff Control**			
4.1	Review existing MADEP or other similar model by-law to assess its applicability and feasibility for adoption in Belchertown.	4	Reviewed model by-law. Held public meeting.	Stormwater Committee, Building Inspector, Planning Board
4.2	Draft and adopt a by-law with public input (draft language and legal review, conduct informational meetings as necessary, submit to warrant, schedule for vote at Town Meeting).	4-5	Drafted and adopted by-law.	Stormwater Committee, Building Inspector, Planning Board
4.3	Provide training for Town staff responsible for reviewing site plans to determine compliance with the newly adopted by-law. NO LONGER APPLICABLE, THE TOWN HIRES CONSULTANTS TO COMPLETE REVIEWS.	N/A	Conducted training for Town staff. NO LONGER APPLICABLE.	Stormwater Committee, Building Inspector, Planning Board
4.4	Develop methods and materials to provide for public inquiry and comments for construction projects, and procedures to respond to public inquiry. Develop site inspection procedures.	5	Developed procedures for public inquiry and associated response. Developed site inspection procedures.	Stormwater Committee, Building Inspector, Planning Board
5	**Post-Construction Runoff Control**			
5.1	Review existing MADEP or other similar model by-law to assess its applicability and feasibility for adoption in Belchertown.	4	Reviewed model by-law. Held public meeting.	Stormwater Committee, Building Inspector, Planning Board, Conservation Commission
5.2	Draft and adopt a by-law with public input (draft language and legal review, conduct informational meetings as necessary, submit to warrant, schedule for vote at Town Meeting).	4-5	Drafted and adopted by-law.	Stormwater Committee, Building Inspector, Planning Board, Conservation Commission

5.3	Provide training for Town staff responsible for reviewing site plans to determine compliance with the newly adopted post-construction runoff control by-law. NO LONGER APPLICABLE, THE TOWN HIRES CONSULTANTS TO COMPLETE REVIEWS.	N/A	Conducted training for Town staff. NO LONGER APPLICABLE.	Stormwater Committee, Building Inspector, Planning Board, Conservation Commission
5.4	Develop procedures for public inquiry and comments for post-construction stormwater BMPs, and procedures to respond to public inquiries. Develop periodic inspection procedures.	5	Developed procedures for public inquiry and associated response. Developed inspection procedures.	Stormwater Committee, Building Inspector, Planning Board, Conservation Commission
6	**Pollution Prevention/Good Housekeeping**			
6.1	Expand annual stormwater training program for appropriate Town employees to include street sweeping, stormwater BMP and drainage system maintenance including catch basin cleaning, winter road and lot maintenance, and solid/hazardous waste management.	1	Developed expanded stormwater training program.	Stormwater Committee, DPW
6.2	Develop record keeping procedures for street sweeping, catch basin cleaning, deicer application and usage, and stormwater BMP inspections and maintenance within the regulated area.	2	Developed record keeping procedures.	Stormwater Committee, DPW
6.3	Conduct training for appropriate Town employees.	1-15	Conducted training. The number of employees trained.	Stormwater Committee, DPW
6.4	Sweep streets within the regulated area, as necessary, on a rotating basis.	1-15	Conducted street sweeping within regulated area. The quantity of debris collected from street sweeping.	DPW
6.5	Establish inspection and maintenance schedules for storm drainage structures and stormwater BMPs within the Phase II regulated area.	3	Established inspection and maintenance schedules.	Stormwater Committee, DPW

Appendix B

Stormwater Public Education and Outreach Materials

Connecticut River Stormwater Committee
Annual Report
April 1, 2017 to March 31, 2018

The Connecticut River Stormwater Committee

The Connecticut River Stormwater Committee is an intergovernmental compact of 17 municipalities that is organized to collaborate in meeting NPDES MS4 permit requirements for stormwater education and outreach (Minimum Control Measure #1). Facilitated and staffed by the Pioneer Valley Planning Commission, the Committee also works together to meet other permit compliance activities where appropriate and needed. Member communities are shown in Table 1 below.

Table 1: Connecticut River Stormwater Committee Member Communities

Member Community	Committee Representatives and Departments
Agawam	Tracey DeMaio, Department of Public Works
Belchertown	Steve Williams, Department of Public Works
Chicopee	Quinn Lonczak, Department of Public Works
East Longmeadow	Bruce Fenney, Department of Public Works
Easthampton	Dan Murphy, Department of Public Works
Granby	Dave Derosiers, Highway Department
Hadley	Marlo Warner, Department of Public Works
Holyoke	Michael McManus, Department of Public Works
Longmeadow	Mario Mazza and Peter Vancini, Department of Public Works
Ludlow	Jim Goodreau, Department of Public Works
Northampton	Doug McDonald, Department of Public Works
Southwick	Randall Brown, Department of Public Works
South Hadley	Melissa LaBonte, Department of Public Works
Springfield	Kevin Chaffee, Planning/Conservation
West Springfield	Jim Czach and Connor Knightly, Department of Public Works
Westfield	Casey Berube and Joe Kietner, Department of Public Works
Wilbraham	Tonya Basch, Department of Public Works

* Member that joined Committee this year.

Education and Outreach over the Past Year

The Connecticut River Stormwater Committee has moved forward several education and outreach activities under the 2003 permit. At the same time, the delayed start of the 2016 MS4 permit has provided time for the Stormwater Committee to lay further groundwork for its education and outreach program over the longer term. This includes developing a draft matrix of education and outreach activities for the next permit term, participating in the state-wide stormwater coalition education and outreach subcommittee to procure a consultant to develop a state-wide education and outreach campaign, and most recently, meeting with students from Worcester Polytechnic Institute

who are working with MassDEP to prepare a repository of stormwater education and outreach materials for use by MS4 permittees.

The narrative below summarizes the work of the Connecticut River Stormwater Committee during the 2017-2018 reporting year, which includes the following:

1. Produced 30-second radio spot as part of continued Soak up the Rain stormwater education campaign that will run on 3 stations throughout the Pioneer Valley in April 2018
2. Designed website for Connecticut River Stormwater Committee and began developing content
3. Worked with state-wide coalition on procuring services to help with design and materials for state-wide education program
4. Continued to lead urban tree planting project in Chicopee, Holyoke, and Springfield
5. Continued to lead project in Holyoke to reduce urban flows into Day Brook

In addition to these public education and outreach activities described in fuller detail below, members of the Stormwater Committee have joined PVPC in other MS4 permit related activities, including:

- Conducting a series of two training workshops for municipal staff that were videotaped and organized into specific modules that can now be used for subsequent annual training required by the new permit. Designed in consultation with consultant Wright Pierce, topics covered elements under the "good housekeeping" and the "illicit discharge detection and elimination" categories of the stormwater permit. Funding for these workshops was provided in part by the Massachusetts Department of Administration and Finance's Efficiency and Regionalization grant. The videos have already been shared with other MS4s in the state and are being loaded to YouTube for easy access by any other MS4 in Massachusetts who wishes to use them. Going forward, Connecticut River Stormwater Committee members have decided to use the video training modules as part of annual events where trainees from the region come together, watch the video modules, and then engage in discussion and problem solving. This will provide for more meaningful engagement than trainees watching videos on their own. Such an annual training event might also include field visits to learn about specific and/or sampling techniques. PVPC will plan to host these events as part of its Stormwater Committee work.

- Reviewing and updating municipal land use code in nine communities to meet new construction, and development and redevelopment standards within the 2016 federal stormwater permit. Funding for the code review was provided by the Massachusetts Department of Administration and Finance's Efficiency and Regionalization grant. A 10th stormwater committee member community elected to undertake code review through a fee for service arrangement with PVPC. This work included review and update of provisions for control of illicit discharges, erosion and sediment control, stormwater management permitting, subdivision regulations, and zoning. A detailed checklist with recommended code language was developed as part of this work to facilitate review in additional communities going forward.

  As there are still many issues to be worked out relative to code, including updating of the Massachusetts Stormwater Standards so that they better relate to the new MS4 permit requirements, and development of model language and procedures to help with off-site mitigation for redevelopment projects, PVPC staff has recommended that communities not immediately adopt code changes developed under this project. PVPC has noted that these

updates are not required to be in place until Year 2 of the permit effective date. PVPC staff is currently working with other members of the state-wide coalition of stormwater coalitions to fold these changes into a state-wide resource package on code updates, including a model bylaw, and the guidance being developed on off-site mitigation.

- Procuring services regionally of Wright Pierce to provide integrated stormwater system mapping and data collection to meet requirements of the new 2016 permit. Seven stormwater committee members—Agawam, Belchertown, Granby, Ludlow, Northampton, South Hadley, and Southwick – are participating in this work. Research conducted in concert with communities prior to this procurement showed significant cost savings in collaborating on this work rather than going it alone.

  To date, project work has entailed development of the mapping interface with stormwater infrastructure, and development of forms to ensure that all data required in the new permit (outfall screening and sampling, manhole inspections, catch basin cleaning, etc.) can be captured in the field during inspections and then uploaded to reference with geographically specific locations within Arc GIS mapping of the storm system for analysis in defining priority catchments and annual reporting to EPA.

1. Aired Soak up the Rain radio spot

The Stormwater Committee produced a 30-second radio spot to air, starting April 2. The Soak up the Rain spot is narrated by a local radio personality and calls on people to take notice and take action. It will air 183 times in a three-week period on three different radio stations in the region, covering all Stormwater Committee member communities. It will be aired at peak and non-peak listening hours to reach a variety of different audiences. The 30-second spot reads as follows:

> When stormwater flows across yards, driveways or parking lots, it picks up leaked car oil, lawn chemicals, litter and animal waste.
>
> This contaminated water ends up in the Connecticut River.
>
> Help keep our river clean. Don't let rain run – soak it up.
>
> Redirect downspouts to your lawn. Use a rain barrel. Create a rain garden or install porous pavement.
>
> Brought to you by the Connecticut River Stormwater Committee, a coalition of 17 Pioneer Valley communities.
>
> Learn more at soakuptherain.pvpc.org

Radio stations in the region that will air the Soak up the Rain radio spot.

It his hoped that interested listeners will follow the reference to the soak up the rain web page and the Committee will be able to make some determination of the spot's effectiveness by counting the increase in clicks on the web site. Results will provide some direction to the Committee as it continues to develop its 5-year education and outreach program under the new 2016 permit.

Production of the radio spot follows on an unsuccessful 4-month effort toward adapting a stormwater video from West Michigan Environmental Action Council. Members had researched stormwater messaging videos, selected the West Michigan video, engaged a local video producer for the adaptation, and worked out the terms of an agreement with the West Michigan group. The problem arose, when the local video producer learned that the Michigan group had no high resolution video file from which to work. Given that the Connecticut River Stormwater Committee members had talked about more than website use of the adapted video, a low resolution file was not adequate. It was surprising that without a high resolution file of the video, the West Michigan group would take the conversation so far. Nonetheless, this was an important lesson in learning what the right first question is to ask when talking about video adaptation.

2. Designed website for Connecticut River Stormwater Committee

While each stormwater committee member continues to maintain and update stormwater information on each of their municipal websites, there is a need to promote stormwater information on a regional Connecticut River website. The regional stormwater website will provide one website reference for forthcoming publications and media outreach work. Links can be made from the local municipal websites to the regional website and vice versa.

Design of the Connecticut River stormwater website includes "portals" for exploring the site in two ways: as an audience enumerated in the MS4 permit (resident, business, developer, industry) and as someone interested in learning more about a specific stormwater best practice important to water quality issues in the region: lawn and yard care, pet waste management, car care, soak up the rain, turf management, and septic system care. Committee members have been talking too about the importance of finding ways to include materials for educators (stormwater curriculum lessons), and agriculture (perhaps connecting to resources through the Extension Program at the University of Massachusetts, Amherst, and any nonpoint source nitrogen reduction initiatives that may emerge).

Content for the website is currently under development by PVPC. It is expected that additional content will be available through the statewide coalition if stormwater coalitions, which has just hired Water Words that Work to outline a state-wide education and outreach Think Blue campaign with development of some associated materials.

One important facet of this regional Connecticut River stormwater website is building the connection between enjoying and appreciating the resource and connecting to action. As such, PVPC will be working with its current Connecticut River US website, maintained in partnership with the Connecticut River Conservancy, to draw stronger lines between getting out on the resource and taking action for stormwater. The Connecticut River US website has information on paddling, trails, and water quality.



Design of Connecticut River Stormwater website that is in development.

3. Collaborated with state-wide stormwater coalition of coalitions

On behalf of Connecticut River Stormwater Committee members, PVPC has been active on the larger coalition of state-wide stormwater coalitions committee and the group's education and outreach subcommittee. The group was successful in applying for and receiving a $200,000 MS4 assistance grant to lay the groundwork for a state-wide stormwater outreach campaign. The campaign will help to define messaging, lay out a plan of work to meet education and outreach permit requirements, and develop a selection of materials for use by coalitions and municipalities. Water Words that Work was just selected as the project consultant at the end of March. PVPC staff is excited by the prospect of working with such a talented consultant that has developed state-wide stormwater campaigns in several states already. At the same time, staff is hopeful that the 5-year education and outreach framework it has been developing with Connecticut River Stormwater Committee members can be further refined with consultant input.

The following two projects, while specific to certain municipalities, are expanding awareness regionally about stormwater. They also serve to build capacity and know-how in planning, design, and construction of better stormwater management practices. Each project has its own outreach and education component.

4. Continue to lead urban tree planting project in Chicopee, Holyoke, and Springfield

PVPC continues to lead an effort to promote urban tree planting in the region's 3 major cities in partnership with the US Forest Service, Massachusetts Executive Office of Energy and Environmental Affairs, the Valley Opportunity Council, Nuestras Raices, ReGreen Springfield, Conway School of Design, Mass DCR, and the Cities of Chicopee, Holyoke, Springfield. Aimed at reducing stormwater flows to combined sewer areas and promoting greater climate reslience, the project involves an integrated community outreach process involving multiple neighborhood workshops and workshops for public works officials. Once completed, the project will provide the following major deliverables:

- installation of 2,200 trees on local streets and yards
- final engineering design for a green streets in each municipality
- model stormwater tree rebate ordinance

The project is made possible thanks to a $239,000 grant award to PVPC from the US Forest Service under the State and Private Forestry FY15 Northeastern Area Landscape Scale Restoration Program.

5. Continue to lead project in Holyoke to reduce urban flows into Day Brook

Through an EPA Urban Small Waters Grant, PVPC is developing a green infrastructure plan for Day Brook in Holyoke, which flows from west to east, remaining above-ground from Anniversary Hill Park and Community Field before being conveyed underground beneath the City and routed through the Waste Water Treatment Plant.

In this past year, the project completed work to increase awareness about this "secret stream" running unseen through the urban landscape. Conducted largely by project partner Enchanted

Circle Theater, awareness work this year followed a six-week lesson series that engaged third and fifth graders in learning about stormwater and producing artwork for use in a mural and "storywalk" about Day Brook.

The mural, which relates the unseen journey of Day Brook in Holyoke, was unveiled at a ribbon cutting event at Community Field in June. The event for the mural included stormwater learning stations, including rain gardens in a cup activities. The storywalk unveiling occurred at the Sullivan School in September as part of Arts in Education Week. Students participated in the unveiling and then spent time being stormwater detectives on the school grounds, working in teams to check off items on a treasure hunt list. The story walk, conceived as movable artwork that tells the story of Day Brook in a series of six panels, has been installed for periods of time at the Sullivan School, Community Field, City Hall, and the Public Library.



Students enjoyed the thrill of unveiling the Day Brook story walk at the Sullivan School in Holyoke. The story walk incorporated student artwork and words telling the history of Day Brook.



Local media provided good coverage of the story walk unveiling.





As part of the story walk unveiling event, a student records finding a storm drain in the stormwater detectives treasure hunt on school property in photo above. In photo at right, Sullivan School Principal John Breish talks with students about a pipe draining storm flow from the school's roof.

The Town of Belchertown

HOUSEHOLD HAZARDOUS WASTE COLLECTION DAY

Saturday, September 16, 2017

PRE-REGISTRATION IS REQUIRED.

Location: **DPW, 290 Jackston St. (Highway Garage Location)**

Time: **9am-12pm (noon)**

Vehicles arriving after noon will not be accepted



***PAYMENT IS DUE AT TIME OF EVENT. CASH/CHECKS (Payable to Town of Belchertown)**

Surrounding Towns are Invited to Take Part

For a registration form and a list of Do/Don't items stop by or visit www.belchertown.org/government/dpw/index.php

WHAT YOU NEED TO KNOW ABOUT WETLANDS PROTECTION IN BELCHERTOWN

What are Wetlands?

"Wetland resource areas" include the commonly known cattail marsh, wet meadows, red maple swamps and open water pond, also rivers that generally flow throughout the year, 200-foot riverfront areas which border rivers or streams on both sides, intermittent streams on both sides, intermittent streams that dry up during part of the year, associated banks, low-lying flood plains and vernal/ephemeral pools. These areas (except riverfront areas) are surrounded by "buffer zones" -100ft. wide protective zones that protect wetlands from human impacts.



Why are they important?

Wetland resource areas provide critical habitat to wildlife and help maintain the aesthetic beauty of our town. They also provide priceless yet "free" services including:



Drinking water purification
Groundwater recharge
Flood control and storage
Pollution prevention
Wildlife Habitat



Wetlands Do's and Don'ts

Do's: Mowing an existing lawn, working in an existing garden, pruning/maintaining existing landscaping, planting native vegetation, hiking, horseback riding, passive recreation.

Don'ts: Dumping yard waste, leaves, grass, manure, any work within 100ft of a vernal pool/ephemeral pool, dumping dirt or other fill, draining/pumping water to or from a wetland, pond or stream, building or removing dams.

The Conservation Commission strongly recommends that you avoid using chemicals anywhere on your property due to the potential hazards that they pose to your drinking water, your children and your pets.



A large percentage of Belchertown homeowners have wetland resource areas on or near their property.

If you plan to do any work in a wetland, within 100ft. of a wetland, or within 200ft. of a stream or river, such as: tree or vegetation removal or clearing, grading, excavation or paving, landscaping, construction, etc. or ANY other activity that might alter wetlands or their buffer zones, you must contact the Belchertown Conservation Commission.

THANK YOU FOR HELPING TO PROTECT BELCHERTOWN'S NATURAL RESOURCES

Appendix C

Stormwater Public Participation/Involvement Materials

A TRUE COPY

Attest Ellen K Rockwell-Berto
Town Clerk, Town of Belchertown

Actions taken at the Annual Town Meeting held May 8, 2017 at the Belchertown High School Veterans' Auditorium

Article 14 Voted to have the Town of Belchertown adopt the Illicit Connections and Discharges to the Municipal Storm Drainage System Bylaw,

SECTION 1. PURPOSE..... 1

SECTION 2. DEFINITIONS..... 2

SECTION 3. APPLICABILITY..... 4

SECTION 4. AUTHORITY..... 4

SECTION 5. RESPONSIBILITY FOR ADMINISTRATION..... 4

SECTION 6. REGULATIONS..... 5

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SECTION 13. TRANSITIONAL PROVISIONS 9

SECTION 1. PURPOSE

The purpose of this bylaw is to regulate and eliminate illicit connections and discharges to the Town of Belchertown's Municipal separate storm sewer system (MS4), which is necessary for the protection of the Town's water bodies, wetlands, and groundwater, and to safeguard the public health, safety, welfare, and the environment. This bylaw establishes methods for controlling the introduction of pollutants into the [Town's] municipal separate storm sewer system (MS4) in order to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) permit process.

The objectives of this bylaw are:

(1) To prevent pollutants from entering the municipal separate storm sewer system (MS4);
(2) To prohibit illicit connections and unauthorized discharges to the storm water system (MS4);
(3) To require the removal of all such illicit connections;
(4) To establish the legal authority to ensure compliance with the provisions of this bylaw through inspection, monitoring, and enforcement.

Increased and contaminated storm water runoffs are major causes of:

(1) Impairment of water quality and flow in lakes, ponds, streams, rivers, wetlands and groundwater;
(2) Contamination of drinking water supplies;
(3) Alteration or destruction of aquatic and wildlife habitat; and
(4) Local flooding.

SECTION 2. DEFINITIONS

For the purposes of this bylaw, the following shall mean:

Authorized Enforcement Agency/Applicable Authority: The Director of the Department of Public Works or designated representative, its employees or agents designated to enforce this bylaw.

Best Management Practices (BMPs): Activities, procedures, restraints, or structural improvements that helps to reduce the quantity or improve the quality of storm water runoff. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or water disposal, or drainage from raw materials storage.

Clean Water Act: The Federal Water Pollution Control Act (33 U.S.C. § 1251 *et seq.*) as hereafter amended.

Discharge of Pollutants: The addition from any source of any pollutant or combination of pollutants into the municipal storm drainage system or into the waters of the United States or Commonwealth from any source.

Grandfathered: Exempt from new legislation, restrictions, or requirements.

Groundwater: Water beneath the surface of the ground and not confined in a conduit or container.

Illicit Connection: Any surface or subsurface drain or conveyance, which allows an illegal discharge into the municipal storm drainage system. Illicit connections include conveyances which allow a non-storm water discharge to the municipal storm drainage system, including: sewage, process wastewater or wash water and any connections from indoor drainages sinks, or toilets, regardless of whether said connection was previously allowed, permitted, or approved before the effective date of this bylaw.

Illegal Discharge: Any direct or indirect non-storm water discharge to the municipal storm drainage system, except as specifically exempted in Section 7 of this bylaw. The term does not include a discharge in compliance with an NPDES Storm Water Discharge Permit or resulting from firefighting activities exempted pursuant to Section 7 of this bylaw.

Impervious Surface: Any material or structure on or above the ground that prevents water from infiltrating the underlying soil. Impervious surface includes, without limitation, roads, paved parking lots, sidewalks, and roof tops.

Municipal separate storm sewer system (MS4) or municipal storm drainage system: The system of conveyances designed or used for collecting or conveying storm water, including any road with a drainage system, street, gutter, curb, inlet, piped storm drain, pumping facility, retention or detention basin, natural or man-made or altered drainage channel, reservoir, and other drainage structure that together comprise the storm drainage system owned or operated by the Town of Belchertown.

National Pollutant Discharge Elimination System (NPDES) Storm Water Discharge Permit: A permit issued by United States Environmental Protection Agency or jointly with the State that authorizes the discharge of pollutants to waters of the United States.

Non-Storm water Discharge: Any discharge to the municipal storm drain system not composed entirely of storm water.

Person: Any individual, partnership, group of individuals, association, partnership, firm, company, trust, corporation, business organization, estate, and any agency, authority, department or political subdivision of the Commonwealth or the federal government, the Town of Belchertown, or any other legal entity to the extent permitted by Town bylaw, including any officer, employee, or agent of such person or entity.

Pollutant: Any element or property of sewage, agricultural, industrial or commercial waste, runoff, leachate, heated effluent, or other matter whether originating at a point or nonpoint source, that is or may be introduced into any sewage treatment works or waters of the Commonwealth or wetland resource areas. Pollutants shall include:

a. paints, varnishes, and solvents;
b. oil and other automotive fluids;
c. liquid, solid wastes and yard wastes;
d. refuse, rubbish, garbage, litter, or other discarded or abandoned objects, accumulations and floatables;
e. pesticides, herbicides, and fertilizers;
f. hazardous materials and wastes; sewage, fecal coliform and pathogens;
g. dissolved and particulate metals;
h. animal wastes;
i. rock, sand, salt, soils;
j. construction wastes and residues; and

k. noxious or offensive matter of any kind.

Process wastewater: Any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any material, intermediate product, finished product, or waste product. Process wastewater includes water which has increased in temperature as a result of manufacturing or other processes.

Recharge: The process by which groundwater is replenished by precipitation through the percolation of runoff and surface water through the soil, or by injection of collected precipitation, run off or adequately treated wastewater.

Storm water: Rainwater, snowmelt and/or other water that flows off impervious surfaces and across or over the ground surface rather than being absorbed into the soil.

Toxic or Hazardous Material or Waste: Any material, including any substance, waste, or combination thereof, which because of its quantity, concentration, physical, chemical, corrosive, flammable, reactive, toxic, infectious or radioactive characteristics, either separately or in combination with any substance or substances, may cause or significantly contribute to a substantial present or potential threat to human health, safety, welfare, or to the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Toxic or hazardous materials include any synthetic organic chemical, petroleum product, heavy metal, radioactive or infectious waste, acid and alkali, and any substance defined as Toxic or Hazardous under M.G.L. Ch.21C and Ch.21E, and the regulations at 310 CMR 30.000 and 310 CMR 40.0000.

Wastewater: Any sanitary waste, sludge, or septic tank or cesspool contents or discharge, or water that during manufacturing, cleaning or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct or waste product.

Watercourses: A natural or man-made channel through which water flows or a stream of water, including a river, brook, or underground stream.

Waters of the Commonwealth: All waters within the jurisdiction of the Commonwealth of Massachusetts, including, without limitation, rivers, streams, lakes, ponds, springs, impoundments, estuaries, wetlands, coastal waters, and groundwater.

SECTION 3. APPLICABILITY

This bylaw shall apply to all flows entering the storm drainage system owned and/or operated by the Town of Belchertown.

SECTION 4. AUTHORITY

This bylaw is adopted under the authority granted by the Home Rule Amendment of the Massachusetts Constitution and the Home Rule Procedures Act, and pursuant to the regulations of the federal Clean Water Act found at 40 CFR 122.34.

SECTION 5. RESPONSIBILITY FOR ADMINISTRATION

The Director of the Department of Public Works and/or its designated representative shall administer, implement and enforce this bylaw. Any powers granted to or duties imposed upon the Director of the Department of Public Works pursuant to this Bylaw may be delegated in writing by the Director of the Department of Public Works to employees or agents of the Department of Public Works.

SECTION 6. REGULATIONS

The Director of the Department of Public Works may promulgate rules and regulations to effectuate the purposes of this bylaw. Failure by the Director of the Department of Public Works to promulgate such rules and regulations shall not have the effect of suspending or invalidating this bylaw.

SECTION 7. PROHIBITED ACTIVITIES

1. Illegal Discharges

   No person shall dump, discharge, cause or allow to be discharged any pollutant or non-storm water discharge into the municipal separate storm sewer system (MS4). Non-emergency pumping performed by the Fire Department must utilize appropriate best management practices (BMPs) and follow hazardous materials disposal guidelines to prevent contamination of the municipal storm drainage system with hazardous materials. If hazardous materials are observed within the flooded area from non-emergency pumping activities, or are suspected to be contained therein, a qualified hazmat technician and applicable state and local agencies must be consulted. These agencies will be responsible for implementing the BMPs to the contamination of nearby water ways and the municipal storm drainage system.

2. Illicit Connections

   No person shall construct, use, allow, maintain or continue any illicit connection to the municipal storm drainage system, regardless of whether the connection was permissible under applicable law, regulation or custom at the time of connection. No grandfathering is permitted.

3. Obstruction of Municipal Storm Drainage System

   No person shall obstruct or interfere with the normal flow of storm water into or out of the storm drainage system without prior approval from the Director of the Department of Public Works or designated representative. No person shall dump or dispose of yard waste (leaves, grass clippings, etc.) into the MS4, or into open watercourses (swales, brooks and streams).

a. Drains – No one shall tie any pump, cellar, yard, roof or area drain directly into the storm water drainage system without approval from the Applicable Authority.

b. Catch Basins – No Person shall directly or indirectly dump, discharge or cause or allow to be discharged into any catch basin, any solid waste, construction debris, paint or paint product, antifreeze, hazardous waste, oil, gasoline, grease and all other automotive and petroleum products, solvents and degreasers, drain cleaners, commercial or household cleaners, soap, detergent, ammonia, food and food waste, grease or yard waste, animal feces, dirt, sand gravel or other pollutant. Any person determined by the applicable authority to be responsible for the discharge of any of the above substances to a catch basin may be held responsible for cleaning the catch basin and any other portions of the storm water system impacted according to Town standards and requirements or paying the cost for such cleaning. In addition, the Person shall be responsible for paying any penalties assessed by the Town.

c. Septage – No person shall discharge or cause or allow to be discharged any septage, or septage tank or cesspool overflow into the Town's storm water drainage system.

d. Storage & Disposal of Hazardous Material – No one shall dispose of anything other than clear water into the Town's storm drainage system. The disposal of waste, gasoline or any other hazardous material into the storm drainage system is strictly prohibited and is in violation of state and federal pollution laws.

e. Private drainage systems – It is prohibited for anyone with a private drainage system from tying into the public storm water disposal system without written approval from the Applicable Authority. The maintenance of any and all private drainage systems shall be the responsibility of the owners.

4. Exemptions

This section shall not apply to any of the following non-storm water discharges or flows provided that the source is not a significant contributor of a pollutant to the storm drainage system.

a. Waterline flushing;
b. Emergency pumping performed by the Fire Department;
c. Discharges (in liquid form) from landscape irrigation or lawn watering;
d. Diverted stream flows, springs;
e. Rising groundwater;
f. Uncontaminated groundwater infiltration as defined in 40 CFR 35.2005(20), or uncontaminated pumped groundwater;
g. Flows from potable water sources;
h. Irrigation water, springs;
i. Water from crawl space pumps, exterior foundation drains, footing drains (not including active groundwater dewatering systems), sump pumps or air conditioning condensation;
j. Water from individual residential car washing;

k. Natural flows from riparian habitats and wetlands;
l. Discharges from de-chlorinated swimming pool water (less than one part per million chlorine) provided it is allowed to stand for one week prior to draining and the pool is drained in such a way as not to cause a nuisance;
m. Discharges during street sweeping, discharge of sand and deicers used for public safety purposes and other storm drainage system maintenance;
n. Dye testing, provided notification is given to the Director of the Department of Public Works or designated representative prior to the time of the test;
o. Non-storm water discharges permitted under an NPDES permit, waiver, or waste discharge order administered under the authority of the United States Environmental Protection Agency, provided that the discharge is in full compliance with the requirements of the permit, waiver, or order and applicable laws and regulations;
p. Discharges for which advanced written approval is received from the Director of the Department of Public Works or designated representative if necessary to protect public health, safety, welfare or the environment; and
q. Emergency repairs to the municipal storm drain system, and any storm water management structure or practice that poses a threat to public health or safety, or as deemed necessary by the Town.

SECTION 8. EMERGENCY SUSPENSION OF STORM DRAINAGE SYSTEM ACCESS

The Director of the Department of Public Works or designated representative may suspend municipal storm drainage system (MS4) access to any person or property without prior written notice when such suspension is necessary to stop an actual or threatened illicit discharge of pollutants that presents or may present imminent risk of harm to the public health, safety, welfare or the environment. In the event any person fails to comply with an emergency suspension order, the Director of the Department of Public Works or designated representative may take all reasonable steps to prevent or minimize harm to the public health, safety, welfare or the environment.

SECTION 9. WATERCOURSE PROTECTION

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

Failure by the property owner to maintain the watercourse does not constitute an obligation on the part of the Town to assume this responsibility.

SECTION 10. NOTIFICATION OF SPILLS

Notwithstanding any other requirements of local, state or federal law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials at that facility operation which is resulting or may result in illegal discharge of pollutants into the municipal drainage

system, a wetland resource area, or waters of the Commonwealth, that person shall take all necessary steps to ensure containment, and cleanup of the release. In the event of a release of oil or hazardous materials, the reporting person shall immediately notify the municipal fire and police departments, the Director of the Department of Public Works or designated representative, and the Massachusetts Department of Environmental Protection (if release is reportable as defined by 310 CMR 40.00). In the event of a release of non-hazardous material, said person shall notify the Director of the Department of Public Works or designated representative no later than the next business day. Written confirmation of all telephone, facsimile or in person notifications shall be provided to the Director of the Department of Public Works or designated representative within three business days thereafter. If the discharge of prohibited materials is from a commercial or industrial facility, the facility owner or operator of the facility shall retain on-site a written record of the discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least three years.

SECTION 11. ENFORCEMENT

1. The Director of the Department of Public Works or an authorized agent of the Department of Public Works shall enforce this bylaw, and the regulations promulgated thereunder, as well as the terms and conditions of all permits, notices, and orders, and may pursue all civil and criminal remedies for such violations.

2. Orders

   The Director of the Department of Public Works or designated representative may issue a written order to enforce the provisions of this bylaw or the regulations thereunder, which include, but are not limited to:

   a. Elimination of elicit connections or discharges to the storm drainage system (MS4);
   b. Termination of access to the storm drainage system;
   c. Performance of monitoring, analyses, and reporting;
   d. Cessation of unlawful discharges, practices, or operations;
   e. Remediation of contamination in connection therewith;
   f. Implementation of source control or treatment BMPs.

   If the Director of the Department of Public Works or designated representative determines that abatement or remediation of contamination is required, the order shall set forth a deadline for completion of the abatement or remediation. Said order shall further advise that, should the violator or property owner fail to abate or perform remediation within the specified deadline, the Town of Belchertown may, at its option, undertake such work and expenses thereof shall be charged to the violator or property owner.

   Within thirty (30) days after completing all measures necessary to abate the violation or to perform remediation, the violator and the property owner will be notified, in writing, of the costs incurred by the Town of Belchertown including administrative costs, for which payment is due to the Town. The violator or property owner may file a written protest or appeal objecting to the amount or basis of costs with the Board of Selectmen within thirty (30) days of receipt of the notification of the costs incurred. If the amount due is not received by the expiration of the

time in which to file a protest or appeal or within thirty (30) days following a decision of the Board of Selectmen or designated representative affirming or reducing the costs, or from a final decision of a court of competent jurisdiction, the costs shall become a special assessment against the property owner and shall constitute a lien on the owner's property for the amount of said costs pursuant to M.G.L. Ch. 40, § 58. Interest shall begin to accrue on any unpaid costs at the statutory rate provided in M.G.L. Ch. 59, §57 after the thirty-first day at which the costs first become due.

3. Equitable Remedy

If a person or entity violates the provisions of this bylaw, regulations, permit, notice, or order issued thereunder, the Director of the Department of Public Works or designated representative may seek injunctive relief in a court of competent jurisdiction to restrain the person from activities that would create further violations or compel the person to abate or remediate the violation.

4. Criminal penalty

Any person who violates any provision of this Bylaw, regulation, order or written approval issued thereunder, shall be punished by a fine not to exceed $300 per violation. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

5. Non-Criminal Disposition

As an alternative to criminal prosecution or civil action, the Town of Belchertown may elect to utilize the non-criminal disposition procedure set forth in M.G.L. Chapter 40, §21D. The Director of the Department of Public Works or designated representative shall be the enforcing person. The penalty for the 1st violation shall be up to $100. The penalty for the 2nd violation shall be $200. The penalty for the 3rd and subsequent violations shall be $300. Each day or part thereof that such violation occurs or continues shall constitute a separate offense.

6. Right-of-Entry

To the extent permitted by state law, or if authorized by the owner or other party in control of the property, the Director of the Department of Public Works or designated representative, its agents, officers, and employees may enter upon privately owned property for the purpose of performing their duties under this bylaw and regulations and may make or cause to be made such examinations, surveys or sampling as the Director of the Department of Public Works or designated representative deems reasonably necessary.

7. Appeals

The decisions or orders of the Director of the Department of Public Works shall be final. Further relief shall be to a court of competent jurisdiction.

8. Remedies Not Exclusive

The remedies listed in this bylaw are not exclusive of any other remedies available under any applicable federal, state or local law.

SECTION 12. SEVERABILITY

If any provision, paragraph, sentence, or clause, of this Bylaw or the application thereof to any person, establishment, or circumstances, shall be held invalid for any reason, such invalidity shall not affect any other provisions or applications of this Bylaw, and shall continue in full force and effect.

SECTION 13. TRANSITIONAL PROVISIONS

Property owners shall have 120 days from the effective date of the bylaw to comply with its provisions provided good cause is shown for the failure to comply with the bylaw during that period unless local, state, or federal agencies deem that immediate actions are warranted

(Vote - Majority Required - Majority Yes)

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COMMUNITY Students assist MSP locate stranded boaters...p. 3


LITTLE LEAGUE Swift River and Subway play in championship...p. 8


GRANBY Officials break ground for new school...p. 12


SPORTS Boys volleyball gathers for All-Star game...p. 13

GRANBY

Override rejection to force school layoffs

WALTER HAMILTON
Correspondent

GRANBY – A property tax override ballot question was rejected 464-190 on Monday, leaving the School Department no choice but to reduce staff and program offerings.

The question to allow a $295,799 increase in the town's tax levy was decided by 754 voters, or 16.5 percent of the town's 4,567 registered voters. The "no" votes easily surpassed the "yes" votes by 62 percent to 38 percent.

The override vote followed a Town Meeting vote on June 12, when a two-thirds majority voted to withdraw $395,000 from the

See OVERRIDE, page 4 •

SELECTMEN

Grant allows town to upgrade electric lighting

STEPHEN C. HILL
Correspondent

BELCHERTOWN – Lower energy costs and a smaller carbon footprint are the expected results of a state grant to upgrade electrical lighting recently received by the town and announced at the Board of Selectmen's meeting Monday.

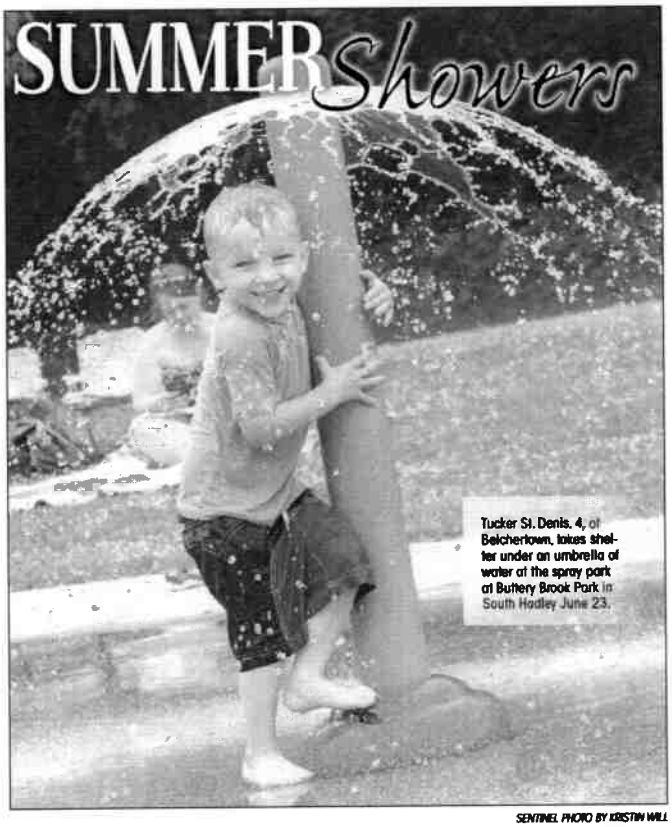
The $195,000 Green Communities grant from the state Department of Energy Resources will be used to install LED lighting in 15 town buildings and the majority of street lights in town, said Town Administrator Gary Brougham. LED stands for light emitting diode, a technology that has made significant strides in the past decade.

"It will save us significantly in our energy costs," Brougham said. "It's a real significant accomplishment."

The grant application was approved in full despite very stiff competition, according to Brougham. He credited the detail and quality of the grant application developed by personnel from the Department of Public Works.

The town is eligible for Green

See GRANT, page 10 •



Tucker St. Denis, 4, of Belchertown, takes shelter under an umbrella of water at the spray park at Buttery Brook Park in South Hadley June 23.

SENTINEL PHOTO BY KRISTIN WILL

WATER BAN

Commissioners lift outdoor watering ban

Recommend conserving water wherever possible

AIMEE M. HENDERSON
ahenderson@turley.com

BELCHERTOWN – An outdoor watering ban that was imposed last winter for those living in the Belchertown Water District has been lifted, following a vote by the commissioners June 20. They are, however, still strongly urging district residents to conserve water whenever and wherever possible.

Water District Director Kevin Williams said the commissioners agreed that conditions have returned to appropriate levels to end the ban, but by conserving water wherever possible, it will reduce the chances of reinstating the ban as the dry months return.

Williams suggests consulting a lawn specialist for proper irrigation practices including the installation of rain sensors and proper watering schedules and duration.

While the groundwater levels have returned with the abundance of recent rain, Williams said they are still below the levels he'd like to see in the summer months. There is still a concern surrounding how much water is drawn from the wells in the coming dry months.

Residents and business owners in the district can help ease some concerns by following recommendations made by the Massachusetts Drought Management Task Force, Executive Office

See WATER BAN, page 4 •

Experts predict heavy defoliation amidst moth outbreak

AIMEE M. HENDERSON
and WYATT ALOISIO

BELCHERTOWN – The outbreak of gypsy moth caterpillars in the area is believed to be one of the worst since the 1980s, according to officials, with complete defoliation of trees occurring across the region.

Egg masses belonging to the invasive insects began to hatch several weeks ago, followed by them feasting on trees and leaves. The caterpillars are expected to pupate into their moth cycle and hatch by mid-July, which will slow down the loss of leaves. The feeding cycle for the caterpillars was expected to peak in mid-June.

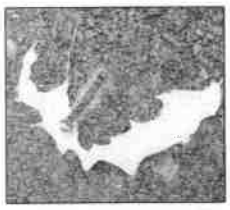
"It's definitely a severe outbreak in this area," said Steve Williams, Belchertown's tree warden. "It's very concerning. This is certainly reminiscent of the 80s."

Williams said not all areas in town have been hit as hard as others, but in the cases where an outbreak occurred there "seems to be devastating" defoliation. He said the majority of trees should recover by shedding the damaged leaves and putting out new ones.

And, while the defoliation of the trees is the greatest impact, the caterpillar droppings cause an added nuisance to the situation.

Even with many of the trees expected to grow a new set of leaves, Williams is concerned about the trees' overall health.

See MOTH, page 10 •


SENTINEL PHOTO BY AIMEE M. HENDERSON
A gypsy moth caterpillar is seen near a leaf that was partially eaten.


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BUSINESS

Bell & Hudson appointed to Hanover's President's Club



Matt Phaneuf, president of Bell & Hudson.

BELCHERTOWN – Bell & Hudson Insurance Agency recently was appointed to The Hanover Insurance Group's President's Club, an elite group of independent insurance agencies from across the country.

Agencies named to the company's President's Club are recognized for delivering outstanding value to their customers through insurance expertise and responsive service.

Bell & Hudson Insurance was one of only 125 independent agencies recognized with this distinction across the country. The Hanover partners with a select group of 2,200 independent agents nationwide.

"The team at Bell & Hudson Insurance truly understands the needs of its customers and delivers a top-of-the-line customer experience, providing expert insurance counsel and high-quality service," said John C. Roche, president, Hanover Agency Markets. "We're proud to partner with Bell & Hudson Insurance and appreciate its commitment to going above and beyond to serve its customers."

The agency was formally recognized for its inclusion in the company's President's Club at a national business conference in Laguna Beach, Calif.

"This is a recognition of the value we place on providing specialized and innovative insurance solutions that meet the unique needs of our customers," said Matt Phaneuf, President at Bell & Hudson. "We are proud to be recognized with this honor.

Bell & Hudson Insurance Agency is an independent, 100+ year old, award winning agency that offers a broad range of personal, commercial, life and health products for individuals, families, and businesses locally, and throughout the region. Their offices are located in Belchertown and West Brookfield.

MOTH • from page 1

"They can only tolerate so much stress over the years," he said. "When a tree is stressed it is more susceptible to various diseases."

Williams pointed out that the trees have experienced several difficult seasons of late, between last year's drought, the winter storm of 2011, among increased air pollution and environmental warming. The gypsy moth caterpillars are just adding to the growing stresses the region's trees are facing.

In 2016 more than 350,000 acres of trees in Western and Central Massachusetts were defoliated as a result of the caterpillars. According to the Massachusetts Department of Conservation and Recreation, egg masses for the caterpillars, which are laid by female moths in August, can potentially contain between 1,000 and 2,000 caterpillars each.

Because of the outbreak and mass quantities of caterpillars in each egg mass, treating for the insect on the town's side is nearly impossible. Williams said the only option would be widespread use of pesticides, which would not be a popular treatment nor cost-effective.

Williams has been referring people concerned about the trees on their own property to professional arborists to discuss treatment options. As for the town's trees, Williams is hoping Mother Nature will correct the issue that is going on.

The caterpillars have preferred species of host trees that they will often target including oaks, conifers maples, birch, willow, hawthorn and apple. The caterpillars, however, have even been seen this season on white and red pine trees.

Despite increased rain and cooler weather throughout the spring, a stark contrast to last year's drought conditions that helped to further spur onwards the caterpillar's population sizes, this summer appears from the outset, to be yet another in which the region will be besieged by the invasive insects.

"We are, unfortunately still in an area where folks will have to be putting up with these insects," said Tawny Simiski, an Extension Entomologist for the University of Massachusetts Amherst Landscape, Nursery, and Urban Forestry Program.

Although last year saw an increased outbreak, the worst attack to date occurred in the 1980 and 1981 where the insects destroyed over 900,000 acres in 1980 and by 1981 defoliated nearly 2 million acres of trees and forest.

Simiski said that if there is one hope for dealing with the insects and their bombardment to the area in lies in a fungus, Entomophaga maimaiga (EM), that develops with the right amount of moisture and rainfall and helps by causing a high mortality rate within gypsy moth caterpillars during periods of high both high and low population density.

"This was something that we first saw happening in 1989 and since then we've enjoyed relatively low population numbers," said Simiski who attributes last year's high numbers of the insects to the drought, making the fungus unable to properly develop.

Similarly a Nucleo-polyhedrosis Virus, or NPV for short, can have equally beneficial impacts to lessening the caterpillar's large populations by causing them to wilt and die-off, but only shows under the condition that the caterpillars have maintained a particularly high population density in a single area over a prolonged period of time.

Often times following the hatching of the eggs the larva insects will "balloon" where the thin strings they release and travel upon will be caught in the wind bringing them to new host trees to devour.

"We're still in the early stages of the season and it is hard to know when or how much of an impact the fungus will have on them if at all this year," said Simiski, who said that only with continued rainfall and wet conditions in the next several weeks can the fungus properly begin and develop.

When it comes to management strategies for helping to lessen the impact of the caterpillars on trees Simiski said that it really comes down to a homeowner's choice of mechanical versus chemical, but said that beyond awaiting the fungus to really takes its toll, area residents should still be prepared to have their trees impacted either way.

Mechanical options, including banding trees and scrapping off the egg masses are, according to Simiski, options that she has seen used by those looking to protect their trees. Due to the eggs having already hatched and the ballooning effect used by the larva to disperse, both options, at present, are likely to be ineffective.

"If people aren't careful, banding can actually harm trees if placed directly on them," said Simiski.

"At some point, the caterpillars are going to stack up if something sticky is placed over the bark of the trees, and they will just climb over each other and up to the leaves."

Chemical options including the use of insecticides such as Bacillus thuringiensis spp. kaurstaki (Btk) as well as other biological pesticides can prove effective if they are applied to the leaves of a tree early enough and by a Massachusetts licensed pesticide applicator with specialized equipment.

Btk is most effective at killing younger caterpillars that are actively feeding and is considered to be non-toxic to birds, fish, bees, and to pets.

Another pesticide, Spinosad, is derived from naturally occurring bacteria and can work on the caterpillars at all stages but is toxic to pollinator insects such as bees until it dries.

"It is difficult, certainly, to predict just where things are headed," said Simiski. "There are a lot of egg masses out there and there is no real way that a homeowner can manage to get to all of them especially now that they are hatching."

For more information on the gypsy moth caterpillars visit the Massachusetts Department of Conservation and Recreation web page at www.mass.gov or speak with your local tree warden or conservation commission.

GRANT • from page 1

Communities grants because it was designated a green community several years ago after completing the rigorous state requirements

"This is great. This is really exciting," said Brenda Aldrich, Selectmen's chairwoman.

Police officer made full time

After serving three years as a part-time police officer, Andrew Letendre has been promoted to full time.

Letendre, 24, is currently enrolled in the Western Mass. Police Training Academy, in Springfield. His appointment to full time was effective June 19. Letendre is a resident of Belchertown.

Town seeks grant for State School infrastructure

A state grant to extend a modern road and utilities on the former Belchertown State School campus from the assisted living facility currently under construction through to Jackson Street will be sought by the town and Mass Development, its partner in the redevelopment of the former facility for the mentally retarded.

The grant from the state Executive Office of Housing and Economic Development could bring $2.5 to $3 million for the project, which would include a road, water, sewer, storm drains, electricity and telecommunications, as well as an upgrade for the intersection at Jackson Street, Brougham said.

> *"It's important to keep momentum going," and the installation of infrastructure should help in that goal."*
>
> CLAIRE O'NEILL
> *Mass Developmen*

The idea, he said, is "to create additional marketable property" on the campus. With most of the old buildings demolished to create open land, having infrastructure in place "would be very attractive to potential developers."

"It's important to keep momentum going," and the installation of infrastructure should help in that goal, said Claire O'Neill, of Mass Development.

Steven Williams, director of the DPW, said the road now in place near Jackson Street needs to be widened and the intersection redesigned a bit, but the long-term goal is to redirect traffic through the campus and away from Howard Street and upper Jackson Street. Those areas have become heavily used by motorists trying to get to the town center and the State Street area from the west and redirecting traffic would return them to quieter residential areas, he said.

O'Neill said traffic through the State School would also help bring development and create a neighborhood on the campus.

No matching funds from the town are required to receive the grant but could boost the town's score on the grant application, Brougham said. The $1.25 million spent to build Front Street from State Street to the former Administration building and the $200,000 bonded by the town for constructing the road to the assisted living facility will be considered matching funds, he said.

Grants are expected to be awarded in September.

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NEWS & FEATURES

As a paper of record, we attempt to cover all general news, personality profiles, and community features that we know about. This includes all selectmen and school committee meetings as well as spot planning board, board of health, finance, and other town meetings determined by the issue's relevance to our readers. There are the annual major community event features that we should always cover, but we are more than open to suggestions of other features to celebrate the fabric of our communities and their many interesting occupants. Our loyal advertisers provide funding for this paid staff coverage.

For more information on news or community features for The Sentinel, please email ahenderson@turley.com.

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Belchertown, Granby & Amherst
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YOUR HOMETOWN NEWSPAPER SINCE 1915

Switching on the savings

Town receives $195K Green Communities grant, using to convert lighting

AIMEE M. HENDERSON
ahenderson@turley.com



SENTINEL SUBMITTED PHOTO

Steve Williams, second from right, receives the Green Communities grant for Belchertown during a ceremony held in Boston last week.

BELCHERTOWN – In an effort to continue to decrease energy use across the town, all municipal buildings will have interior and exterior lights converted to LED bulbs.

Last week, Steve Williams, Department of Public Works director, received – on the town's behalf – a check for $195,358 from the Department of Energy Resources as part of the Green Communities grant program. The Baker-Polito Administration awarded more than $14 million in competitive grants to 72 communities in the state to fund clean energy projects. There are 185 Massachusetts cities and towns that have earned the designation of a Green Community.

To date, Belchertown has been awarded $415,000 in Green Communities money, which has been used to fund such projects as installing storm windows,

See **GRANT**, page 3 •

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implementing a fuel management system, replacing boilers, and others.

The average annual savings to the town with Green Communities support, according to Williams, has been a 28 percent energy consumption reduction.

This year's project, which will convert 377 interior/exterior lights to LED on 15 different municipal buildings, is expected to save 54 percent in energy costs, which amounts to roughly $21,000. That savings is based on the current electrical rates.

The purpose of the upgrade will provide the latest interior and exterior LED lighting as replacements to existing fluorescent bulb-lighting, along with new fixtures and recommended interior motion sensors, according to Williams. The buildings receiving said upgrades include the police department, senior center, recreation center, Freedom Hall, IT/computer department, DPW, salt storage sheds, maintenance building, fire department, EMS department, Old Town Hall, Family Center, wastewater treatment plant, Finnerty House/offices, and Lawrence Memorial Hall.

Additionally, the municipal complex (Senior Center parking lot), which provides parking for five buildings, will receive new lighting. The existing overhead pole lighting currently consists of standard bulb lighting, which Williams said is poor and less efficient.

Other benefits, on top of efficiency, that come with converting to LED lighting include a 10-year warranty, in addition to the lights being: ecologically friendly because they are free of toxic chemicals; durable, in that they can withstand rough weather conditions; produce little infrared light and close to no UV emissions; ability to brighten up immediately; among others.

Under the Green Communities Act, cities and towns must meet five criteria to be designated a Green Community and receive funding. The grants provide financial support for energy efficiency and renewable energy projects that further the designated communities' clean energy goals. This sixth annual round of DOER Green Communities competitive grants is awarded to existing Green Communities that have successfully invested their initial designation grants and previous competitive grant awards. Grants are capped at $250,000 per municipality.

"Today's grant announcement is the largest award in the Green Communities program history and represents our administration's commitment to supporting clean energy efforts for our partners in cities and towns across Massachusetts," said Gov. Charlie Baker. "The projects funded by these grants will allow cities and towns across the Commonwealth to reinvest their energy savings in vital public services like schools, public safety, and local infrastructure."



Office of
DEPARTMENT OF PUBLIC WORKS
290 Jackson Street, P.O. Box 306
Belchertown, Massachusetts 01007-0306
Telephone: (413) 323-0415

Steven J. Williams
Director

Donna Lusignan
Administrative Assistant

December 1, 2017

Massachusetts Department of Energy Resources
100 Cambridge Street, Suite 1010
Boston, MA 02114
Attn: Ms. Jane Pfister, Grant Coordinator
Mr. James Barry, Regional Coordinator

RE: Green Community Competitive Grant – 2017
LED Lighting Project Final Completion Report

Dear Ms. Pfister,

The Town of Belchertown Department of Public Works would like to submit its final report for the completion of our LED Lighting Conversion Project funded by the Green Communities Competitive Grant –Year 2017. This project has provided for the removal and installation of 377 new interior and exterior LED lighting ballasts, bulbs, and sensors to fourteen(14) town owned buildings. Results are expected to produce a 54% average annual reduction in kilowatt savings with an estimated annual cost estimated savings of $25.000, for the Town of Belchertown.

DOCUMENTS & SCHEDULE:

1. **PROCUREMENT**: This project is part of a statewide, mandated energy efficiency program administered by National Grid (utility company).

2. **CONTRACT AWARD**: A standard contract between the Town of Belchertown and MassDOER was executed on July 14, 2017.

   The Department of Public Works acquired fourteen(14) purchase orders on July 20, 2017 for each designated building, as per quoted costs provided by Energy Source LLC. (Note: It was decided Franklin Street School Building was to be sold just after the submittal of this grant request thereby is not included in this project).

   Contracts between the Town of Belchertown and Energy Source, LLC. were executed on July 20, 2017 and provided to Mr. John Shoulda, Energy Source, LLC.,Project Manager. Certificates of Liability Insurance and W-9's were obtained from both Energy Source, LLC. as well as JS Electrical, Inc., vendor retained on behalf of Energy Source, LLC. to conduct the electrical work. Prevailing Wage(s) Report # 20170814-015 obtained on 08/14/2017.

3. **PERMITTING:** JS Electric, Inc., obtained a blanket electrical permit on August 7, 2017 from the Belchertown Building Inspector. No federal permits were required for this project.

4. **WORK TIMELINE:**
Materials were ordered as of August 1, 2017 with deliveries arriving on August 8, 2017. LED Lighting replacement began on August 9, 2017 after a pre-construction meeting was held at the DPW, 290 Jackson Street location. The dismantling and removal of existing systems occurred on an individual basis. The specific timeline for each building installation is shown here below.

Buildings (14)	Address	Start Date	Completion Date
DPW	290 Jackson Street	August 9	August 10
Salt Storage Sheds -2	290 Jackson Street	August 14	August 14
DPW Maintenance	290 Jackson Street	August 11	August 14
Police Department	70 State Street	August 15	August 18
MIS	7 Berkshire Ave	August 21	August 22
Recreation Center	66 State Street	August 23	August 24
Fire Department	10 North Main Street	August 25	August 30
Senior Center	60 State Street	August 31	Sept. 6
Lawrence Memorial Hall	2 Jabish Street	Sept. 7	November 17
Wastewater Treatment Plan	175 George Hannum Street	Sept. 13	Sept. 20
Old Town Hall	28 Park Street	Sept. 21	November 30
Freedom Hall	68 State Street	Sept. 27	Sept. 28
Finnerty House	1 South Main Street	Sept. 29	Sept. 29
EMS	9 East Walnut Street	October 2	November 17

ONSITE STORAGE & WASTE REMOVAL: The Department of Public Works provided on-site storage of the materials, effective August 8, 2017 and for the duration until project end. All regular waste removal was retained in a 30 yard dumpster provided by the vendor, was located onsite and removed on November 16, 2017. There was no hazardous waste material identified within any of the fourteen (14) buildings.

FINAL WALK-THROUGH / ONSITE MEETING(S):

October 20, 2017: site inspector Mr. Sean McCauley from CNC and on behalf of the Mass Save Program via NGRID conducted an onsite inspection and bulb count. The following five(5) buildings were chosen for inspection: Highway Dept., Maintenance Division, Fire Dept., Town Hall, and Police Dept.

November 16, 2017: The final inspection by the Regional Coordinator will be scheduled in the near future.

November 17, 2017: Onsite Installation inspections were conducted by project manager, Mr. John Shoulda, Energy Source, LLC.

FINAL COMPLETION DATE DECEMBER 1, 2017: Final document closeout, revised cut-sheets and delivery of comprehensive project completion manual(s) were provided by Energysource, LLC. See Letter from DPW, Maintenance Supervisor Max Bock –attached.

PROJECT BUDGET:
The actual installation and materials costs have changed from initial proposal.
Expenditures/rebate amounts have been confirmed and approved as of this final report.

See Comprehensive Files to include:

1. **Exhibit A** – Total Revised Costs –(Exc.)
2. **Exhibit B** – Final Invoices, Cut-Sheets
3. **Exhibit C**- Installation and Warranty Information
4. **Exhibit D** - Press and News Coverage via The Belchertown Sentinel Newspaper – Weekly Ad-run: June 29, 2017 & Ad-run July 6, 2017.
5. **Exhibit E** – Photos: Old Lighting vs. New Led Lighting –various locations

The Department of Public Works has received positive feedback regarding the new installed LED lighting within fourteen(14) town owned buildings; specifically with regards to their color which provides a white to bluish-white appearance creating a warmer glow and low glare as opposed to high optic lighting which previously caused vision harshness. In addition, new motion sensors as opposed to powering light switches on and off several times throughout the day have been an asset and pleasing to everyone.

In closing, we are pleased with the outcome of this LED Lighting project which would not have come to fruition without the grant funding of $195,358 provided us via the MassDOER – Green Communities Competitive Program.

Sincerely,

Steve Williams, Director
Dept. of Public Works

SJW/dml

ATTACHMENTS/Exhibits

CONSERVATION COMMISSION
Lawrence Memorial Hall
2 Jabish Street, Post Office Box 670
Belchertown, Massachusetts 01007-0670
(413) 323-0405

Conservation Commission Annual Report For 2017

The Belchertown Conservation Commission held fifty-two hearings under the Wetlands Protection Act; twenty-three were Requests for Determination, thirty were Notices of Intent, one application was withdrawn, one Amended Order of Conditions and two for Extended Orders of Conditions. The Commission issued five Emergency Certificates for the protection of public health and safety; the majority of the emergencies were to remediate flooding impacts as a result of beaver activity. The Commission also reviewed and commented on all septic system installation permits, site plan reviews, subdivision applications, ANR plans, and Chapter 61, 61A and 61B withdrawal requests. In addition, the Commission also reviewed the applications for all forest cutting plans and the Yearly Operational Plan for the vegetation management for the Massachusetts Electric Company, National Grid and the New England Central Railroad Company.

The Conservation Commission administrator, under the guidance of the Conservation Commission, is the Stormwater Authority for the Town. This responsibility is for the enforcement and permitting process for the Belchertown Stormwater Bylaw and regulations which went into effect in January, 2008. For the year 2017, there were thirty-three applications submitted for review. These regulations serve to protect public health, environment, and general welfare by establishing requirements and procedures to control the adverse impacts of stormwater runoff from new development and redevelopment.

The Commission has conducted numerous site visits to monitor ongoing projects throughout the year including housing lots, subdivisions currently under construction, ANR lots and Stormwater site visits. In addition, the Commission has dealt with several outstanding enforcement issues and has been concentrating their efforts to bring these projects back into compliance. The Commission continues to work with various Town departments for the Belchertown State School redevelopment project and is currently working with the project manager and the adjoining Lampson Brook Farm to provide protection, passive recreational access, environmental education and agricultural opportunities for this large undeveloped area. The Commission is also working with the Planning Board and the Recreation Department to create a handicapped accessible trail around Lake Wallace.

The Conservation Commission was awarded a $343,636.00 grant through the Local Acquisitions for Natural Diversity, (LAND) Grant program of the Mass. Executive Office of Energy and Environmental Affairs for the Mader Town Forest. This 86 acre property, in the vicinity of the Holland Glen Conservation Area, consists of a steep hillside with scenic vistas, a popular place for hiking, and a recharge area for Jabish Brook - a water supply for Belchertown and the City of Springfield. This property also has numerous Vernal Pools located within its boundaries. The conservation goal for this property is to protect a large tract of contiguous forestland, to be designated as a Town Forest, to improve outdoor recreation opportunities, support the local timber economy, preserve wildlife habitat and protect drinking water supplies.

In addition, the Commission, working with the Pioneer Valley Planning Committee and DPW was also awarded a $50,000 stormwater grant from DEP to study the creation of a Stormwater Utility. As the current Stormwater Authority, the Commission is working with the Stormwater Committee in developing a process to handle the new proposed MS-4 (Municipal Stormwater Discharges) regulations which are proposed to go into effect in July 2018.

The Conservation Commission has been involved in numerous conservation area stewardship projects, collaborating with both private and public organizations, as well as individuals. New trails have been blazed on the Reed Conservation Area as well as an updated trail map. The Jabish Brook Conservation trails have been improved, cleared and maintained. We are currently having the Holland Glen Conservation Area surveyed to determine property lines for a future parking area and new trail construction. The Conservation Commission would like to thank all volunteers and the Belchertown Department of Public Works for all their assistance with the stewardship and maintenance of our conservation areas.

The Commission has been actively working with the Tri-lakes Association and the Belchertown Lake Committee. The purpose of this relationship is to addresses the annual and long-range management strategies needed to meet recreational, habitat, aesthetic, water quality and other agreed-upon goals for Belchertown's Lacustrine habitats. Monitoring water quality, vegetation and nutrient content is a necessity in assessing the overall health for all three Lakes. The Conservation Commission, the Belchertown Lake Committee, Tri-Lakes Association and DPW are currently all working together to address the annual and long-range management strategies needed to meet the water quality and other agreed-upon goals for these lakes.

The updated 2013-2020 Open Space and Recreation Plan, (OSRP) will continue to qualify Belchertown for numerous State grant opportunities. The 2013-2020 Open Space and Recreation goals and objectives for 2018 will continue to incorporate this data reflecting community concerns for the Town and provide Belchertown with the resources, recreational management guidelines and strategies for the next seven years. In addition, the Conservation Commission regrettably accepted the resignation of Linda Leduc, a Commission member for over seven years who resigned in January 2017. A new Conservation Commission member Eric Wojtowicz joined the Commission on June 12th.

The Commission is anxious to begin new projects for the year 2018 and feels confident that the environment is favorable within the local community to protect and maintain valuable resource areas and open space within the Town. Collaborative efforts by Town departments, Land Trusts, State agencies, private individuals and private landowners only strengthen the chances for successful open space protection within the community.

Respectfully submitted;

David Haines, Chairman
Jon Clements, Vice-Chairman
Edward Knight, Commissioner
John Henry, Commissioner
Michael Cavatorta, Commissioner
Eric Wojtowicz, Commissioner
LeeAnne Connolly, Administrator
and
Michele Nowak, Department Clerk



TRASH COLLECTION

The Town of Belchertown, Department of Public Works will be providing town recyclable trash bags to anyone wishing to collect curbside trash for Earth Day. Trash bags may be obtained at the DPW, 290 Jackson Street, Highway Garage location April 19-21, 2017. All trash collected must be brought to the Transfer Station for Disposal by Saturday, April 22, 2017 or contact the DPW office to arrange for pickup.

Thanks to all participants for your efforts towards keeping our town clean!

CELEBRATE EARTH DAY APRIL 22, 2017

TRASH COLLECTION

The Town of Belchertown, Department of Public Works will be providing town recyclable trash bags to anyone wishing to collect roadside trash on Earth Day,

Trash bags may be obtained at the DPW, 290 Jackson Street, Highway Garage location from April 19 -21, 2017. All trash collected must be brought to the Transfer Station for disposal by Saturday, April 22, 2017 or contact the DPW office to arrange for pickup.

Thanks for all participants for your efforts towards keeping our town clean!

Name/Address	Collection Location/Route	# Bags
SCOTT TETRAULT	N. WASHINGTON ST	20
SCOTT TETRAULT	N. WASHINGTON	10
Mike Horton	20 Enfield Rd	20
NORMA WARNER	George Hannum	20
Bill Terry	Chauncey Wilcox	10
Ryan Kobylanski	George Hannum	10
Louise Butler	Rt 21	20
Jeff Cowgill B-TOWN 4-H	Old Enfield/Allen	20
Lloyd Buck	Rt 21	20
GEORGE BRACY	FULLER ST	20
GEORGE BRACY	S. WASHINGTON ST.	10
Mark Browne II	Michael Sears Cold Springs	20
Samantha Taylor	George Hannum	10
11	TOTAL:	210

Pioneer Valley Reciprocal HHW Collections-2017

- ***Residents planning on attending an event located in another community should contact your towns DPW or Recycling coordinator to confirm the method of payment.***

Date	Community	Contact	Phone	Time	Location
5.20.2017	South Hadley/ Granby	Veronique Blanchard Jeanne Crosby	413 538 5033 413 467-7174	8-12noon	10 Industrial Drive.
5.20.2017	Northampton	Susan Waite	413 587-1059	9-12noon	Vocational High Sch.
9.9.2017	Agawam	Tracy DeMaio	413 821-0624	9-12noon	DPW Yard (1000 Suffield St.)
9.9.2017	Longmeadow, Hampden, Ludlow, Palmer, Wilbraham	Arlene Miller	413 567-5027	9-1pm	Wilbraham Regional High School
9.16.2017	Belchertown	Donna Lusignan	413 323-0415	8-12noon	DPW Highway Garage (290 Jackson St.)
9.23.2017	Greenfield (FCSWMD)	Jan Ameen	413 772-2438	9-12noon	Greenfield Community College
9.23.2017	Orange (FCSWMD)	Jan Ameen	413 772-2438	9-12noon	Orange Transfer Station
9.24.2017	Amherst	Steve Telega	413 259-3049	9-12noon	Amherst Transfer Station (740 Belchertown Road)
10.7.2017	Chicopee	Barry Brouillard	413 594-3557	9-12noon	115 Baskin Dr,./DPW
10.21.2017	West Springfield	Rob Colson	413 263 3246	9-12noon	430 Westfield Street
10.28.2017	Westhampton	Kathleen Casey	413 685-5498	9-12noon	Westhampton, DPW

TOWN OF BELCHERTOWN PROPOSED BY-LAW GOVERNING DISCHARGES TO THE MUNICIPAL STORM DRAIN SYSTEM

The public is invited to attend a public hearing to be held by Steven J. Williams, Director of the Department of Public Works, in the Selectmen's Meeting Room, First Floor, Lawrence Memorial Hall, 2 Jabish Street, Belchertown, on **Wednesday, April 26, 2017 at 7:00 pm** to offer comments on a proposed Bylaw to regulate discharges to the Town's storm drainage system. The Bylaw is seen as necessary for the protection of the Town of Belchertown's storm drainage system and local water bodies, wetlands and groundwater and to safeguard the public health, safety, welfare and the environment.

The Director of the Department of Public Works will make a determination as to whether this Bylaw shall apply to all flows entering the storm drainage system in the Town of Belchertown so as to prepare for consideration at the next Town Meeting scheduled for Monday, May 8, 2017.

This proposed Bylaw would be adopted under the authority granted by the Home Rule Amendment of the Massachusetts Constitution and the Home Rule Procedures Act, and pursuant to the regulations of the Federal Clean Water Act found at 40 CFR 122.34, and under the representation of The Director of the Department of Public Works who may promulgate rules and regulations to effectuate the purposes of this bylaw.

TOWN OF BELCHERTOWN
Steven J. Williams, Director
Department of Public Works
04/13, 04/20/17

Municipal Separate Storm Sewer System (MS4) Bylaw
Town of Belchertown, Massachusetts

PURPOSE OF THIS BYLAW

The purpose of this bylaw is to regulate illicit connections and illicit discharges to the storm drainage system. The bylaw is to protect the Town of Belchertown's water bodies, wetlands, and groundwater, to safeguard the public health, safety, welfare and the environment and to comply with state and federal statutes and regulations relating to stormwater discharges.

1. BACKGROUND

The U.S. Environmental Protection Agency (EPA) issued the revised Massachusetts Small Municipal Separate Storm Sewer systems (MS4) General permit in April, 2016. The new permit has a similar structure to the original 2003 permit, but it significantly increases stormwater management requirements and mandates specific compliance timeframes. The new permit will become effective July 1, 2017.

2. WHAT YOU SHOULD KNOW

Municipal storm drain systems are a major source of pollutants to waters of the Commonwealth. Federal and state laws and regulations require municipalities with storm drain systems to manage and control stormwater discharges. Over 200 Massachusetts towns discharge stormwater under U.S. EPA's NPDES Municipal Separate Storm Sewer Systems permit (the MS4 Permit). This 5-year permit, jointly issued by EPA and MassDEP, requires towns to meet six minimum control measures:

- Pollution Prevention/Good Housekeeping for Municipal Operation
- An Illicit Discharge Detection and Elimination (DDE)
- Construction Site Runoff Control
- Post Construction Runoff Control
- Public Education and Outreach
- Public Participation and involvement

3. *WHAT IS AN ILLEGAL DISCHARGE?*

An Illegal Discharge is any direct or indirect non-stormwater discharge to the municipal storm drainage system, except as specifically exempted in Section 7 of the proposed bylaw. The term does not include a discharge in compliance with an NPDES Storm Water Discharge Permit or resulting from firefighting activities also exempted pursuant to Section 7 of the proposed bylaw.

4. WHAT IS AN ILLICIT CONNECTION?

An Illicit Connection is any surface or subsurface drain or conveyance, which allows an illegal discharge into the municipal storm drainage system. Illicit connections include conveyances which allow a non-stormwater discharge to the municipal storm drainage system, including: sewage, process wastewater or wash water and any connections from indoor drainages, sinks, or toilets, regardless of whether said connection was previously allowed, permitted, or approved before the effective date of this bylaw.

INSPECTIONS

The Director of the Department of Public Works or designated representative, its agents, officers and employees may enter upon privately owned property for the purpose of performing their duties.

ENFORCEMENT

The Department of Public Works or an authorized agent of the Department of the Public Works shall enforce this bylaw and the regulations promulgated thereunder, and may pursue all civil and criminal remedies for such violations.

Office of
DEPARTMENT OF PUBLIC WORKS
290 Jackson Street, P.O. Box 306
Belchertown, Massachusetts 01007-0306
Telephone: (413) 323-0415

Steven J. Williams
Director

PUBLIC HEARING

Town of Belchertown
Illicit Connections and Discharges To The Municipal Storm Drainage System Bylaw (MS4)

MINUTES OF WEDNESDAY, APRIL 26, 2017

Present:

- Mr. Steve Williams, DPW Director
- Mr. Gary Brougham, Town Administrator
- Ms. Donna Lusignan, DPW Administrative Assistant ~ Minutes

The following informational material was made available

1. Attendance "Sign-In Sheet"
2. Package entitled: Article 14 : " Town of Belchertown Illicit Connections and Discharges To The Municipal Storm Drainage System Bylaw (Proposed Draft 3.13.2017) –(Yellow Cover Sheet -25 copies)
3. One page handout entitled: "Municipal Separate Storm Sewer System (MS4) Bylaw Town of Belchertown, Massachusetts – (Yellow -25 copies).

7:00pm – S. Williams opened the Public Hearing, as advertised.
(*The Sentinel newspaper, dated April 13, 2017 & April 20th, 2017

7:01pm – There was no public attendance for this hearing.

7:02pm - Discussion: There was no discussion held.

7:20pm – G. Brougham made a motion to close the public hearing due to lack of public participation. Second: S. Williams, All in Favor: Vote 3:0:0 (unanimous)

7:21PM – Meeting adjourned.

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Telephone: (413) 323-0415

Steven J. Williams
Director

TOWN OF BELCHERTOWN PROPOSED BY-LAW
GOVERNING DISCHARGES TO THE MUNICIPAL
STORM DRAIN SYSTEM

The public is invited to attend a public hearing to be held by Steven J. Williams, Director of the Department of Public Works, in the Selectmen's Meeting Room, First Floor, Lawrence Memorial Hall, 2 Jabish Street, Belchertown, on Wednesday, April 26, 2017 at 7:00pm to offer comments on a proposed Bylaw to regulate discharges to the Town's storm drainage system. The Bylaw is seen as necessary for the protection of the Town of Belchertown's storm drainage system and local water bodies, wetlands and groundwater and to safeguard the public health, safety, welfare and the environment.

The Director of the Department of Public Works will make a determination as to whether this Bylaw shall apply to all flows entering the storm drainage system in the Town of Belchertown so as to prepare for consideration at the next Town Meeting scheduled for Monday, May 8, 2017.

This proposed Bylaw would be adopted under the authority granted by the Home Rule Amendment of the Massachusetts Constitution and the Home Rule Procedures Act, and pursuant to the regulations of the Federal Clean Water Act found at 40 CFR 122.34, and under the representation of The Director of the Department of Public Works who may promulgate rules and regulations to effectuate the purposes of this bylaw.

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TOWN OF BELCHERTOWN
Steven J. Williams, Director
Department of Public Works

Office of
DEPARTMENT OF PUBLIC WORKS
290 Jackson Street, P.O. Box 306
Belchertown, Massachusetts 01007-0306
Telephone: (413) 323-0415

Steven J. Williams
Director

Donna Lusignan
Administrative Assistant

STORMWATER COMMITTEE MEETING/MS4
MINUTES OF THURSDAY, May 5, 2017

STWM Committee Members Present:

Steve Williams, DPW Director (minutes)
Gary Brougham, Town Administrator
Ted Bock, Fire Chief
LeeAnne Connolly, Conservation Administrator
Paul Adzima, Building Inspector
Doug Albertson, Town Planner
Judy Metcalf, Board of Health Administrator
Patti Gambarini, Pioneer Valley Planning Commission

10:00AM – Meeting called to order

Old Business:

- Stormwater Mapping is running –PVPC work with vendor Wright-Pierce is ongoing. A kickoff meeting will be held next week.
- 2016 Stormwater Report is complete. The link is located on the DPW website to for viewing.
- Notice of Intention: Fuss & O'Neill is working on this document
- 604B Grant is complete thanks to Patti Gambarini, LeeAnne & Doug.
- IDDE Bylaw- Draft is Final. A Public hearing was held on Wednesday, April 26, 2017. No public attendance.
- Appeal MS4 Permit – Ongoing
- Regulations next year – Patti has drafts available of both regulations & Bylaw to review. Bylaw goes to Town Meeting; regulations are under the authority of the Conservation Commission.

New Business:

- No new business to discuss at this time

- Next Meeting: This meeting will take place one month from today +/-. Schedule and notification will be made via email.

Meeting Adjourned: 12:00PM
(Transcribed: dl)

Office of
DEPARTMENT OF PUBLIC WORKS
290 Jackson Street, P.O. Box 306
Belchertown, Massachusetts 01007-0306
Telephone: (413) 323-0415

Steven J. Williams
Director

Donna Lusignan
Administrative Assistant

STORMWATER COMMITTEE MEETING/MS4
MINUTES OF Tuesday, June 13, 2017

STWM Committee Members Present:

Steve Williams, DPW Director (minutes)
Gary Brougham, Town Administrator
Ted Bock, Fire Chief
LeeAnne Connolly, Conservation Administrator
Paul Adzima, Building Inspector
Doug Albertson, Town Planner
Judy Metcalf, Board of Health Administrator
Patti Gambarini, Pioneer Valley Planning Commission

10:00AM – Meeting called to order

Old Business:

- DPW has received projected FY'18 Budgets to which a small amount of funding is available for sweeping, catch basin cleaning and engineering services.
- Further news is expected in September regarding the 604b grant.
- IDDE Bylaw: The Bylaw was approved at the May 8, 2017 Annual Town Meeting. Fuss & O'Neill will be working on the IDDE Plan for implementation.
- Stormwater Mapping: Wright Pence is working on applications & map integration. How will forms link to town G.I.S.?
- NOI Filing: No update at this time.
- Appeal of MS4 Permit: Several other states have joined. All are being consolidated and handled in Washington, D.C.
- Connecticut Stormwater Committee: Public education and outreach (#1) will be coordinated by PCPV staff. Patti provided an overview of assistance and other work including grants.
- Code Review (Patti)-

a. LeeAnne has informed the Committee updates are necessary and looking to make changes in Spring of 2018. Patti stated the Committee has until year 2019.

- OTHER: The following documents were distributed for review~
  1. Draft Stormwater Management Regulations
  2. SOP 5 Construction Site Inspection
  3. STW Permit Application Review Process
  4. STW Management Bylaw
  5. Subdivision Regulations

New Business:
No new business to discuss at this time

Next Meeting: The next Stormwater Committee meeting will be scheduled for the beginning of August, 2017. S. Williams will send invitation to attend, accordingly.

Meeting Adjourned: 12:00PM
(Transcribed: dl)

Office of
DEPARTMENT OF PUBLIC WORKS
290 Jackson Street, P.O. Box 306
Belchertown, Massachusetts 01007-0306
Telephone: (413) 323-0415

Steven J. Williams
Director

Donna Lusignan
Administrative Assistant

STORMWATER COMMITTEE MEETING/MS4
MINUTES OF THURSDAY, OCTOBER 19, 2017

STWM Committee Members Present:

Steve Williams, DPW Director (minutes)
Gary Brougham, Town Administrator
Ted Bock, Fire Chief
LeeAnne Connolly, Conservation Administrator
Paul Adzima, Building Inspector
Doug Albertson, Town Planner
Judy Metcalf, Board of Health Administrator
Patti Gambarini, Pioneer Valley Planning Commission

10:00AM – Meeting called to order

Permit Status:

- "Stay" was implemented until July, 2018. New Hampshire and Massachusetts both filed in Federal Court. Appeals have been aligned so ruling can apply to both.
- Environmental groups have recently filed to overturn the "Stay"..
- Challenge is only for the Water Quality Standards not other requirements. EPA failed to site to the maximum extent practicable and failed to site any parameters.

Stormwater Code Update:

- Bylaw revisions are ready for Town meeting.
- Regulation update is still ongoing
- Regulations and Bylaw changes should progress together, otherwise the changes will only be delayed.
- Most elements of the permit will be addressed through the regulations and the zoning, con-com, planning, subdivision and building codes/regulations will include references to regulations.
- Bylaw will not have any specifics, only provide the Town authority.
- Requirements under Year 2003 permit have been met. Year I requirements are mostly met, and there are many outstanding requirement for Year II

604B Grant –

- Task # 1 – Hire Consultant
- Task # 2 – Parcel Analysis
- Task # 3 – Define Financial Elements
- Task # 4 – Meetings with Stormwater Committee
- Task # 5 –Public Participation
- Task # 6- Reporting

Timeframe –

- Final Report could be done within one-year.

Meeting Adjourned: 12:00PM
(Transcribed: dl)

LAKES COMMITTEE ANNUAL REPORT

The Belchertown Lakes Committee is responsible for the protection of the public health, environment and the general welfare of the lakes within the Town. For the year 2017, the Committee has met 8 times and has been working with the Tri-Lakes Association, Town departments and local residents to meet recreational, habitat, aesthetic, water quality and other agreed-upon goals for the Town's waterbodies. Belchertown can be very proud of our accomplishments regarding lake stewardship efforts for all lakes over the last 5 to 10 years. Data for the Tri-Lakes area has shown a continued increase in water quality, a decline in nutrient over-loading and nuisance vegetation.

During the season of 2017, the Belchertown Lake Committee has been working with AER, (Aquatic Ecosystem Research) to make recommendations for long term management for all lakes. AER provides recommendations in regards to auxiliary projects that can be considered for future lake management efforts or grant acquisition. For 2017, sampling initiatives were conducted in Lake Arcadia, Lake Metacomet and Holland Pond of the Tri-Lakes System. During each sampling event, vertical profiles of temperature, dissolved oxygen, specific conductance, and pH were evaluated in each lake. Additionally, the water chemistry parameters alkalinity, ammonia, nitrate, nitrite, total Kjeldahl nitrogen, and total phosphorus were assessed at the surface and bottom of each lake during each initiative. Finally, water clarity was measured and an algal sample was taken in each lake during all sampling events. This project, working in partnership with AER and the Tri-Lakes Association, will provide a scientific determination of the water quality for all 3 lakes and will determine future management recommendations for 2018. The Lake Committee is awaiting this final report.

In addition, the channel enhancement between Holland Pond and Lake Arcadia was conducted by Solitude Lake Management in early Fall to increase the water flow between both waterbodies. A hydro-rake was used to create a path through the lily species (i.e. *Brasenia schreberi* and *Nymphaea odorata*) to allow for enhanced water flow from Holland Pond to Lake Arcadia. Peat bogs were also removed from the inlet of Lake Arcadia. Due to very low water levels, the channel on the Holland Pond side was not mechanically harvested and this work will be conducted in the Spring of 2018 when the water level rises.

The Committee is anxious to begin new projects for the year 2018 and feels confident that the environment is favorable, within the local community, to protect these valuable resource areas within the Town.

Respectfully submitted,

LeeAnne Connolly, Chairman
Bonnie Strickland, Vice Chairman
Kathi Smith, Clerk
Jennica Gallagher
Cathy LeBlond

Appendix D

Draft Priority Outfall Rankings

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
010605_FR_04	Flow, no IDDE evidence	No	None	Cat 5	Low	Pre-1970	40+	Road crossings only	10.0	High	Arcadia Lake
010701_BB_19	Flow, no IDDE evidence	No	None	Cat 5	Low	Pre-1970	40+	Road crossings only	10.0	High	Arcadia Lake
010605_FR_13	Flow, no IDDE evidence	No	None	Cat 1, 2, 3	Low	1970-1990	40+	Road crossings only	8.2	High	Lake Holland
010605_FR_14	Flow, no IDDE evidence	No	None	Cat 1, 2, 3	Low	1970-1990	40+	Road crossings only	8.2	High	Wetland area south of Cheryl Circle that flows to Hop Brook
010605_FR_21	Unscreened	No	None	Cat 1, 2, 3	Low	Pre-1970	40+	Road crossings only	8.2	High	Wetland area south of Cheryl Circle that flows to Hop Brook
010701_BB_10	Flow, no IDDE evidence	No	None	Cat 5	Low	Pre-1970	20-40	Road crossings only	8.2	High	Roadside area of Old Amherst Road draining to wetland area along Federal Street to unnamed trib of Hop Brook
010701_BB_22	Unscreened	No	None	Cat 1, 2, 3	Low	Pre-1970	40+	Road crossings only	8.2	High	Roadside area of Old Amherst Road draining to wetland area along Federal Street to unnamed trib of Hop Brook
010701_BB_34	Unscreened	No	None	Cat 1, 2, 3	Low	Pre-1970	40+	Road crossings only	8.2	High	Unnamed tributary of Hop Brook
040105_JB_55	Unscreened	No	None	Cat 1, 2, 3	Low	Pre-1970	40+	Road crossings only	8.2	High	Unnamed tributary of Hop Brook
010605_FR_03	Screened, No Flow	Yes	None	Cat 5	Low	Pre-1970	Sewered	Road crossings only	8.2	High	Wetland area of unnamed tributary of Hop Brook
010605_FR_12	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	40+	Road crossings only	7.3	High	Unnamed Tributary of Batchelor Brook

Draft

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
010701_BB_23	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	40+	Road crossings only	7.3	High	Wetland area south of Bay Road upgradient of wetland area of unnamed tributary of Batchelor Brook
040105_JB_117	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	40+	Road crossings only	7.3	High	Wetland area upstream of Metacomet Lake
010605_FR_02	Screened, No Flow	Yes	None	Cat 4C	Low	Pre-1970	Sewered	Road crossings only	7.3	High	
010701_BB_17	Screened, No Flow	No	None	Cat 5	Low	1970-1990	40+	Road crossings only	7.3	Low	Wetland area upstream of Metacomet Lake
010701_BB_10	Unscreened	No	None	Cat 5	Low	1970-1990	20-40	Road crossings only	6.4	High	Wetland area upstream of Metacomet Lake
040105_JB_57	Unscreened	No	None	Cat 1, 2, 3	Low	Pre-1970	20-40	Road crossings only	6.4	High	Wetland area south of Bay Road upgradient of wetland area of unnamed tributary of Batchelor Brook
010701_BB_02	Flow, no IDDE evidence	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	6.4	Low	Wetland area upstream of Metacomet Lake
010701_BB_24	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1970-1990	40+	Road crossings only	6.4	Low	Marsh that drains to Metacomet Lake
010701_BB_30	Flow, no IDDE evidence	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	6.4	Low	Marsh that drains to Metacomet Lake
010701_BB_33	Flow, no IDDE evidence	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	6.4	Low	Metacomet Lake
010701_BB_43	Flow, no IDDE evidence	No	None	Cat 1, 2, 3	Low	Pre-1970	Sewered	Road crossings only	6.4	Low	Roadside area north of Allen Street which is upgradient of Batchelor Brook

Draft

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
040105_JB_130	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	40+	Road crossings only	6.4	Low	Roadside area south of Bay Road that drains toward a commerical parking lot upgradient of Batchelor Brook
040105_JB_62	Unscreened	Yes	None	Cat 1, 2, 3	Low	1990s-Present	<20	Road crossings only	6.4	Low	Batchelor Brook
040105_JB_63	Unscreened	Yes	None	Cat 1, 2, 3	Low	1990s-Present	<20	Road crossings only	6.4	Low	Batchelor Brook
040105_JB_65	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1970-1990	40+	Road crossings only	6.4	Low	Wetland area of Batchelor Brook
040105_JB_80	Flow, no IDDE evidence	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	6.4	Low	Wetland area of Batchelor Brook
040106_SR_05	Unscreened	No	None	Cat 1, 2, 3	Medium	Pre-1970	Sewered	Road crossings only	6.4	Low	Unnamed tributary of Batchelor Brook
040106_SR_07	Unscreened	No	None	Cat 1, 2, 3	Medium	Pre-1970	Sewered	Road crossings only	6.4	Low	Wetland area along Batchelor Brook
040401_CR_34	Unscreened	Yes	None	Cat 1, 2, 3	Low	1990s-Present	<20	Road crossings only	6.4	Low	Batchelor Brook
010605_FR_06	Flow, no IDDE evidence	No	None	Cat 1, 2, 3	Low	1990s-Present	20-40	Road crossings only	5.5	Low	Wetland area upstream of unnamed tributary of Batchelor Brook
010701_BB_18	Screened, No Flow	No	None	Cat 5	Low	Pre-1970	Sewered	Road crossings only	5.5	Low	Wetland area of unnamed tributary of Lampson Brook
010701_BB_20	Screened, No Flow	No	None	Cat 5	Low	Pre-1970	Sewered	Road crossings only	5.5	Low	Grassy area west of Tucker Land upgradient of unnamed tributary of Lampson Brook
040105_JB_122	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	5.5	Low	Forested area ugradient of wetland that discharges to unnamed tributary of Lampson Brook

Draft

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
040105_JB_29	Flow, no IDDE evidence	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	5.5	Low	Wetland area along unnamed tributary of Lampson Brook
040105_JB_34	Unscreened	No	None	Cat 1, 2, 3	Low	Pre-1970	Sewered	Road crossings only	5.5	Low	Wetland area along unnamed tributary of Lampson Brook
040105_JB_35	Unscreened	No	None	Cat 1, 2, 3	Low	Pre-1970	Sewered	Road crossings only	5.5	Low	Detention Basin at Junction of Hickory Hill and George Hannum Street upgradient of unnamed tributary to Lampson Brook
040105_JB_37	Unscreened	No	None	Cat 1, 2, 3	Low	Pre-1970	Sewered	Road crossings only	5.5	Low	Detention Basin at Junction of Hickory Hill and George Hannum Street upgradient of unnamed tributary to Lampson Brook
040105_JB_60	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	5.5	Low	Behind homes along Howe Street upgradient of an unnamed tributary of Lampson Brook
040105_JB_64	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	5.5	Low	Behind homes located on Atherton Lane on slope draining toward Jackson Street upgradient of Lampson Brook
040105_JB_71	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	5.5	Low	Behind homes located on circle off Clark Street on slope draining toward Jackson Street upgradient of Lampson Brook
040105_JB_72	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	5.5	Low	Wetland area upgradient of unnamed tributary of Lampson Brook

Draft

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
040105_JB_76	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	5.5	Low	Roadside area north of Jackson Street with is upgradient of Lampson Brook
040401_CR_31	Screened, No Flow	Yes	None	Cat 1, 2, 3	Low	1990s-Present	<20	Road crossings only	5.5	Low	Behind homes off Cobb Lane, slope drains toward Jackson Street upgradient of Lampson Brook
040401_CR_32	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	5.5	Low	Behind homes off Caldwell Lane, slope drains toward Jackson Street upgradient of Lampson Brook
040401_CR_33	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	5.5	Low	Wetland area upgradient of unnamed tributary to Lampson Brook
010605_FR_17	Flow, no IDDE evidence	No	None	Cat 1, 2, 3	Low	1990s-Present	<20	Road crossings only	4.5	Low	Drains to wetland area west of Howard Street. Wetland area spans both sides of RR track upgradient of Lampson Brook
010701_BB_14	Screened, No Flow	No	None	Cat 5	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Roadside area west of Franklin Street upgradient of wetland area within the Jabish Brook Watershed
010701_BB_15	Screened, No Flow	No	None	Cat 5	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Roadside area west of Franklin Street upgradient of wetland area within the Jabish Brook Watershed
010701_BB_25	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Forested area south of Eugene Drive which drains to a wetland area ~ 700 feet East of Jabish Brook

Draft

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
010701_BB_35	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Forested area south of Eugene Drive which ultimately drains to Jabish Brook, ~ 1300 feet East of Jabish Brook
010701_BB_47	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Roadside area west of Franklin Street upgradient of wetland area within the Jabish Brook Watershed
010701_BB_53	Screened, No Flow	No	None	Cat 1, 2, 3	Low	Pre-1970	Sewered	Road crossings only	4.5	Low	Roadside area west of wetland that dishcarges to an unnamed tributary of Jabish Brook
010701_BB_54	Screened, No Flow	No	None	Cat 1, 2, 3	Low	Pre-1970	Sewered	Road crossings only	4.5	Low	Roadside depression upgradient of wetland that dishcarges to an unnamed tributary of Jabish Brook
040105_JB_119	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	20-40	Road crossings only	4.5	Low	Roadside area ~280 feet west of wetland that dishcarges to an unnamed tributary of Jabish Brook
040105_JB_126	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	20-40	Road crossings only	4.5	Low	Roadside area ~300 feet west of unnamed tributary to Jabish Brook
040105_JB_24	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Wetland area East of North Main Street upgradient of another set of Wetland near Jabish Brook
040105_JB_24A	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Wetland area near Jabish Brook
040105_JB_25	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	4.5	Low	Roadside area East of Eastview Drive upgradient of wetland that drains to Jabish Brook

Draft

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
040105_JB_26	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	4.5	Low	Roadside area East of Eastview Drive upgradient of wetland that drains to Jabish Brook
040105_JB_27	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	4.5	Low	Roadside area East of Eastview Drive upgradient of wetland that drains to Jabish Brook
040105_JB_28	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Roadside area North of Jabish Street which is upgradient of Jabish Brook
040105_JB_29A	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Wetland area East of Jabish Street upgradient of Jabish Brook
040105_JB_30	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	South of East Walnut Street within the Jabish Brook basin
040105_JB_33	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Wetland area East of Jabish Street upgradient of Jabish Brook
040105_JB_36	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Roadside area North of Jensen Street upgradient of wetland area which is upgradient of Jabish Brook
040105_JB_38	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Discharges to wooded area southwest of baseball field upgradient of wetland/pond area upgradient of Jabish Brook
040105_JB_54	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	Discharge on east side of entrance to Church upslope of wetland/pond area upgradient of Jabish Brook

Draft

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
040105_JB_59	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	20-40	Road crossings only	4.5	Low	Discharge to wooded area at southern end of the Town Clerks Office parking lot area is upgradient of Jabish Brook
040105_JB_75	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	4.5	Low	Discharges to area on west side of entrance to Church upslope of wetland/pond area upgradient of Jabish Brook
040105_JB_82	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	4.5	Low	Discharges to wooded area East of Everett Avenue upgradient of Jabish Brook
040105_JB_84	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1970-1990	20-40	Road crossings only	4.5	Low	Grassy area North of Mill Valley Road upgradient of wetland areas that drain to tributary of Jabish Brook
040105_JB_86	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	20-40	Road crossings only	4.5	Low	Behind homes along Fuller street upgradient of wetland areas that drain to tributary of Jabish Brook
040401_CR_23	Unscreened	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	4.5	Low	East side of North Washington Street upgradient of wetland areas that drain to tributary of Jabish Brook
010605_FR_05	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1990s-Present	20-40	Road crossings only	3.6	Low	Wooded area on East side of North Washington Street upgradeint of wetland areas that drain to tributary of Jabish Brook

Draft

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
010701_BB_09	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Wetland area on East side of North Washington Street upgradient of wetland draining to tributary of Jabish Brook
010701_BB_16	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1990s-Present	20-40	Road crossings only	3.6	Low	Small wetland on south side of Mill Valley Road upgradient of larger wetland area draining to tributary of Jabish Brook
010701_BB_29	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Wetland area on the south side of Mill Valley Road that discharges to an unnamed tributary of Jabish Brook
010701_BB_36	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Wetland area on the south side of Mill Valley Road that discharges to an unnamed tributary of Jabish Brook
010701_BB_37	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Grassy area at Mill Valley Rd/Nathaniel Way upgradient of wetland area that discharges to a tributary of Jabish Brook
010701_BB_38	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Wooded area behind houses off Martin Circle upgradient of Jabish Brook
010701_BB_40	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Wetland/Pond area along Jabish Brook on the North side of Mill Valley Road
010701_BB_41	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Wetland area on East side of North Washington Street upgradient of wetland area draining to tributary of Jabish Brook

Draft

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
010701_BB_42	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Wetland area draining to unnamed tributary of Jabish Brook
010701_BB_44	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Wetland area behind homes at end of Cedar Glen Drive upgradient of of Jabish Brook
010701_BB_45	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Wetland small stream to the East of North Washington Street upgradient of Jabish Brook
010701_BB_46	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Roadside area to the east of North Liberty Street upgradient of wetland area and Jabish Brook
010701_BB_48	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Roadside area to the east of North Liberty Street upgradient of Jabish Brook
010701_BB_49	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Roadside area to the east of North Liberty Street upgradient of Jabish Brook
040105_JB_120	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1990s-Present	20-40	Road crossings only	3.6	Low	Roadside area to the east of North Liberty Street upgradient of Jabish Brook
040105_JB_127	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	<20	Road crossings only	3.6	Low	Roadside area to the east of North Liberty Street upgradient of Jabish Brook
040105_JB_129	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	<20	Road crossings only	3.6	Low	US of wetland area flowing to Jabish Brook
040105_JB_31	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Swift River
040105_JB_32	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1970-1990	Sewered	Road crossings only	3.6	Low	Swift River

Draft

Catchment ID	Screening results	Public Health Area	Past Complaints	Receiving Water Quality	Land Use / Generator Density	Development Age	Septic Age	Culverted Stream	Score (0-10)	Priority	Receiving Water
040105_JB_56	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Upgradient of Roaring Brook
040105_JB_61	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	<20	Road crossings only	3.6	Low	Roadside area south of Springfield Road upgradient of unnamed tributary to Broad Brook
040401_CR_17	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Roadside area south of Springfield Road upgradient of unnamed tributary to Broad Brook
040401_CR_21	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Broad Brook
040401_CR_22	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	3.6	Low	Broad Brook
040105_JB_118	Unscreened	No	None	Cat 1, 2, 3	Low	1990s-Present	<20	Road crossings only	3.6	Excluded	Roadside area just upgradient of wetland area draining to unnamed tributary of Broad Brook
010701_BB_27	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	2.7	Low	Wetland area draining to unnamed tributary of Broad Brook
010701_BB_39	Screened, No Flow	No	None	Cat 1, 2, 3	Low	1990s-Present	Sewered	Road crossings only	2.7	Low	Jabish Canal
040401_CR_16	Unscreened	No	None	Cat 1, 2, 3	Excluded	1970-1990	20-40	Road crossings only	1.8	Excluded	Jabish Canal
040401_CR_30	Unscreened	No	None	Cat 1, 2, 3	Excluded	1970-1990	Sewered	Road crossings only	0.9	Excluded	Wetland area to Jabish Canal
040401_CR_18	Unscreened	No	None	Cat 1, 2, 3	Excluded	1990s-Present	Sewered	Road crossings only	0.0	Excluded	Wetland area to Jabish Canal
040401_CR_24	Screened, No Flow	No	None	Cat 1, 2, 3	Excluded	1970-1990	Sewered	Road crossings only	0.0	Excluded	Wetland of Broad Brook

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Appendix E

Construction Site Control Materials

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2017
Single Dwelling	0	2	1	4	7	3	4	5	4	2	1	2	35
Condos	0	0	2	0	0	0	2	0	0	0	0	0	4
Two Dwelling	0	0	0	0	0	0	0	0	0	0	0	0	0
Trench Permits	2	1	5	6	7	4	3	5	5	8	3	3	52
Business/Commercial	0	0	0	1	2	0	0	0	0	0	0	0	3
sheet metal	1	5	0	0	3	0	2	1	1	1	0	0	14
Add/Alter/Repairs	22	23	27	43	52	48	30	52	33	43	51	15	439
Solar	10	12	19	9	13	6	9	3	9	12	11	4	117
Shed/Barn/Gar/Deck	0	0	3	1	3	1	6	10	3	6	3	1	37
Accessory Apt.	0	0	0	0	0	0	0	0	0	0	0	0	0
WoodStove/Chimney	4	3	1	5	1	2	2	3	5	5	7	5	43
Demolitions	1	2	1	1	1	2	0	0	0	0	0	1	9
Pools	0	0	3	3	7	3	4	2	2	0	2	0	26
Renewals/Signs	0	1	0	1	1	0	0	1	0	2	0	0	6
Other * see below**	1			2	2	2	0	2	2	1	0	1	13
Total Bldg Permits	**41**	**49**	**62**	**76**	**99**	**71**	**62**	**84**	**64**	**80**	**78**	**32**	**798**
Cert. of Inspection	0	0	1	0	9	4	1	1	2	9	3	0	30
Weights & Measures	1	1	1	0	1	0	0	0	0	0	0	2	6
Home Occup Zon	3	5	5	4	4	3	3	7	0	4	1	3	42
Total	**4**	**6**	**7**	**4**	**14**	**7**	**4**	**8**	**2**	**13**	**4**	**5**	**78**
Electrical Permits	44	31	37	34	41	38	30	39	30	47	30	22	423
Plumbing Permits	9	12	9	15	15	19	11	16	8	13	8	12	147
Gas Permits	20	16	11	12	11	16	16	15	12	22	21	19	191
TOTAL	**73**	**59**	**57**	**61**	**67**	**73**	**57**	**70**	**50**	**82**	**59**	**53**	**761**
Total of ALL Permits													
											New		
		Found	Not	Dog		Farm	Cell	Solar		Generator	const due		
Other Breakdown	stove hood	Only	Approved	Kennel	Ramp	Camp	Tower	Field	Antenna	for Verizon	to fire	voided	
January		1											
February													
March													
April		2											
May		1								1			
June									1		1		
July													
august		1										1	
Sept.		2											
Oct		1											
Nov													
Dec									1				

Appendix F

Stormwater Training Materials

Department of Public Works
290 Jackson Street, Post Office Box 306
Belchertown, Massachusetts 01007-0306
(413) 323-0415

M E M O R A N D U M

Date: March 7, 2018
To: ALL DPW Divisions: Highway, WWTP, Maintenance
From: Steven J. Williams, Director, Dept. of Public Works
RE: Annual Stormwater Training -2018

The DPW Annual Stormwater Training has been scheduled for Wednesday, April 4, 2018 at 11:00AM. This meeting will be held at the Department of Public Works, 290 Jackson Street, location.

If you are unable to attend, please contact me at the DPW Office at (413)323-0415 or email: swilliams@belchertown.org.

Sincerely,

Steven J. Williams, Director
Dept. of Public Works

SJW/dml

cc: Erica Cross, Conservation Administrator

Annual Storm Water Training 4/4/18

Leo Feet	Leo Feet	Hwy
Jon Grossman	Jon Grossman	Hwy
Terry Chevalier		Hwy
Ronald Ritter	Ronald Ritter	Hwy
Heather Blanchard	H Blanchard	WWTP
David Warczyk		WRF
Thomas Hoad	Thomas Hoad	WWTP
Sean Madden	Sean Madden	WWTP
Dave Martel		Hwy
Chris Johnson		Maint
Karl Jensen	Karl Jensen	Maint
Luke Taussaint		Hwy
Timothy J Taylor		maint.
Melissa J Cook	Melissa J Cook	Maint.
Miguel A. Vazquez		Maint.
Caitlin Andrew		Maint
David Clegg		Maint
Darin Braese	Darin Braese	Hwy
Roland Chagnon		Hwy.
Larry Belbin		Maint
Ed Burton		Hwy
John Perrett		Hwy
Chris Laurendo		Hwy
Rollin DeWitt		WRF
Steve Williams		DPW
Erica Cross		Conservation
Max W. Cook		Maint.

Two MS4 Permit Compliance Workshops for Connecticut River Stormwater Committee Members

Westfield State University, Scanlon Hall, Living Room

Wednesday, November 8, 2017
8:30 to 11 a.m.

Good Housekeeping

Learn about both the specific components and scope of the Stormwater Pollution Prevention Plan (SWPPP) and the control measures required under the MS4 permit for maintenance garages, public works yards, transfer stations, and other waste handling facilities where potential pollutants are exposed to storm water.
Best practices to be covered will include:

- Vehicle storage, fueling, and washing
- Storage of materials (salt & sand, petroleum products, and any other potential stormwater pollutants)
- Spill prevention and response
- Municipal facilities inspections as part of the SWPPP
- Catch basin inspection, cleaning, and maintenance
- Collection and recording of required data

Thursday, November 9, 2017
8:30 to 11 a.m.

Illicit Discharge Detection and Elimination (IDDE)

Learn about IDDE program requirements, how to detect and recognize illicit discharges and sanitary sewer overflows, and use of procedures and equipment.
The training will cover:

- IDDE program overview and key components
- Field screening of outfalls for dry weather flow
- Sampling and source tracking dry weather flows
- System vulnerability factors
- Sampling wet weather flows (where there is a minimum of 1 system vulnerability factor)
- Data collection and recording

Catalyst for Regional Progress
PVPC

WRIGHT-PIERCE
Engineering a Better Environment
70 YEARS 1947 - 2017

Workshops are made possible with funding from the Baker-Polito Administration's Community Compact Cabinet's *Efficiency and Regionalization Grant Program*

Registration by November 1 is required. Call Mary Mazik or Paula Delskey at 413-781-6045.

WRIGHT-PIERCE
Engineering a Better Environment

Agenda

Illicit Discharge Detection and Elimination (IDDE) Training
Westfield State University
November 9, 2017
8:30 a.m. – 11:00 a.m.

8:00 - 8:30	Registration and Introductions
8:30 - 9:00	Module 1 and Discussion • Background • Recognizing illicit discharges and SSOs
9:00 - 9:45	Module 2 and Discussion • IDDE Program
9:45 - 10:00	Break
10:00 - 10:45	Module 3 and Discussion • Field screening • Sampling and source tracking
10:45 - 11:00	Evaluation
11:00	Adjourn

MS4 Permit Compliance Workshop - Illicit Discharge and Detection

November 9, 2017, 8:30 to 11 a.m.

Initial if present		Name	Title	City/Town	Phone	E-mail
JM	1	John Decker	DPW ~~Highway Department~~	Agawam	413-821-0264	JDecker@agawam.ma.us
	2	~~Brian Blackak~~	DPW Highway Department	Agawam	413-821-0264	
✓	3	Mike Albro	DPW Highway Department	Agawam	413-821-0264	MAlbro@agawam.ma.us
✓	4	Ben Ashley	DPW Highway Department	Agawam	413-821-0264	BAshley@agawam.ma.us
CL	5	Chris Laurenzo	Highway Supervisor	Belchertown	413-323-0415	claurenzo@belchertown.org
EB	6	Ed Burton	Highway Foreman	Belchertown	413-323-0415	eburton@belchertown.org
QL	7	Quinn Lonczak	Project Supervisor	Chicopee	413-594-3585	qlonczak@chicopeema.gov
	8	Jeff Neece	Superintendent	Chicopee	413-594-3557	jneece@chicopeema.gov
	9	Ela Soja	Assistant Superintendent	Chicopee	413-594-3557	esoja@chicopeema.gov
DJM	10	Dan Murphy	City Engineer	Easthampton	413-665-5555	dmurphy@easthamptonwater.com
	11	Bruce Fenney	Superintendent	East Longmeadow	413-246-3685	bruce.fenney@eastlongmeadow.gov
D.D.	12	Dave Desrosiers	Highway Superintendent	Granby	413-467-7575	daved@granbyma.org
BP	13	Brian Pike	Mechanic	Granby	413-467-7575	
RA	14	Russ Aurnhammer	Mechanic	Granby	413-467-7575	
AK	15	Andy Krar	Town Engineer	Longmeadow	413-567-3400	akrar@longmeadow.org
PV	16	Pete Vancini	Engineering Aide	Longmeadow	413-567-3400	pvancini@longmeadow.org
DM	17	Doug McDonald	DPW Highway Department	Northampton	413-587-1582	dmcdonald@northamptonma.gov
KS	18	Katie Sadosiwitz	DPW Highway Department	Northampton	413-587-1582	

Initial if present		Name	Title	City/Town	Phone	E-mail
RDB	19	Randal Brown	Director	Southwick	413-569-3040 x308	rbrown@southwick.net
JB	20	John Broderick	Highway Supervisor	South Hadley	413-315-0200	
V.P.	21	Vivian Price	Operations Manager	South Hadley	413-315-0200	vprice@southhadley.ma.gov.
BKM	22	Bryan Manijak	DPW Highway Department	South Hadley	413-315-0200	
	23	Ed Beattie	DPW Highway Department	South Hadley	413-315-0200	
KC	24	Kevin Chaffee	Natural Resource Mgr.	Springfield	413-787-6234	kchaffee@springfieldcityhall.com
	25	Luca Mineo	Civil Engineer	Springfield	413-784-4884	lmineo@springfieldcityhall.com
	26	Matt Sokop	City Engineer	Springfield	413-784-4884	msokop@springfieldcityhall.com
CB	27	Casey Berube	Deputy Superintendent	Westfield	413-642-9397	c.berube@cityofwestfield.org
JK	28	Joe Kietner	Stormwater Coordinator	Westfield	413-642-9398	joseph.kietner@westfield.org
MW	29	Mike Walsh	Foreman	Westfield	413-572-6267	mike.walsh@cityofwestfield.org
JR	30	Jim Ruffo	Working Foreman	Westfield	413-572-6267	j.ruffo@cityofwestfield.org
CNK	31	Connor Knightly	Project Manager	West Springfield	413-263-3249	cknightly@townofwestspringfield.org
JC	32	Jim Czach	Town Engineer	West Springfield	413-263-3244	jczach@townofwestspringfield.org
TB	33	Tonya Basch	Assistant DPW Director/ Engineer	Wilbraham	413-495-2090	tbasch@wilbraham-ma.gov
	34	MARY ANN BABINSKI	City Councilor	WESTFIELD	413-568-8562	mababinski@city of Westfield.org
	35	STEVEN FREDERICK	DPW DIRECTOR	LUDLOW		SFREDERICK@LUDLOW.MA.US
	36					
	37					

Safety Training Sign In

Safety Training — **Annual Osha Review** — 4/13/2017

	Print Name	Sign	Date	Division
	Denis N. Lessard		4-13-17	HWY
**	Steve Williams		4-13-17	DPW
	Anthony Hurtado		4-13-17	WWTP
	John Panzetti		4-13-17	HWY
	Ed Burton		"	HWY
*	David Wanczyk		4/13/17	WWTP
	Dacin Braese		4-13-17	HWY
	Melissa J Cook		4/13/17	Maintn.
	Karl Jensen		4-13-17	maint
	Sean Madden		4/13/17	maint.
	Jeff Grossman		4/13/17	Maint
W	Ray McGinnis		4/13/17	BWD
**	Rollin Dewitt		4/13/17	WWTP
W	Kevin Williams		4/13/17	BWD
	Instructor Sign/Date :	4/13/17	Company :	ATC
	MICHAEL MATHIAMEWITH			

W = water License

xx = water + waste water

* waste water only

Safety Training Sign In

P52

Safety Training **Annual Osha Review** 4/13/2017

Print Name	Sign	Date	Division
CHRIS LAURENZO		4/13/17	HIGHWAY
Leo Feet		4-13-17	Hwy
Jon Grossman		4/13/17	Highway
* Jerry Chevalier		4/13/17	Highway
* H Blanchard	HB	4/13/17	WWTP
Chris Johnson		4/13/17	Maint.
Dave Martel		4/13/17	Hwy
* STEVEN COLE		4/13/17	WWTP
Samantha Taylor		4/13/17	Maintance
MAX W. Bock		4/13/17	Maint.
Instructor Sign/Date :	4/13/17	**Company :**	ATC
MICHAEL MATTHEWS CIH, CSP			

Safety Training Sign In

Safety Training **Respirator Training** ~~#3~~ 4/13/2017

Print Name	Sign	Date	Division
Rollin DeWitt		4/13/17	WWTP
Roy McGinnis		4/13/17	BWD
Kevin Williams		4/13/17	BWD
David Warczyk		4/13/17	WWTP
Anthony Hurtado		4/13/17	WWTP
Heather Blanchard		4/13/17	WWTP
Steven Cole		4/13/17	WWTP
Kevin Williams		4/13/17	BWD -
Instructor Sign/Date : 4/13/17		**Company :**	ATC
Michael McMillanen CFM, CSP			

Safety Training Sign In

Safety Training | **National Grid Power Lines Safety** | 3/22/2017

Print Name	Sign	Date	Division
Rollin DeWitt		3/22/17	WRF
John Panzetti		3-22-17	Highway
Larry Bullyn		3/22/17	Highway
Terry Chevalier		3/22/17	Highway
Jon Grossman		3/22/17	Highway
Dylan Bachand		3/22/17	Highway
Dave Martel		3227	Highway
Darin Breese		3-22-17	Hwy
Stephen Sikes		3/22/17	Hwy
Lee Reed		3-22-17	Hwy
CHRIS LAURENCO		3/22/17	HIGHWAY
STEVEN COLE		3/22/17	WRF
RAY MCGINNIS		3/22/17	WATER DISTRICT
Chris Johnson		3/22/17	Maintenance
David Wanczyk		3/22/17	WRF
Melissa Cook		3/22/17	maintenance
Samantha Taylor		3/22/17	maintenance
Jeff Grossman		3/22/17	Maintenance
Sam Madden		3/22/17	Maint.
Kevin Williams		3/22/17	Water District
Anthony Hurtado		3-22-17	WWTP
SEFFREY E. OLOPHERSON		3-22-17	NATIONAL GRID
Instructor Sign/Date :		**Company :**	

MEGA
MASSACHUSETTS EDUCATION & GOVERNMENT ASSOCIATION

MEGA Safety Training

Member: Belchertown Town Of / Belchertown Water District

Topic: Bloodborne Pathogens / Personal Protective Equipment / Winter Weather

Date: January 17, 2018

Trainer: Ben Flanders

	Name	Signature
	Denis N. Lessard	
xx	Rollin DeWith WWTP	
	CHRIS LAURENCE HIGHWAY	
	John Paquette Highway	
	KEVIN CHEVALIER Highway	
	JON GROSSMAN Highway	
	RONALD RITTER	
	Chris Johnson maintenance	
	Dave Markel Hwy.	
	Darin Braese	
*	RAY McGINNIS	
*	Jordan Keith	
	Karl Jensen	
xx	David Warczak	
xx	Sean Madden	
xx	HBlanchard	
	Larry Belbin	
	DAVID CLEGG	
	Melissa Cook	
	Amanda Taylor	
*	Kevin Williams	

* = water license
xx = waste water

UMass Transportation Center

SEMINAR SIGN-IN SHEET

Chainsaw Skills & Safety - 2 Day-Belchertown
Seminar ID: 2830
6/1/2017 7:45:00 AM - 6/2/2017 3:00:00 PM
Belchertown DPW

Initial Here	Name	Organization	Phone	Email
	Blanchard, Heather	Town of Belchertown	413 323-0415	
	Chevalier, Terry	Town of Belchertown	413-323-0415	
	Clegg, David	Town of Belchertown	413-575-5270	dclegg@belchertown.org
	Cook, Melissa	Town of Belchertown	413 323-0415	
	DeWitt, Rollin	Town of Belchertown	413-323-0415	rdewitt@belchertown.org
	Laurenzo, Christopher	Town of Belchertown	413-323-0415	claurenzo@belchertown.org
	Lessard, Denis	Town of Belchertown	413-323-0415	
	Madden, Sean	Town of Belchertown	413 323-0415	
	Martel, Dave	Town of Belchertown	508-764-5433	

LP	Peet, Leo	Town of Belchertown	413-323-0415
SJS	Swistak, Scot	Town of Belchertown	413-323-0415

Department of Public Works

290 Jackson Street, Post Office Box 306
Belchertown, Massachusetts 01007-0306
(413) 323-0415

M E M O R A N D U M

Date: April 24, 2017
To: ALL DPW Divisional Employees
From: Steven J. Williams, Director, Dept. of Public Works
RE: CPR REFRESHER TRAINING COURSE

The Belchertown EMS Department will be offering a CPR & First Aid Refresher Course on Tuesday, May 23, 2017 between the hours of 8am-12pm (noon). Please note there must be a minimum of four(4) in attendance in order to hold this class.

Anyone wishing to sign up for this course are asked to contact Rollin DeWitt at the WWTP at (413) 323-0449.

Sincerely,

Steve Williams, Director
Dept. of Public Works

SW/dl

Blood Born Pathogens **Section 7** **Training**

First Aid /CPR **2017**

Employee	**Date**
Rollin DeWitt	**5/23/17**
Denis Lessard	**5/23/17**
Steve Cole	**5/23/17**
Elmer Dodge	**5/23/17**
Samantha Taylor	**5/23/17**
Steve Sikes	**5/23/17**
Edwin Burton	**5/23/17**
Kevin Williams	**5/23/17**
Ray McGinnis	**5/23/17**

Illicit Discharge Detection and Elimination (IDDE) Training

Presented by:
Christine T.M. Rinehart, PE

Presentation Overview

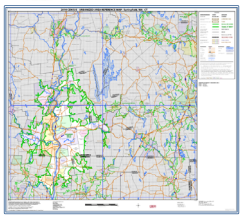


- Module 1
  - Background
  - Recognizing illicit discharges and SSOs
- Module 2
  - IDDE Program
- Module 3
  - Field screening
  - Sampling and source tracking

Module 1

Background

- 2016 Massachusetts MS4 Permit
- MS4 = Municipal Separate Storm Sewer System
- 6 Minimum Control Measures



Background

6 Minimum Control Measures (MCMs)

1. Public Education and Outreach
2. Public Involvement and Participation
3. **Illicit Discharge Detection and Elimination Program**
4. Construction Site Stormwater Runoff Control
5. Post Construction Stormwater Management
6. Good Housekeeping and Pollution Prevention



Illicit Discharges

What is an Illicit Discharge?

Anything that is not entirely made of stormwater that enters the storm sewer system

Exceptions: allowable, non-stormwater discharges, discharges pursuant to another NPDES permit, and discharges resulting from fire-fighting activities



Only rain down the storm drain!

Types of Illicit Discharges

Frequency:

- Continuous
  - Occurs continuously to nearly continuously
  - Usually easier to detect
  - Typically greatest pollutant load
- Intermittent
  - Occurs over a shorter period of time (a few hours per day, few days per year)
  - Harder to detect
- Transitory
  - Occurs in response to singular event (spill, sewer break, transport accident, illegal dumping)
  - Hardest to identify during routine screening

Cross Connection

Sump Pump

Dumping

Types of Illicit Discharges

Mode of Entry:

- Direct
  - Enter via piped connection
  - Usually continuous or intermittent
  - Sewer cross connections, straight pipe, industrial and commercial cross connections
- Indirect
  - Enter via storm drain inlets or by infiltration
  - Usually intermittent or transitory
  - Groundwater seepage, spills, dumping, outdoor washing, non-target irrigation





Stormwater Pollutants

- Heavy metals
- Toxics
- Oil and grease
- Solvents
- Surfactants / detergents
- Nutrients
- Bacteria
- Sediment









Stormwater Pollutants

Activity	Pollutant
Vehicle washing / maintenance	• Heavy metals • Oils and grease • Surfactants / detergents • Solvents
Pet waste	• Bacteria
Lawn maintenance / landscaping	• Fertilizers and pesticides • Nutrients
Failing septic systems / sewer cross connections / SSOs	• Bacteria
Illegal dumping / spills from vehicular accidents	• Oil and grease • Toxics • Nutrients (from lawn waste dumping)
Swimming pool draining	• Chlorine
Construction sites	• Sediment
Cleaning greasy equipment and grease traps	• Fats, oils, and grease

Examples of Illicit Discharges

- Chlorinated pool water
- Spills from car accidents
- Failing septic fields
- Dumped material
- Cross connections
- Track out
- Sanitary sewer overflows
- Contaminated sump pumps
- Floor drains

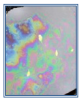




Indicators of an Illicit Discharge

- Unusual flow
- Pungent odors
- Excessive or dead vegetation
- Excessive sediment
- Discoloration or oils sheen or stains
- Residual evidence (i.e. toilet paper)




Sanitary Sewer Overflow (SSO)

- Untreated discharge of sanitary sewer
- Develop inventory of SSOs
- Oral (within 24 hours) and written notice (within 5 days) to EPA and/or MassDEP





Allowable Non-Stormwater Discharges

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground water
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- Uncontaminated pumped groundwater
- Discharge from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water, springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual resident car washing
- De-chlorinated swimming pool discharges
- Street wash waters
- Residential building wash waters without detergents

Note: Allowable as long as the discharge is not identified as a significant contributor of pollutants to the MS4

Receiving Waters & Impairments

- Impaired waters do not meet water quality standards for a designated use(s)
- Impaired waters can be found on MassDEP's website (search for TMDL – Integrated Lists & Other Reports)



Integrated list updated every 2 years

Discussion

- Is this an illicit discharge?



Discussion

- Could this be an illicit discharge?



Discussion

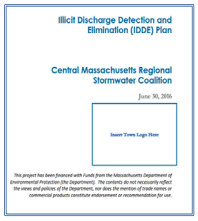
- Natural or man-made?



Module 2

IDDE Program

- Goal:
  - systematically find and eliminate illicit discharges
  - implement procedures to prevent future illicit discharges
- IDDE program must be a written document


Illicit Discharge Detection and Elimination (IDDE) Plan

Central Massachusetts Regional Stormwater Coalition

June 30, 2016

Insert Town Logo Here

This project has been financed with Funds from the Massachusetts Department of Environmental Protection (the Department). The contents do not necessarily reflect the views and policies of the Department, nor does the mention of trade names or commercial products constitute endorsement or recommendation for use.

Sample template available from the Central Massachusetts Regional Stormwater Coalition

Major Components of IDDE Program

- Legal authority to prohibit illicit discharges
- Storm system mapping
- Inventory and ranking of outfalls
- Dry weather outfall screening
- Catchment investigations
- Identification/confirmation of illicit sources
- Illicit discharge removal
- Follow up screening
- Employee training



Legal Authority

- Ordinance or bylaw
- Adequate legal authority:
  - Prohibit illicit discharges
  - Investigate suspected illicit discharges
  - Eliminate illicit discharges into the MS4
  - Implement enforcement procedures and actions



Interdepartmental Responsibilities

- Implementing an IDDE program involves many departments
  - Department of Public Works
  - Highway Department
  - Sewer Department
  - Building Inspector and/or Code Enforcement Officer
  - Licensed Plumbing Inspector
  - Health Department
  - Engineering Department
  - Conservation Agent
  - Conservation Commission
  - Planning Board Chairperson
  - Board of Selectmen or Town Council
  - Town Administrator and/or Mayor



Stormwater System Mapping

- Phase I Mapping
  - Outfalls and receiving waters
  - Open channel conveyances (swales, ditches, etc.)
  - Interconnections with other storm sewer systems
  - Municipally owned stormwater treatment structures
  - Water bodies identified by name and indication of all use impairments
  - Initial catchment delineations



Stormwater System Mapping

- Phase II Mapping
  - Outfall spatial location (lat/long minimum accuracy of +/-30')
  - Pipes
  - Manholes
  - Catch basins
  - Refined catchment delineations
  - Municipal sanitary sewer system (if available)
  - Municipal combined sewer system (if applicable).



Assessment and Priority Ranking

- Assesses illicit discharge/SSO potential and related public health significance
- Identifies each outfall/ interconnection, location, condition; provides tracking framework
- Sets priority order for investigations
- Initial inventory and priority ranking based on existing information; updated annually



A catchment is the drainage area to an individual outfall

Outfall Categories

- Ranking Characteristics
  - Previous screening results
  - Past discharge complaints & reports
  - Poor receiving water quality
  - Density of generating sites
  - Sewer conversion
  - Historic CSOs
  - Density of aging septic systems
  - Culverted streams
  - Water quality limited waterbodies
  - Age of development & infrastructure

Problem Outfalls	High Priority Outfalls
Known or suspected illicit discharges Previous screening indicating sewer input	Discharging to an area of concern to public health due to proximity of public beaches, recreational areas, drinking water supplies or shellfish beds High potential for an illicit discharge
Low Priority Outfalls	**Excluded Outfalls**
Low potential for an illicit discharge	No potential for illicit discharge Limited to: 1. Roadway drainage in undeveloped areas 2. Athletic fields 3. Parks or undeveloped green space 4. X-country drainage

Sample Matrix

Table 5-1. Outfall Inventory and Priority Ranking Matrix
##MUNICIPALITY, Massachusetts
Revision Date: ##DATE OF LAST UPDATE

Outfall ID	Receiving Water	Previous Screening Results Indicate Likely Sewer Input[1]	Discharging to Area of Frequent Public Health[2]	Frequency of Past Discharge Complaints	Receiving Water Quality[3]	Density of Generating Sites[4]	Age of Development/ Infrastructure[5]	Historic Combined Sewers or Septic[6]	Aging Septic[7]	Culverted Streams[8]	Additional Characteristics	Score	Priority Ranking
Information Source	Outfall inspections and sample results	GIS Maps	Town Staff	Impaired Waters List	Land Use/GIS Maps, Aerial Photography	Land Use Information, Visual Observation	Town Staff, GIS Maps	Land Use, Town Staff	GIS and Storm System Maps	Other		
Scoring Criteria	Yes = 3 (Problem Outfall) No = 0	Yes = 3 No = 0	Frequent = 3 Occasional = 2 None = 0	Poor = 5 Fair = 2 Good = 0	High = 3 Medium = 2 Low = 1	High = 3 Medium = 2 Low = 1	Yes = 3 No = 0	Yes = 3 No = 0	Yes = 3 No = 0	TBD			
Sample 1	XYZ River	3	0	2	0	2	1	0	0	3	None	11	Problem
Sample 2	XYZ Lake	0	3	0	3	1	2	0	3	3	None	15	High Priority
Sample 3	XYZ Stream	0	0	2	0	1	1	0	0	0	None	4	Low Priority

Scoring Criteria:
[1] Previous screening results indicate likely sewer input if any of the following are true:
- Olfactory or visual evidence of sewage,
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and bacteria levels greater than the water quality criteria applicable to the receiving water, or
- Ammonia ≥ 0.5 mg/L, surfactants ≥ 0.25 mg/L, and detectable levels of chlorine

[2] Outfalls/interconnections that discharge to or in the vicinity of any of the following areas: public beaches, recreational areas, drinking water supplies, or shellfish beds.
[3] Receiving water quality based on latest version of MassDEP integrated List of Waters.
- Poor = Waters with approved TMDLs (Category 4a Waters) where illicit discharges have the potential to contain the pollutant identified as the cause of the impairment
- Fair = Water quality limited waterbodies that receive a discharge from the MS4 (Category 5 Waters)
- Good = No water quality impairments

[4] Generating sites are institutional, municipal, commercial, or industrial sites with a potential to contribute to illicit discharges (e.g., car dealers, car washes, gas stations, garden centers, industrial manufacturing, etc.)
[5] Age of development and infrastructure:
- High = Industrial areas greater than 40 years old and areas where the sanitary sewer system is more than 40 years old
- Medium = Developments 10-40 years old
- Low = Developments less than 20 years old

[6] Areas once served by combined sewers and but have been separated, or areas once served by septic systems but have been converted to sanitary sewers.
[7] Aging septic systems are septic systems 30 years or older in residential areas.
[8] Any river or stream that is culverted for distance greater than a simple roadway crossing.

Outfall

What is an outfall?

- The point where the MS4 discharges to waters of the United States via a discrete conveyance
- Can be a pipe, can be a ditch outfall
- Does not include pipes that simply convey waters of the United States (such as cross culverts)



Interconnection

What is an interconnection?

- The point where one MS4 discharges to another MS4 or other storm sewer system via a discrete conveyance
- Treated similarly to an outfall



Outfall Screening and Sampling

- Inspect high & low priority outfalls & interconnections during dry weather
- Conduct dry weather screening based on priority ranking



More information provided in Module 3

Catchment Investigations

- Purpose
  - To trace the source
- Techniques
  - Review of maps, plans, records
  - Manhole observations
  - Sampling
  - CCTV inspection
  - Smoke and dye testing



More information provided in Module 3



Employee Training

- Required annually
- All employees involved in program
- How to identify illicit discharges and SSOs
- Maintain records
- This training counts as training!



Reporting

- Progress of mapping
- SSOs inventory, status of mitigation & corrective measures
- Outfall inventory and ranking
- Screening data
- Sampling results
- Data from catchment investigations
- System vulnerability factor (SVF) inventory
- Status of IDDE investigation & removal activities
- Info for each confirmed source removed
- Frequency and type of training
- Evaluation of IDDE program



Thorough tracking and documentation will make annual reporting easier

Discussion

- What stage of program development are you at?
- What portions do you feel comfortable with – what areas will be or have been a struggle?

Module 3

Dry Weather

- Dry weather
  - Less than 0.1 inches of rainfall in previous 24-hour period AND no significant snow melt
- Dry weather flow:
  - Flow from storm sewer system during dry weather
  - Indicator of potential illicit discharge



Dry Weather Screening

- Required for high and low priority outfalls
- Conducted during dry weather
- Order based on outfall inventory and priority ranking



General Procedure

- Outfall Screening
  - Photograph outfall
  - Conduct visual inspection
  - If flow observed, collect sample
  - If no flow observed, but evidence of illicit flow, follow up in one week
- Outfall Sampling
  - Collect sample of dry weather flow
    - Ammonia, Surfactants, Chlorine
    - Conductivity, Temperature, Salinity
    - Indicator bacteria, Pollutants of concern (impaired waterbodies)
- Document, update outfall inventory and priority ranking



For submerged/inaccessible outfalls, move to the first accessible upstream structure

Visual/Olfactory Evidence

- Odor
- Color
- Turbidity
- Floatables
  - Suds
  - Bubbles
  - Sewage
  - Toilet paper
- Deposits
- Stains
- Vegetation
- Damage to outfall



Figure 34: Interpreting Color and Turbidity

Images from the CWP IDDE Manual, October 2004

Visual/Olfactory Evidence

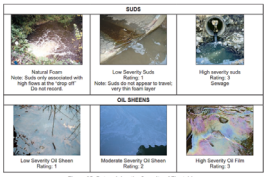


Figure 35: Determining the Severity of Floatables



Figure 36: Synthetic versus Natural Sheen (a) Sheen from bacteria such as iron floc forms a sheet-like film that cracks if disturbed (b) Synthetic oil forms a swirling pattern



Figure 38: Interpreting Benthic and Other Biotic Indicators

Images from the CWP IDDE Manual, October 2004

Visual/Olfactory Evidence

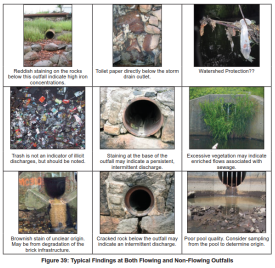


Figure 39: Typical Findings at Both Flowing and Non-Flowing Outfalls

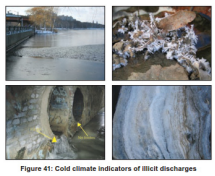


Figure 41: Cold climate indicators of illicit discharges

Images from the CWP IDDE Manual, October 2004

Field Equipment

- Clipboard
- Inspection form/tablet
- Chain-of-custody forms
- Pen/permanent markers
- Nitrile gloves
- Flashlight/headlamp
- Cooler with ice (for transporting samples)
- Digital camera
- PPE
- GPS receiver
- Water quality sonde/meter (if needed)
- Test kits
- Label tape
- Sample containers
- Pry bar/pick
- Sandbags
- Mallet/hammer
- Utility knife
- Measuring tape
- Safety cones
- Hand sanitizer
- Zip ties/duct tape
- Rubber boots/waders
- Sampling pole

Sample Parameters

- Test Kit Parameters
  - Ammonia
  - Surfactants
  - Chlorine
- Lab Parameters
  - Indicator bacteria
  - Pollutants of Concern (for impaired waters)
- Metered Parameters
  - Ammonia
  - Surfactants
  - Chlorine
  - Conductivity
  - Temperature
  - Salinity

Sample Parameters

A few things to consider:

- Same water quality parameters for dry and wet weather
- Surfactant field kit creates hazardous waste
- Indicator bacteria sample bottles come pre-sterilized and pre-preserved
- PVPC can provide guidance on water quality sampling elements



Indicator Use

Table 39: Indicator Parameters Used to Detect Illicit Discharges

Parameter	Discharge Types It Can Detect: Sewage	Washwater	Tap Water	Industrial or Commercial Liquid Wastes	Laboratory/Analytical Challenges
Ammonia	●	⊛	○	⊛	Can change into other nitrogen forms as the flow travels to the outfall
Boron	⊛	⊛	○	N/A	
Chlorine	○	○	○	⊛	High chlorine demand in natural waters limits utility to flows with very high chlorine concentrations
Color	⊛	⊛	○	⊛	
Conductivity	⊛	⊛	○	⊛	Ineffective in saline waters
Detergents – Surfactants	●	●	○	⊛	Reagent is a hazardous waste
E. coli Enterococci Total Coliform	⊛	○	○	○	24-hour wait for results Need to modify standard monitoring protocols to measure high bacteria concentrations
Fluoride*	○	○	●	⊛	Reagent is a hazardous waste Exception for communities that do not fluoridate their tap water
Hardness	⊛	⊛	⊛	⊛	
pH	○	⊛	○	⊛	
Potassium	⊛	○	○	●	May need to use two separate analytical techniques, depending on the concentration
Turbidity	⊛	⊛	○	⊛	

● Can almost always (>80% of samples) distinguish this discharge from clean flow types (e.g., tap water or natural water). For tap water, can distinguish from natural water.
⊛ Can sometimes (>50% of samples) distinguish this discharge from clean flow types depending on regional characteristics, or can be helpful in combination with another parameter
○ Poor indicator. Cannot reliably detect illicit discharges, or cannot detect tap water
N/A: Data are not available to assess the utility of this parameter for this purpose.
Data sources: PWI (this study)
*Fluoride is a poor indicator when used as a single parameter, but when combined with additional parameters (such as detergents, ammonia and potassium), it can almost always distinguish between sewage and washwater.

Table 39, CWP IDDE Manual, October 2004

Sample Collection and Analysis

- Fill out info on bottle and field form
- Wear protective gloves
- Collect sample directly from flow
- Do not disturb the sediment or touch inside of sample container
- Use test strips, test kits, field meters (measurement taken from sample in bottle)
- For lab samples:
  - Place on ice
  - Fill out chain-of-custody
  - Deliver samples to lab
- Dispose of used test strips and test kit ampules properly
- Decontaminate all testing personnel and equipment



Sample bottles and devices should be triple rinsed with distilled water and then rinsed with sample water IF the sample bottle is not pre-filled with a preservative

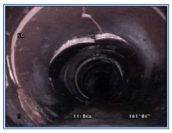
Interpreting Sampling Results

Benchmark field measurements for select parameters

Analyte or Parameter	Benchmark
Ammonia	>0.5 mg/L
Conductivity	>2,000 µS/cm
Surfactants	>0.25 mg/L
Chlorine	>0.02 mg/L (detectable levels per the 2016 MS4 Permit)
Indicator Bacteria*: *E.coli* *Enterococcus*	*E.coli*: the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 126 colonies per 100 ml and no single sample taken during the bathing season shall exceed 235 colonies per 100 ml *Enterococcus*: the geometric mean of the five most recent samples taken during the same bathing season shall not exceed 33 colonies per 100 ml and no single sample taken during the bathing season shall exceed 61 colonies per 100 ml

System Vulnerability Factors (SVFs)

- Factors making a catchment more susceptible to an illicit discharge
- SVFs to be identified for each catchment
- Catchments with identified SVFs to be sampled during wet weather





Example SVFs

✓ *History of SSOs*	✓ *Crossings of storm and sanitary sewer alignments*	✓ *Areas formerly served by combined sewer systems*
✓ *Common or twin-invert manholes serving storm and sanitary sewer alignments*	✓ *Sanitary sewer systems constructed with an underdrain*	✓ *Sanitary sewer infrastructure defects such as leaking laterals, cracked, broken, or offset infrastructure*
✓ *Common trench construction serving both storm and sanitary sewer alignments*	✓ *Inadequate sanitary sewer level of service resulting in regular surcharging, customer back-ups or frequent complaints*	✓ *Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power equipment has failed or blockages could result in an SSO*
✓ *Any storm or sanitary infrastructure greater than 40 years old*	✓ *Widespread code-required septic system upgrades required at property transfers*	✓ *History of multiple Board of Health actions addressing widespread septic system failures*

Dry Weather Manhole Inspections

- Systematic and progressive
- Observe, sample, and evaluate key junction manholes
- Update mapping, catchment delineations, and SVF inventory



Dry Weather Manhole Inspections

- Inspect MH for visual and olfactory evidence
- If flow observed, collect sample for ammonia, chlorine, and surfactants
- If evidence of a potential illicit discharge, flag for additional upstream investigation
- Conduct key junction MH inspections until suspected illicit discharge is isolated to a pipe segment between two MHs
- If no evidence of an illicit discharge found, catchment investigation considered complete (once key junction MHs sampled)





Junction Manholes

- Junction Manholes
  - Structure with two or more inlets from two or more MS4 alignments
- Key Junction Manholes
  - Junction structures that represent one or more junction manholes that can be used to rule out tributary areas of the system during investigation



Example SVF Inventory

Table 7-1: Outfall Catchment System Vulnerability Factor (SVF) Inventory
##MUNICIPALITY, Massachusetts
Revision Date: ##DATE OF LAST UPDATE

Outfall ID	Receiving Water	1 History of SSOs	2 Common or Twin Invert Manholes	3 Common Trench Construction	4 Storm/Sanitary Crossings (Sanitary Above)	5 Sanitary Lines with Understrains	6 Inadequate Sanitary Level of Service	7 Areas Formerly Served by Combined Sewers	8 Sanitary Infrastructure Defects	9 SSO Potential in Event of System Failures	10 Sanitary and Storm Drain Infrastructure <40 years Old	11 Septic with Poor Soils or Water Table Separation	12 History of BOH Actions Addressing Septic Failure
Sample 1	XYZ River	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

Presence/Absence Evaluation Criteria:
1. History of SSOs, including, but not limited to, those resulting from wet weather, high water table, or fat/oil/grease blockages
2. Common or twin-invert manholes serving storm and sanitary sewer alignments
3. Common trench construction serving both storm and sanitary sewer alignments
4. Crossing of storm and sanitary sewer alignments where the sanitary system is shallower than the storm drain system
5. Sanitary sewer alignments known or suspected to have been constructed with an underdrain system
6. Inadequate sanitary sewer level of service (LOS) resulting in regular surcharging, customer back-ups, or frequent customer complaints
7. Areas formerly served by combined sewer systems
8. Sanitary sewer infrastructure defects such as leaking service laterals, cracked, broken, or offset sanitary infrastructure, directly piped connections between storm drain and sanitary sewer infrastructure, or other vulnerability factors identified through Inflow/Infiltration Analyses, Sanitary Sewer Evaluation Surveys, or other infrastructure investigations
9. Sewer pump/lift stations, siphons, or known sanitary sewer restrictions where power/equipment failures or blockages could readily result in SSOs
10. Any sanitary sewer and storm drain infrastructure greater than 40 years old
11. Widespread code-required septic system upgrades required at property transfers (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)
12. History of multiple Board of Health actions addressing widespread septic system failures (indicative of inadequate soils, water table separation, or other physical constraints of the area rather that poor owner maintenance)

Wet Weather Outfall Sampling

- Outfalls located in catchments with ≥1 SVF
- During a storm event producing a discharge
- During spring (higher groundwater levels)
- To determine if illicit discharge is due to wet weather-induced high flows in sewer or high groundwater in areas served by septic systems



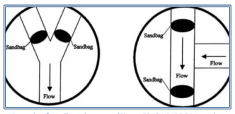
Wet Weather What's next?

- If sampling indicates potential illicit discharge
  - Additional source sampling, isolation, and confirmation needed
- If sampling does not indicate potential illicit discharge AND no indicators during MH inspection
  - Catchment investigation considered complete



Source Isolation and Confirmation

- Sandbagging
  - Useful to isolate intermittent flows
  - Dam water at manhole inlet
  - Left in place <48 hours, during dry weather
  - Time consuming (2+ trips/MH), limiting
- Smoke Testing
  - Introduce into storm drain, look for escaping smoke in sewer, vents, or leaks in system
  - Smoke bombs/liquid smoke, blower, plugs
  - Notify residents, businesses, police, and fire
- Dye Testing
  - Introduce into plumbing fixtures and observe outfalls and structures for presence of dye
  - Sufficient amount of water to flush dye
  - Notify residents, businesses, police, and fire
  - Relatively quick, effective, and inexpensive

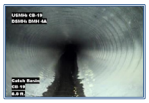


Example of sandbag placement (Figure 59, CWP IDDE Manual, October 2004)



Source Isolation and Confirmation

- CCTV/Video Inspections
  - Video inspection using a remotely guided camera
  - Effective, costly, and time consuming
- Optical Brightener Monitoring
  - Fluorescent dyes used in detergents and paper products
  - Optical brightener traps
    - using cotton pad in a wire cage
    - Secure trap to pipe/structure, retrieve, and place under UV light
  - Hand-held fluorometer – more quantitative; more costly and not as effective at isolating intermittent discharges
- IDDE Canines
  - Dogs trained in detecting human related sewage
  - Not widespread, cost-effect
  - Tool to supplement conventional methods



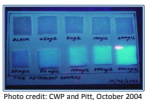


Photo credit: CWP and Pitt, October 2004



Photo credit: FBE, August 2012

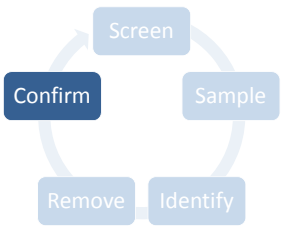
Illicit Discharge Removal

- Removal necessary when source is identified
- Eliminate discharge within 60 days of identification or establish a schedule
- Rely on established legal authority



Confirmatory Screening

- Conducted during dry weather
  - If SVF identified, both dry and wet weather needed
- Conducted within 1 year of removal of identified illicit discharge
- Evidence of illicit discharge requires additional investigation



Ongoing Screening

- Reprioritize outfalls
- Screen once every 5 years
- Dry weather
- Wet weather, as required



Discussion

- Do or will you conduct your own outfall sampling or do you hire a consultant?
- Do or will you utilize a laboratory or field kits?
- What has worked well / not so well?

Contact Information

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CT River Stormwater Committee

- Town of Agawam
- Town of Belchertown
- City of Chicopee
- Town of East Longmeadow
- City of Easthampton
- Town of Granby
- Town of Hadley
- City of Holyoke
- Town of Longmeadow
- Town of Ludlow
- City of Northampton
- Town of South Hadley
- Town of Southwick
- City of Springfield
- Town of West Springfield
- City of Westfield
- Town of Wilbraham
- University of Massachusetts
- Pioneer Valley Planning Commission

Bloodborne Pathogens

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What is a Bloodborne Pathogen ?

- Viruses, Bacteria
- Carried in the Blood or Bodily Fluids
- Can cause disease



Bloodborne: Definition



- Bloodborne diseases:
- **Not** transmitted by casual contact

OR

- **Not** by using the same bathroom or kitchen facilities

Bloodborne Disease Examples

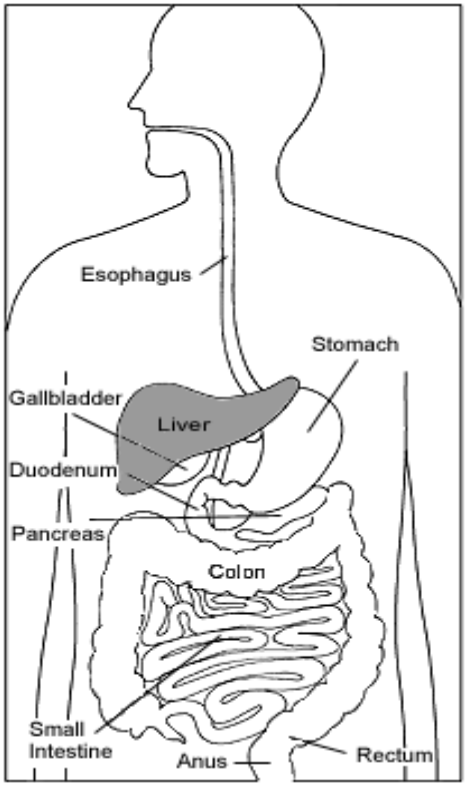
- Hepatitis B or C
- HIV or AIDS
- Malaria
- TB



Hepatitis Causes Liver Damage

You cannot live without a liver:

- -Produces bile to digest fats
- -Makes proteins for body repair
- -Cleans toxins



Hepatitis B (HBV)

- Inflammation of the Liver
- Symptoms = None to Flu-like
- Approx. 300,000 people a year
- Preventive **Vaccine** Available !!

Hepatitis B Symptoms

- Fatigue
- Loss of Appetite
- Fever
- Achy muscles
- Nausea
- Jaundice



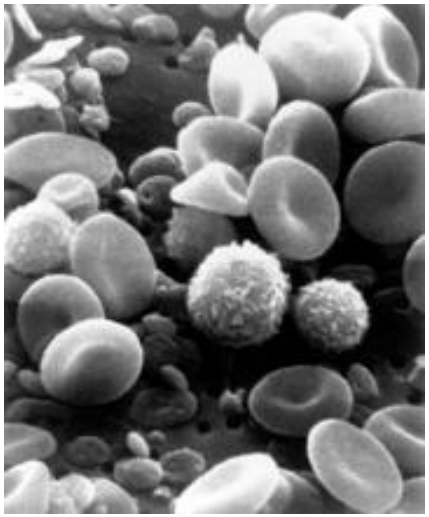
Hepatitis C (Hep C)



- Signs and symptoms similar to Hep B
- **No** Vaccine Available

HIV or AIDS

- Attacks the immune system
- 35,000 people infected annually
- **No** vaccine
- Can be carried for many years before symptoms appear



AIDS



- Swollen lymph glands
- Recurrent fever
- Night sweats
- Fatigue
- Weight Loss
- Other Illnesses

Means of Transmission – Must Enter Body !!

- Sexual Contact
- Shared Needles
- Sharps (e.g. Broken Glass)
- Blood (and possibly any other body fluid)
- Splashes

Survival Outside the Body

- Hepatitis B – in dried blood – maybe **2 weeks**
- Hepatitis C – Up to **4 Days**
- HIV – Very Brittle – almost immediately destroyed

Occupational Means of Transmission

- Breaks in the Skin
- Mucous Membranes (eyes, nose, mouth)
- Sharps (broken glass, needles)

"Universal Precautions"

- Treat all Blood and Body Fluids as **Potentially** Infectious.

Good Work Practices

- Wear PPE (e.g. Gloves, facial, etc.)
- Use Tools to pick up Broken Material **(Sharps)**
- Use Spill Kits
- Wash Hands

Cleanup (Decontamination)

- 10% Solution (1:10) of Bleach (Sodium Hypochlorite) and Water

  Or

- (1/4 Cup Bleach to 1 Gallon Water)


Bloodborne
Pathogens
Infection Control Kit
SaniZide

Disposal

- Sharps – Puncture resistant, leak proof container
- Clothing – Wash
- Equipment – Disinfect, wash

Common Sense Rules

- Wash Hands, Change Clothing before:
  - Eating
  - Drinking
  - Smoking

Hand Washing

- Wet
- Add Soap (Rub 20 Seconds, Front/Back, Between)
- Rinse
- Dry



Summary

- Protect Yourself - On and Off the Job
- Practice Good Personal Hygiene
- Wash Hands Often, after work or exposure
- Keep areas clean – report problems to supervisors.

Questions & Discussion

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Cold Weather Safety Fact Sheet

Wind Chill

Little Danger | Increasing Danger | Greater Danger that Exposed Flesh Will Freeze

WIND VELOCITY (mph)

TEMPERATURE (°F)	0	5	10	15	20	25	30	35	40	45	50
-10	-10	-15	-31	-45	-52	-58	-63	-67	-69	-70	-70
-5	-5	-11	-27	-40	-46	-52	-56	-60	-62	-63	-63
0	0	-6	-22	-33	-40	-45	-49	-52	-54	-54	-56
5	5	1	-15	-25	-32	-37	-41	-43	-45	-46	-47
10	10	7	-9	-18	-24	-29	-33	-35	-36	-38	-38
15	15	12	-2	-11	-17	-22	-26	-27	-29	-31	-31
20	20	16	2	-6	-9	-15	-18	-20	-22	-24	-24
25	25	21	9	1	-4	-7	-11	-13	-15	-17	-17
30	30	27	16	11	3	0	-2	-4	-4	-6	-7
35	35	33	21	16	12	7	5	3	1	1	0
40	40	37	28	22	18	16	13	11	10	9	8

WIND CHILL TABLE

5 mph = moves a light flag
10 mph = fully extends a flag
15 mph = will raise a newspaper sheet
20 mph = produces blowing and drifting snow

Personal Protective Clothing

- Wear at least three layers: layer 1 breaks the wind, layer 2 absorbs sweat, layer 3 draws sweat off the body.
- Keep a change of clothing available, should one set get wet.
- Pay special attention to your feet hands head and face. Keep your head covered (up to 40% of body heat can be lost by being uncovered).
- Wear footgear that protects against cold and dampness.

Environmental Protection

- Consider an on-site source of heat
- For prolonged exposures to 20^0 F or less, consider a heated shelter
- Shield work areas from drafty or windy conditions.
- Do not sit or kneel on cold unprotected surfaces.

For more information, contact Tim McGuire, Loss Control Consultant at 800-552-1150, ext. 1112, or email him at tmcguire@ccmsi.com

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Cold Weather Safety Fact Sheet

- Take extra work breaks as necessary
- Avoid activities that lead to heavy perspiration
- Work indoors if possible during the coldest days; when outside, selects the warmest part of the day.
- Prevent dehydration by drinking warm, sweet, caffeine-free, non-alcoholic drinks or soup.
- Avoid working alone in very cold weather. Use a buddy system.

Recognizing Hypothermia

- Shivering/exhaustion
- Confusion/fumbling hands
- Memory loss/slurred speech
- Drowsiness

What to do

- Get the victim to a warm shelter.
- If the victim's clothing is wet, remove them.
- Cover victim and warm body first.
- Provide **warm** beverages; nothing alcoholic. Do not give beverages to an unconscious person.
- Keep victim dry and wrapped in a warm blanket.
- Get medical attention ASAP.

Recognizing Frostbite

- A white or grayish-yellow skin area
- Skin that feels unusually firm or waxy
- Numbness

What to do

- Check for hypothermia
- Get to a warm shelter
- Unless necessary, do not walk on frostbitten feet or toes
- Immerse the affected area in **warm** – not hot – water
- Do not rub the affected area.
- Do not use a heating pad, heat lamp, fireplace or radiator for warming – Affected areas are numb, and easily burned.

For more information, contact Tim McGuire, Loss Control Consultant at 800-552-1150, ext. 1112, or email him at tmcguire@ccmsi.com

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Risk Reminder

LADDER SAFETY

According to the National Safety Council, over 30,000 people are injured each year by falls involving ladders. Most accidents occur because the users violate the basic rules of ladder safety. Offered below are five rules for ladder safety.

Rule #1

SELECT THE RIGHT LADDER FOR THE JOB

There are many types of ladders, the most common being straight (single or extension) ladders and stepladders. They may be made of wood, aluminum or fiberglass. Look for the label certifying that it complies with ANSI and that it is listed with Underwriters Laboratories (UL). Be sure the ladder is long enough and sturdy. Do not use aluminum ladders near electricity!

Rule #2

INSPECT THE LADDER BEFORE YOU USE IT

Inspect for loose or damaged rungs, steps, rails or braces. Make sure the spreaders on stepladders can be locked in place. Check the safety feet of ladders so equipped. Never use a ladder that is defective! Painting can hide defects so do not paint a ladder.

Rule #3

SET UP THE LADDER WITH CARE

Use a barricade if ladder is in a traffic area to prevent collisions. The base should be on a solid, level surface that is kept uncluttered. Straight ladders should be placed at a four-to-one ratio. If you plan to climb onto a roof be sure the ladder extends at least three feet above the edge.

Rule #4

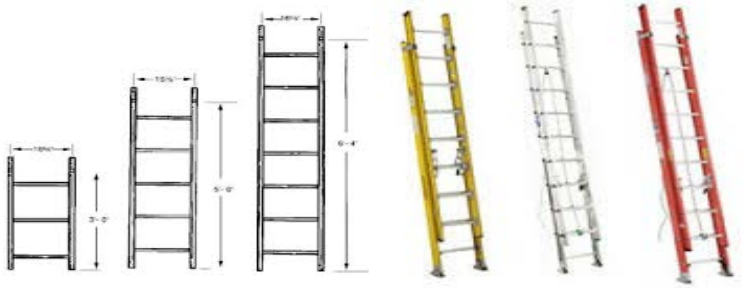
CLIMB AND DESCEND LADDERS CAUTIOUSLY

Always face the ladder and hold on with both hands. When climbing, always maintain 3-point contact (2 hands, 1 foot or 1 hand, 2 feet) with ladder. Use a tool belt or hand line to bring tools to the work height.

Rule #5

USE COMMON SENSE

Never reach too far to either side. Always keep one hand on the ladder. Never climb higher than the second step from the top of a stepladder or the third from the top of a straight ladder. Use care when carrying or transporting a ladder to avoid injuries to others and damage to the ladder. Store ladders in well ventilated areas in a manner that will prevent sagging or warping.





Contact Tim McGuire for more information at 781-683-1112 or tmcguire@ccmsi.com

Personal Protective Equipment

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Types of PPE



Hardhats

- Falling objects, bumps, electrical hazards
- ANSI Z89.1
- Classes
  - A: Impact & 2200 volts
  - B: Impact & 20K volts
  - C: Impact only
- Proper fit
- Remove from service if cracked, perforated, damaged by heat
- Avoid painting



Eye & Face Protection

- Flying particles, liquid chemicals, gases or vapors
- ANSI Z87.1-1989
- Types
  - Safety Glasses w/sideshields
  - Safety goggles
  - Face shield w/glasses or goggles
- Rx requirements
- Proper fit
- Remove from service if damaged or vision is impaired



Hearing Protection

- Based on noise levels & length of exposure
- Types
  - Single use earplugs: foam, self-forming
  - Preformed/Molded: must be fitted
  - Ear Muffs: best protection
- Proper fit is critical!
- Remove from service if damaged



Body Protection

- Splashes, chemicals
- Types
  - Leather, canvas: cuts, burns, abrasions
  - Fabric: dirt, slivers, abrasions
  - Chemical resistant: butyl, neoprene, nitrile, viton, pvc
- Always use gauntlet gloves and/or arm protection with chemicals
- Proper material for hazard
- Always use a bib apron
- Remove from service if damaged



Hand & Arm Protection

- Chemical. Electrical, cuts, abrasions, punctures
- Types
  - Rubber
  - Rubberized fabrics
  - Neoprene
  - Plastic
- Always combine with other types of PPE
- Proper material for hazard
- Remove from service if damaged – fill with water



Foot Protection

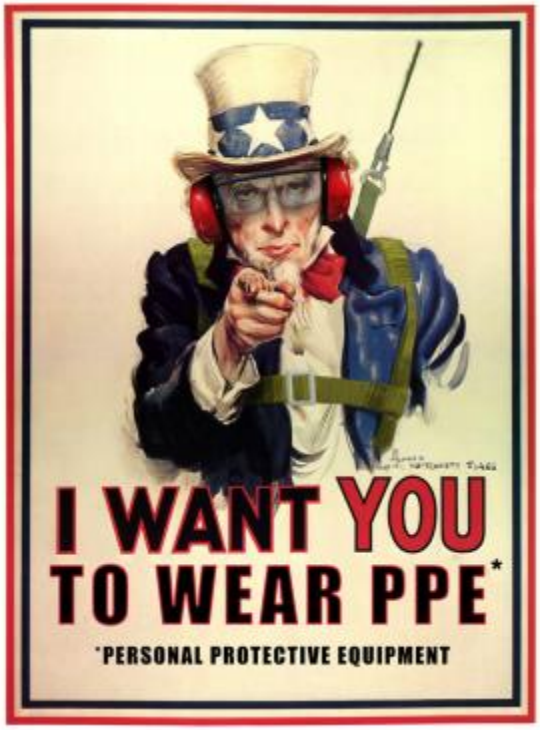
- Impact, crushing, heat, electricity, chemicals, slippery surfaces
- ANSI Z41-1991
- Types
  - Safety shoes/boots: impact, crushing, heat, electricity, slips
  - Chemical resistant: chemicals, sometimes impact, crushing, electrical
- Remove from service if damaged





General PPE Considerations

- Correct PPE for the hazard
- Proper fit
- Requires care and maintenance
- Replace if damaged or compromised in any way
- **YOU MUST WEAR IT PROPERLY IN ORDER FOR IT TO WORK!**



Questions & Discussion

MEGA
MASSACHUSETTS EDUCATION & GOVERNMENT ASSOCIATION

RiskReminder

Preventing Tick-Borne Diseases



Tick-borne pathogens can be passed to humans by the bite of infected ticks. Ticks can be infected with bacteria, viruses, or parasites. Some of the most common tick-borne diseases in the United States include: Lyme disease, Rocky Mountain Spotted Fever, Southern Tick-Associated Rash Illness, Tick-Borne Relapsing Fever, Colorado tick fever, Powassan encephalitis, and Q fever.

Outdoor workers are at risk of exposure to tick-borne diseases if they work primarily at worksites with woods, bushes, high grass, or leaf litter. Outdoor workers in most regions of the United States should be extra careful to protect themselves in the spring, summer, and fall when ticks are most active. Ticks are usually more active in the months of April through October and peak in the summer months of June through August. The time of year when ticks are active may vary with the geographic region and climate. Ticks may be active all year in some regions with warmer weather.

Symptoms: What are the symptoms of tick-borne infection? Some common symptoms include:

- Body/muscle aches
- Headaches
- Joint pain
- Stiff neck
- Fever
- Fatigue
- Rash
- Facial paralysis

Treatment: Most cases can be successfully treated with antibiotics, especially if started early. However, some workers may have symptoms such as arthritis, muscle and joint pain, or fatigue for an extended period of time.

Prevention: The following may be helpful in preventing exposure:

1. Wear light-colored, long-sleeved shirts, long pants (tucked into boots or socks), socks, and a hat when possible.
2. Wear repellents (containing 20% to 30% DEET) on skin and clothing for protection against tick bites. Remember to reapply the repellent as needed.
3. Some repellents (such as Permethrin) provide greater protection. Permethrin kills ticks on contact. It can be used on clothing but not skin. One application of Permethrin to pants, socks, and shoes typically stays effective through several washings.
4. When possible, avoid working at sites with woods, bushes, tall grass, and leaf litter.
5. If work in these higher-risk sites must occur, take the following steps to reduce tick populations:
   - Remove leaf litter.
   - Remove, mow, or cut back tall grass and brush.
   - Discourage deer activity.
6. Check your skin and clothes for ticks every day. The immature forms of these ticks are very small and may be hard to see.
   - Remember to check your hair, underarms, and groin for ticks.
   - Immediately remove ticks from your body using fine-
   - tipped tweezers.
   - Grasp the tick firmly and as close to your skin as possible.
   - Pull the tick's body away from your skin with a steady motion.
   - Clean the area with soap and water.
7. Wash and dry work clothes in a hot dryer to kill any ticks present.
8. If you suspect you have been exposed or have symptoms, seek medical attention immediately!

Contact Tim McGuire for more information at 781-683-1112 or tmcguire@ccmsi.com

MEGA

MASSACHUSETTS EDUCATION & GOVERNMENT ASSOCIATION PROPERTY AND CASUALTY GROUP, INC.

Risk Reminder

3 Point Contact

Help to prevent slips and falls while working by maintaining three points of contact when entering or exiting the cab of your truck. That is, a driver should have two feet on the steps and one hand on the handhold, or two hands on the handhold and one foot on the step.



The fact is that three-point contact gives you the best balance and least chance of slipping, tripping or falling, as well as the best chance to catch yourself if you do slip.

On or away from the employer's premises, drivers fall frequently and for many different reasons. Cabs can be several feet off the ground, and a driver can sustain serious injuries if he/she falls while entering or exiting the truck. Transitioning out of the cab and onto uneven terrain, slippery, greasy or oily surfaces can cause slips and falls. Oil and grease can accumulate on yard surfaces and be transferred to the driver's shoes. In winter weather, snow and ice can accumulate on the truck decking that leads into/out of the cab. To reduce these exposures, consider:

- Use of foot and handholds, as well as non-skid decking, can help prevent such falls.
- Remember to always face your vehicle when entering or exiting your cab.
- Put anything you are carrying into the cab first, and then climb in. Don't try getting in with an armful.
- Drivers should be aware of which leg they lead with when climbing into and out of the cab.
- Based on the design of the steps, leading with the left or right leg can reduce the amount of twisting of the torso and increase the ease of maintaining a three point stance.
- Furthermore, the driver must be aware that jumping from cabs is an unsafe and prohibited practice. This is especially true when considering some of the ruts and uneven terrain you encounter on a job-site. Jumping out of the cab and landing on this uneven terrain can cause significant injuries such as twisted or broken ankles.
- Also avoid bad habits such as swinging down from the cab, skipping or missing steps.

For more information, contact Tim McGuire, Loss Control Consultant at 800-552-1150, ext. 1112, or email him at tmcguire@ccmsi.com

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

MASSsafetyWorks!
Workplace Safety is No Accident

SAFETY REQUIREMENTS

Removing Snow from Rooftops on Municipal and State Property

After excessive snowfall, concerns arise about the weight of snow and the structural integrity of the roof. Workers assigned to remove snow from rooftops are at high risk of injury from falling off the roof edge or falling through skylights.

Employers must plan ahead to protect all workers from falling off the roof.

Prevent Worker Injury When Removing Snow from Roofs

- Use snow removal methods that do not involve workers going onto roofs, when possible.
- Provide Fall Protection equipment to workers who go onto roofs such as full body harnesses, shock-absorbing lanyards, lifelines, and engineered anchor points.
- Guard skylights, so workers do not fall through.
- Mark skylights, roof drains, and vents that could trip workers.
- Avoid contact with electrical power lines. Keep ladders, aerial lifts and workers at least 10 feet away from power lines.
- Evaluate weight load exerted on roof to ensure the roof can support the workers and equipment.
- Train workers to use Fall Protection harness, lifelines and anchor points correctly.

For more detailed information to prevent injury, refer to OSHA Publication 3513 “Hazard Alert: Falls and Other Hazards to Workers Removing Snow from Rooftops and Other Elevated Surfaces” available at: www.osha.gov



A method to protect workers from falling is required. One example of Fall Protection is a full-body harness with a shock-absorbing lanyard attached to a rope grab and vertical lifeline that is attached to a separate 5000-pound anchor point per worker.

Frequently Asked Questions

The roof is flat. Is Fall Protection still required?

Answer: YES. There is no exemption unless there is a railing protecting the entire perimeter.

I won’t go closer than 6 feet to the edge. Is Fall Protection still required?

Answer: YES. The 6 foot rule for construction does not apply to roof maintenance.

Do I still need fall protection if I mark the skylights with spray paint?

Answer: YES. The skylight is still considered a fall hazard.

Does the Fall Protection requirement apply to public sector workers?

Answer: YES. M.G.L. chapter 149, §6 requires public sector employers to prevent workers from work-related injury such as falling off a roof. The OSHA Fall Protection requirements outline the minimum methods to keep employees safe.

Confined Space Entry Safety

Michael Matilainen CIH, CSP
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Deadly Time Bombs !!!

- Eleven tips to keep you from becoming a statistic
  - Trenches and Excavations
  - WWTP Tanks
- General overview
- More specialized training



How to Identify Confined Spaces

- Limited Openings for Entry and Exit
- Unfavorable Natural Ventilation
- Not Designed for Continuous Worker Occupancy

Confined Space?



Confined Space?

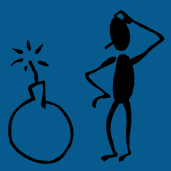


Confined Space?



Typical Confined Spaces

- Boiler, Degreaser, Furnace
- Pipeline, Pit, Pumping Station
- Reaction or Process Vessel, Mills
- Septic Tank, Sewage Digester
- Silo, Storage Tank, Barges
- Sewer, Utility Vault, Manhole
- Trenches, Shafts, Caissons



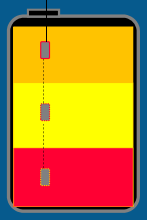
Confined Space Safety Training

- 88% - Human Error
- 10% - Equipment Failure
- 2% - Acts of God.



Stratification - Test all areas of the space

Hydrogen
Ammonia

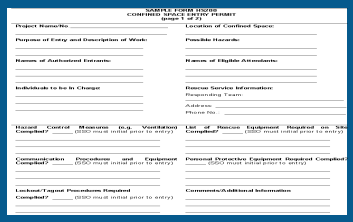


Gasoline
Hydrogen Sulfide
Most Chemicals

Tip #5 Always use the buddy system



Tip #7 Always fill out a permit OSHA required hazard assessment



SAMPLE FORM 09299
CONFINED SPACE ENTRY PERMIT
(page 1 of 2)

Project Name/No. _____ Location of Confined Space: _____

Purpose of Entry and Description of Work: _____ Possible Hazards: _____

Names of Authorized Entrants: _____ Names of Eligible Attendants: _____

Individuals to be in Charge: _____ Rescue Service Information: Responding Team: _____ Address: _____ Phone No: _____

Hazard Control Measures (e.g. Ventilation) Complied? _____ (ESO must initial prior to entry) _____

List of Rescue Equipment Required on Site Complied? _____ (ESO must initial prior to entry) _____

Communication Procedures and Equipment Complied? _____ (ESO must initial prior to entry) _____

Personal Protective Equipment Required Complied? _____ (ESO must initial prior to entry) _____

Lockout/Tagout Procedures Required Complied? _____ (ESO must initial prior to entry) _____

Comments/Additional Information _____

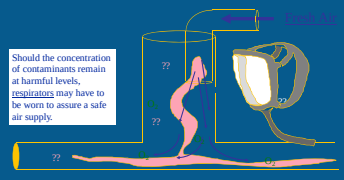


Tip#8 Know your hazards

- **Groundwater Soil Contaminants**
  - Benzene
  - Fuel oil
- **Hydrogen sulfide**
  - Extremely toxic
  - Loss of smell
- **Methane**
  - Explosive
  - Most deadly
- **Oxygen deficiency**
  - Asphyxiate
- **Others**
  - Heat
  - Electrical
  - Mechanical

Tip #9 Always eliminate the hazard

Should the concentration of contaminants remain at harmful levels, respirators may have to be worn to assure a safe air supply.



Isolation Methods

- Ventilation
- Lockout tag out
- Plugs
- Disconnect lines
- Chain valves
- Others





Tip #10 Follow excavation safety rules



Tip #11 Plan for rescue when appropriate







Deadly Time Bombs !!!

- **Eleven tips to keep you from becoming a statistic**
  - Trenches and Excavations
  - WWTP Tanks
- **General overview**
- **More specialized training**

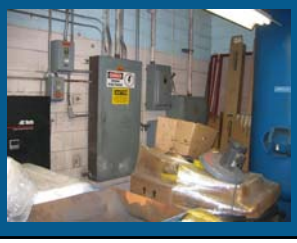
Electrical Safety And Lockout Tag Out

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SUMMARY

- Qualified Persons Work on Exposed Electrical Circuits
- Unqualified Persons Must De-energize by Lock Out Tag Out
- Safe Working Distances

Maintain Working Clearance



Exposed Conductors



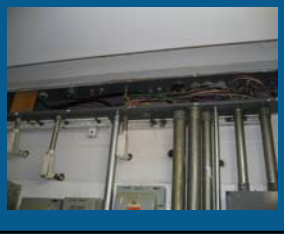
Exposed Knockouts



Use of Flexible Wiring



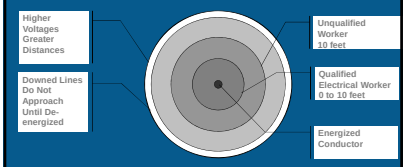
Exposed Conductors



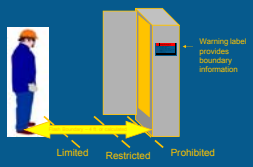




Safe Working Distances Boundaries



DISTANCES:





Personal Protective Equipment



PPE

- **Hard Hats, Safety Glasses**
- **Gloves**
  - Ground work
  - Class 1 – 1,000 volts
  - Class 2 - 17,000 volts
  - Periodic Testing
  - Leather covers, punctures, air test
  - Inspection, cleaning, protection, jewelry
- **Shoes**
  - EH rated
  - Over boots
- **FR Clothing**
  - Coveralls
  - Cotton or wool

The Table

600V Class Motor Control Centers (MCCs) and Busways.

Task	Hazard Risk	V-rated Gloves	V-rated Tools
Operate CB or fused switch or starter with enclosure doors closed.	0	N	N
Read a panel meter while operating a meter switch.	0	N	N
Operate CB or fused switch or starter with enclosure doors open.	1	N	N
Work on energized parts, including voltage testing.	2*	Y	Y
Work on control circuits while working near exposed live parts 120V and below.	0	Y	Y

CLOTHING

Hazard Risk	Clothing Type (= number of layers)	cal/cm²
0	Non-melting fabric Untreated cotton fabric weight of at least 4.50oz/yd (1)	N/A
1	FR shirt and FR pants(1) or FR coveralls.	4
2	Cotton underwear + FR shirt and FR pants (1or2).	8
3	Cotton underwear + FR shirt and FR pants+ FR coverall (2 or 3) or 2 FR coveralls.	25
4	Cotton underwear + FR shirt and FR pants + multilayer flash suit (3 or more).	40

HAZARDOUS ENERGIES

- **Electrical**
- **Chemical**
- **Thermal**
- **Fluid Pressure**
- **Pneumatic**
- **Mechanical**
- **Kinetic / Potential Energy**
- **Radiation**



PROCEDURE

- **Notify**
- **Shutdown Deactivate**
- **Isolate**
- **De-energize**
- **Verify**



DE-ENERGIZE

- Capacitors
- Chemical Removal Cleaning
- Heat Sources
- Depressurize
- Mechanically Stable



Zero Energy State

LOCK REQUIREMENTS

- Working Order
- Provided by the Employer
- Standardized
- Identifiable
- Unique Key
- Supplies



LOCK ACCESSORIES

- Hasps
- Circuit Breaker Covers
- Valve Covers (Clamshell)
- Tags



TAGS

- Use In Conjunction With Lock
- May Be Used Alone In Certain Circumstances
- "Do Not Use, Do Not Operate"
- Point of Isolation (With the Lock)
- Identifies
  - Operator
  - Means of Contact



Special Circumstances



CREW WORK

- Group Hasps
- Crew Boxes
- Shift Changes
- Designated Employee



ENERGY CONTROL PROCEDURES EXEMPTIONS

- Cord and Plug Equipment
- Single Source Equipment
- Electrical Power Transmission

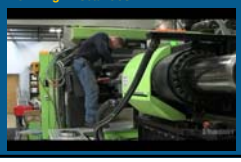


CONTRACTORS

- Locks / Tags
- Written Program
- Review Procedures
- Coordination

SUMMARY

- Qualified Persons Work on Exposed Electrical Circuits
- Unqualified Persons Must De-energize by Lock Out Tag Out
- Safe Working Distances

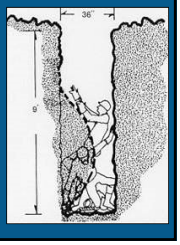


Excavation/Trench Safety

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Injury and Death

- Excavating is one of the most hazardous construction operations
- Most accidents occur in trenches 5-15 feet deep
- There is usually no warning before a cave-in



Excavation Overview

- Jackie's Law
- Trench Protection
- Soil Evaluation
- Safety Procedures



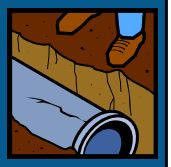
Jackie's Law

- 1999 Bridgewater
- Child fell in unprotected trench and died
- Fire department did not have proper rescue equipment
- Implemented public safety regulations
- Permit system local inspector

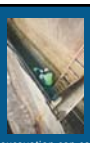


Jackie's Law

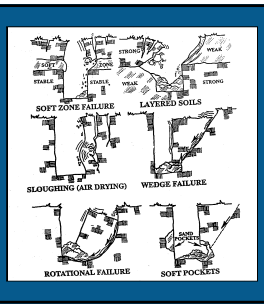
- Protect the General Public
  - Traffic barriers
  - Steel plates (3/4" thick minimum)
- Dig Safe #
- Hoisting License #
  - Excavation = Class 2
  - 520 CMR 6.0
- Posting
- Permit Fees

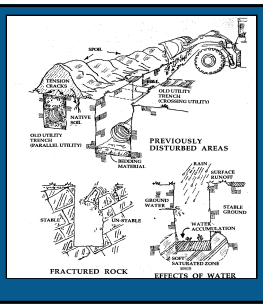


Excavation Hazards



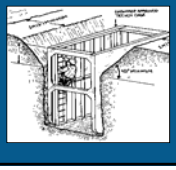
- Cave-ins are the greatest risk
- Other hazards include:
  - Asphyxiation due to lack of oxygen
  - Inhalation of toxic materials
  - Fire
  - Moving machinery near the edge of the excavation can cause a collapse
  - Accidental severing of underground utility lines





Protect Employees Exposed to Potential Cave-ins

- Slope or bench the sides of the excavation,
- Support the sides of the excavation, or
- Place a shield between the side of the excavation and the work area

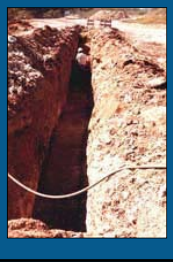


Excavations



Inadequate Protective System

This worker is in a trench with no protective system, that is not sloped or benched and has no means of egress



Protect Employees Exposed to Potential Cave-ins

- Slope or bench the sides of the excavation,
- Support the sides of the excavation, or
- Place a shield between the side of the excavation and the work area

Factors Involved in Designing a Protective System

- Soil classification
- Depth of cut
- Water content of soil
- Changes due to weather and climate
- Other operations in the vicinity



1926 Subpart P Appendix A - Soil Classification

- A method of categorizing soil and rock deposits in a hierarchy of:
  - Stable Rock,
  - Type A,
  - Type B, and
  - Type C



1926 Subpart P Appendix A - Soil Classification

- "Stable rock" means natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.
- "Type A" means cohesive soils with an unconfined, compressive strength of 1.5 ton per square foot (tsf) or greater.
- Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam.



Soil Classification

- However, no soil is Type A if:
  - (i) The soil is fissured
  - (ii) The soil is subject to vibration
  - (iii) The soil has been previously disturbed
  - (iv) The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater;

Soil Classification

- "Type B" means:
  - (i) Cohesive soil with an unconfined compressive strength greater than0.5 tsf but less than 1.5 tsf ; or
  - (ii) Granular non-cohesive soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and,
  - (iii) Previously disturbed soils except those which would otherwise be classed as Type C soil,
  - (iv) Type A, but is fissured or subject to vibration; or
  - (v) Dry rock that is not stable

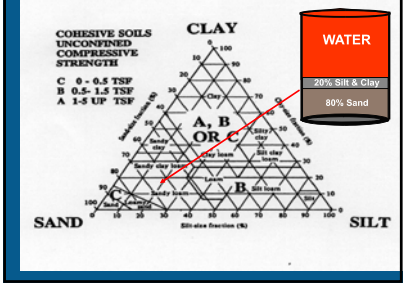
Soil Classification

- "Type C" means:
  - (i) Cohesive soil with an unconfined compressive strength of 0.5 tsf (48
  - kPa) or less; or
  - (ii) Granular soils including gravel, sand, and loamy sand; or
  - (iii) Submerged soil or soil from which water is freely seeping; or
  - (iv) Submerged rock that is not stable

Soil Field Tests

- Thumb test
- Plasticity
- Pocket penatrometer
- Torvane shear
- Sedimentation

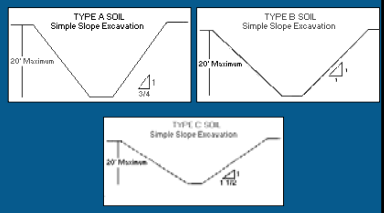


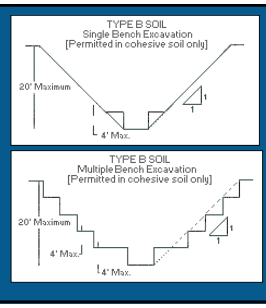


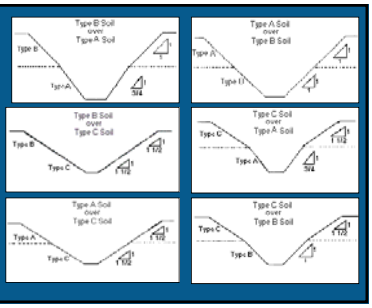
Sloping

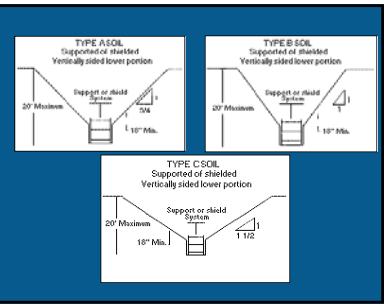
- Maximum allowable slopes for excavations less than 20 ft (6.09 m) based on soil type and angle to the horizontal are as follows:

Soil type	Height/Depth ratio	Slope angle Stable
Rock	Vertical	90°
Type A	¾:1	53°
Type B	1:1	45°
Type C	1½:1	34°
Type A (short-term)	½:1	63° (max 12')









Shoring

- General
  - Provides a framework to work in
  - Uses wales, cross braces and uprights
  - Supports excavation walls
- OSHA tables provide shoring data
  - Must know soil type
  - Must know depth and width of excavation
  - Must be familiar with the OSHA Tables

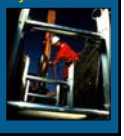
Trench Shield

- A trench shield was built around this work area



Hydraulic Trench Support

- Using hydraulic jacks the operator can easily drop the system into the hole
- Once in place, hydraulic pressure is increased to keep the forms in place
- Trench pins are installed in case of hydraulic failure



Materials and Equipment

- Equipment used for protective systems must not have damage or defects that impair function.
- If equipment is damaged, the competent person must examine it to see if it is suitable for continued use.
- If not suitable, remove it from service until a professional engineer approves it for use.



Specific Excavation Requirements

- Remove all surface encumbrances
- Address underground utilities
- Use appropriate access & egress
- Minimize exposure to vehicular traffic
- Minimize exposure to falling loads



Specific Excavation Requirements

- Warning for mobile equipment
- Control hazardous atmospheres
- Control water accumulation
- Evaluate stability of adjacent structures
- INSPECT



Other Excavation Hazards

- Water accumulation
- Oxygen deficiency
- Toxic fumes
- Access/Egress
- Falls
- Mobile equipment

Protection from Vehicles

- Install barricades
- Hand/mechanical signals
- Stop logs
- Grade soil away from excavation
- Fence or barricade trenches left overnight



Hazardous Conditions

- The weight and vibrations of the crane make this a very hazardous condition.
- They should not be working under this crane.



Spoils

- Don't place spoils within 2 feet from edge of excavation
- Measure from nearest part of the spoil to the excavation edge
- Place spoils so rainwater runs away from the excavation
- Place spoil well away from the excavation



Water = Cave-in Hazard



These workers must be protected from cave-in. Note the water in the bottom of the trench. This is a very hazardous condition!

Water is Hazardous

- When water is present in an excavation it is extremely hazardous to enter
- Note that these workers are not wearing hardhats to protect them from materials falling into the trench



Hazardous Atmosphere

Test excavations more than 4 feet before an employee enters the excavation for:

- Oxygen deficiency
- High combustible gas concentration
- High levels of other hazardous substances



Means of Egress

- A stairway, ladder, or ramp must be present in excavations that are 4 or more feet deep, and within 25 feet of the employees



The ladder should extend 3 feet above the excavation

Access and Egress

- These two ladders which are lashed together are not an adequate means of egress
- The ladder should extend 3 feet above the top of the excavation



Protection from Falls, Falling Loads, and Mobile Equipment

- Install barricades
- Use hand / mechanical signals
- Grade soil away from excavation
- Fence or barricade trenches left overnight
- Use a flagger when signs, signals and barricades are not enough protection

Competent Person

- Must have had specific training in and be knowledgeable about:
  - Soils classification
  - The use of protective systems
  - The requirements of the standard
- Must be capable of identifying hazards, and authorized to immediately eliminate hazards



Inspections of Excavations

- A competent person must make daily inspections of excavations, areas around them and protective systems:
  - Before work starts
  - After rainstorms, high winds or other occurrence which may increase hazards
  - When you can reasonably anticipate an employee will be exposed to hazards



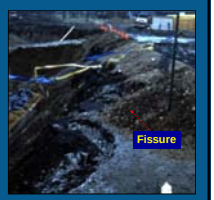
Inspections of Excavations

- If the competent person finds evidence of a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions:
  - Get out!
  - Fix the problem!



Site Evaluation Planning

- Evaluate soil conditions
- Construct protective systems
- Test the air
- Provide safe in and out access
- Contact utilities
- Determine what safety equipment is needed



Summary

- The greatest risk in an excavation is a cave-in.
- Employees can be protected through sloping, shielding, and shoring the excavation.
- A competent person is responsible to inspect the excavation.
- Other excavation hazards include water accumulation, oxygen deficiency, toxic fumes, falls, and mobile equipment.

Fall Protection

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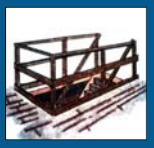
Fall Protection



Fall Protection Options



Personal Fall Arrest System (PFAS)



Guardrails



Safety Net

When Fall Protection is Needed

- Walkways & ramps
- Open sides & edges
- Holes
- Concrete forms & rebar
- Excavations
- Roofs
- Wall openings
- Bricklaying
- Residential Construction

Fall Protection Planning



Fall protection systems and work practices must be in place before you start work.

Guardrails



- Top rails between 39 and 45 inches tall
- Toeboards at least 3 1/2 inches high

Excavations

- Use guardrails, fences or barricades if excavation is not readily seen



Holes and Skylignts

- Protect from: falling through, tripping or stepping into, and objects falling through





Formwork and Rebar

- Workers must be protected by FPS above 6 feet





Walkways and Ramps



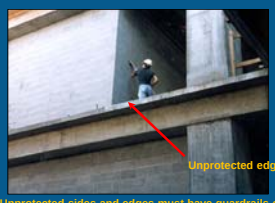
Guard ramps, runways, and other walkways

Fall Protection – Residential Construction



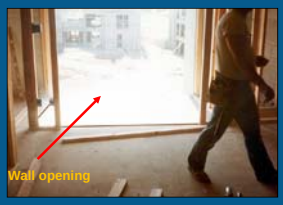
In residential construction, you must be protected if you can fall more than 6 feet

Unprotected Sides and Edges



Unprotected sides and edges must have guardrails or equivalent

Wall Openings



If you work near wall openings 6 feet or more above lower levels you must be protected from falling

Sides & Edges – Improper Guarding



This 1/4" nylon rope alone is not a proper way to guard this open floor

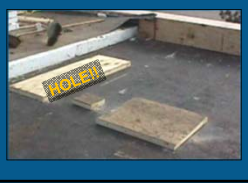
Floor Holes



- Cover completely and securely
- If no cover, can guard with a guardrail

Covers

- Withstand twice expected load
- Secured
- Marked with 'HOLE' or 'COVER'



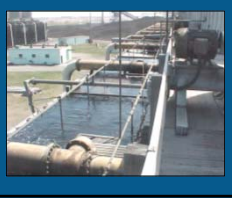
Concrete Forms and Rebar



- Use PFAS when working on formwork or rebar
- Cover or cap protruding rebar

Dangerous Equipment

- Below six feet must protect workers with guardrail systems or by equipment guards.



Safety Nets



Place as close as possible, but no more than 30 feet below where employees work

Safety Nets

- Installed a maximum of 30' below working level
- 400 pound drop test or certified by employer or CP
- Extends sufficiently from outer edge
- Inspected weekly
- Objects removed within shift
- Border rope strength of 5000 pounds



Personal Fall Arrest Systems





- You must be trained how to properly use PFAS.
- PFAS = anchorage, lifeline and body harness.

Roofs



If you work on roofs and can fall more than 6 feet, you must be protected

Definitions

- "Lanyard" means a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.



Snaphooks

- The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; or



Snaphooks

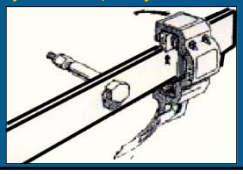
- The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection.
- As of January 1, 1998, the use of a non-locking snaphook as part of personal fall arrest systems and positioning device systems is prohibited.



Double – Locking Snap Hook

Anchorage

- Shall be independent of any anchorage being used to support or suspend platforms, designed by qualified person
- Capable of supporting at least 5,000 pounds per employee attached, safety factor of two



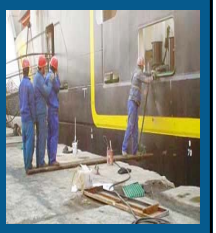
Horizontal Lifelines

- Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person
- Part of a complete personal fall arrest system
- Maintains a safety factor of at least two.



"Controlled Access Zone (CAZ)"

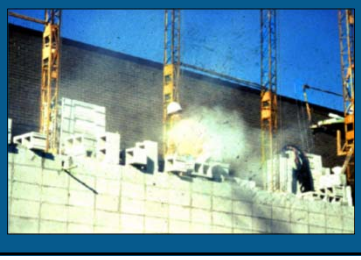
- Leading edge work may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems
- If infeasible, or creates a greater hazard must implement a Fall Protection Plan
- Controlled access



Leading Edge Work - CAZ

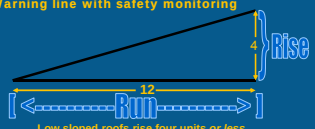


Leading Edge Work - CAZ



Work on Low-Sloped Roofs

- FPS
- FPS in combination with warning line
- Warning line with safety monitoring



Low sloped roofs rise four units *or less* for every run of 12 units

Steep Roofs

- Guardrail systems with toeboards, safety net systems, or personal fall arrest systems.

Steep sloped roofs have a pitch greater than 4 & 12



Safety Monitoring System

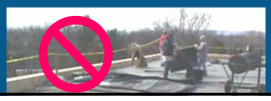
- Competent person is responsible for recognizing and warning employees of fall hazards.



Warning Line System

- Barrier erected on a roof
- Warn employees that they are approaching an unprotected roof side or edge
- No protection required





Safety Monitors

- Must be CP to recognize fall hazards
- Warns employees when:
  - Unaware of hazards
  - Acting in unsafe manner
- Same surface and within sight
- Close enough to be heard
- No other responsibilities



Training

- **Employers must provide fall protection training**
- **The training is to teach you:**
  - How to recognize hazards
  - How to minimize hazards
- **The training must cover:**
  - Fall hazards
  - Fall protection systems
  - Use of fall protection devices



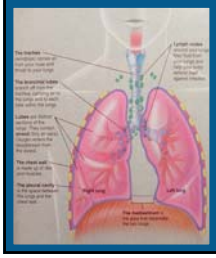
Summary

- **If you can fall more than 6 feet, you must be protected**
- **Use fall protection on:**
  - walkways & ramps, open sides & edges, holes, concrete forms & rebar, excavations, roofs, wall openings, bricklaying, residential construction
- **Protective measures include guardrails, covers, safety nets, and Personal Fall Arrest Systems**

Right to Know
Hazard Communication
Globally Harmonized System
GHS

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Hazard Recognition



- **The toxicity of a substance depends on the following:**
  - Exposure route
    - » Inhalation
    - » Skin contact or absorption
    - » Ingestion
    - » Injection

Hazard Recognition

- **Published exposure limits for inhalation hazards**

	Guideline	Explanation/Definition	Source
PEL	Permissible Exposure Limit	Time-weighted average concentrations similar to (and in many cases derived from) TLVs published by ACGIH in 1968	OSHA
REL	Recommended Exposure Limit	Time-weighted averages and ceiling concentrations based on NIOSH evaluations	NIOSH
TLV-TWA	Threshold Limit Value – Time Weighted Average	The average concentration to which nearly all workers may be repeatedly exposed without adverse effect (8-hour workday/40-hour work week)	ACGIH

A worker may work safely below these limits without experiencing adverse health effects

Hazard Recognition

- **Flammable and combustible liquids**
- **Diesel (AI 495F and FP 125F)**
- **Gasoline (AI 536F and FP -45F)**

Heat/ignition source
Oxygen
Fuel
Chain reaction



Hazard Recognition

- **Plan to use flammable and combustible liquids safely**
  - Read labels
  - Control ignition sources
  - Store properly and use approved equipment and containers
  - Be prepared for fire control
  - Handle with care



Subpart F - Fire Protection

- **Types of Fires**
  - Class A - Ordinary materials such as paper, wood, cloth
  - Class B- Flammable liquids or Combustible liquids such as gasoline, paint, thinners, propane, kerosene
  - Class C- Electrical equipment fires, appliances, switches, panels
  - Class D- Certain metals such as magnesium, sodium, that could explode!



Subpart F - Fire Protection

- **Using a portable fire extinguisher**
  - P - Pull the pin
  - A - Aim nozzle at base of flames
  - S - Squeeze the trigger
  - S - Sweep the extinguisher from side to side, covering the area of the fire with the extinguishing agent



1926.151 Fire Prevention

- **Electrical for light, heat, and power complies with Subpart K**
- **Engine combustion well away from combustibles**
- **No smoking around fire hazards and signs posted**
- **Hot work permit system for work outside dedicated shops**





1926.150 General Requirements

- **Alarm system established for emergencies:**
  - Alert employees
  - Alert fire department
- **Reporting instructions conspicuously posted by phones and worker entrances**
- **Check – Ensure safe to enter or evacuate**
- **Call – Notify EMS immediately**
- **Care – If trained to do so and can favorably change**





Corrosive Materials

Sodium Hydroxide
(Caustic soda)
Sulfuric acid
Drain cleaner



Can eat through containers and combine with other chemicals
Can burn skin and eyes on contact
Can appear harmless until contact produces harmful effect

Hazard Recognition

- **pH**
  - pH comes from potentiation of Hydrogen
    - » Is considered one way of measuring corrosivity
    - » Does not always indicate how destructive a hazardous material is..



Hazard Recognition

- **Corrosives safety**
  - Use safety equipment
    - » Gloves
    - » Safety glasses
    - » Face shield
    - » Apron or overalls
  - Use in a well-ventilated area
  - Safety showers and eyewash stations



Reactive Materials

Chlorine
(Tablets, gas, bleach)
Ammonia



Can explode, ignite or produce toxic vapors when exposed to air, water, or other materials
Can create hazards more severe than the materials themselves
Can take extended periods of time to develop

PPE Program

- **Includes procedures for selecting, providing and using PPE**
- **First -- assess the workplace to determine if hazards are present, or are likely to be present, which necessitate the use of PPE**
- **After selecting PPE, provide training to employees who are required to use it**

Work Practice Controls -- Examples



Examples of PPE

Body Part	Protection
Eye	safety glasses, goggles
Face	face shields
Head	hard hats
Feet	safety shoes
Hands and arms	gloves
Bodies	vests
Hearing	earplugs, earmuffs

Examples of Hearing Protectors

Earmuffs



Earplugs



Canal Caps



Hand Protection





Body Protection


Cooling Vest


Full Body Suit


Sleeves and Apron

Globally Harmonized System Training

GHS Hazard Classification

Why is the GHS Important?



Why is the GHS Important – The Vision



New Globally Harmonized System Requirements



How Will the Label Change?

No longer performance oriented, labels will be standardized.
–Signal Words
–Hazard Statements
–Precautionary Statements (in 2007 revision)
–Pictograms

GHS Labels

GHS classification ratings order of severity differ from NFPA and HMIS:

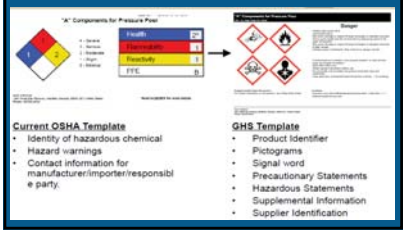


HMIS/NFPA
0 = Least Hazardous
4 = Most Hazardous

GHS
4 = Least Hazardous
1 = Most Hazardous



Train on both systems during transition

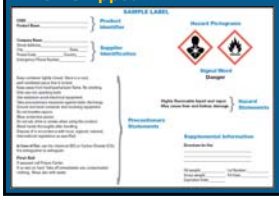


Current OSHA Template
- Identity of hazardous chemical
- Hazard warnings
- Contact information for manufacturer/importer/responsible party

GHS Template
- Product Identifier
- Pictograms
- Signal word
- Precautionary Statements
- Hazardous Statements
- Supplemental Information
- Supplier Identification

New Label Requirements

On Shipped



OSHA Quick Card OSHA 3492-02 2012

New Globally Harmonized System Requirements

A Guide to *The Globally Harmonized System of Classification and Labeling of Chemicals* (GHS)
- The HAZCOM GHS "Purple Book"



- Standardized approach to:
  - define health, physical and environmental hazards
  - classify hazards
  - communicate hazards in the workplace & beyond
- Guide for national chemical safety programs

GHS Hazard Classification

- **Defined criteria are used to assign a hazard classification**
  - Physical Hazards
    - » 16 categories
  - Health Hazards
    - » 10 categories
  - Environmental Hazards
- **Mixtures**
  - GHS classification guidance for when chemicals are mixed

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GHS Physical Hazard Classification

- **Physical Hazards (16)**
  - Explosives
  - Flammable Gases
  - Flammable Aerosols
  - Oxidizing Gases
  - Gases Under Pressure
  - Flammable Liquids
  - Flammable Solids
  - Self-Reactive Substances
  - Pyrophoric Liquids
  - Pyrophoric Solids
  - Self-Heating Substances
  - Substances which, in contact with water, emit flammable gases
  - Oxidizing Liquids
  - Oxidizing Solids
  - Organic Peroxides
  - Corrosive to Metals

Physical Hazards

Hazard Class	Hazard Category						
Explosives	Unstable Explosive	Div 1.1	Div 1.2	Div 1.3	Div 1.4	Div 1.5	Div 1.6
Flammable Gases	1	2					
Flammable Aerosols	1	2					
Oxidizing Gases	1						
Gases under Pressure: Compressed Gases; Liquefied Gases; Refrigerated Liquefied Gases; Dissolved Gases	1						
Flammable Liquids	1	2	3	4			
Flammable Solids	1	2					
Self-Reactive Chemicals	Type A	Type B	Type C	Type D	Type E	Type F	Type G
Pyrophoric Liquids	1						
Pyrophoric Solids	1						
Pyrophoric Gases	Single category						
Self-heating Chemicals	1	2					
Chemicals, which in contact with water, emit flammable gases	1	2	3				
Oxidizing Liquids	1	2	3				
Oxidizing Solids	1	2	3				
Organic Peroxides	Type A	Type B	Type C	Type D	Type E	Type F	Type G
Corrosive to Metals	1						
Combustible Dusts	Single Category						

Hazardous Chemical

- **Pyrophoric gases**, signal word "danger", "catches fire spontaneously if exposed to air"*
  - » i.e. Ignites at or below 130º F
- **Simple asphyxiants**, signal word "warning", "may displace oxygen and cause rapid suffocation"*
  - » e.g. *Nitrogen in Confined Space*
- **Combustible dust**, signal word "warning", "May form combustible dust concentrations in the air"*
  - » e.g. Coal and carbon

**Hazard Statements*

GHS Health Hazard Classification

- **The list of chemicals presenting a 'Health' hazard was deleted from the current HCS and the proposed HCS has identified a new listing.**
- **A 'Health Hazard' means a chemical which is classified as posing one of the following hazardous effects:**

GHS Hazard Classification

- **Health Hazards (10)**
  - Acute Toxicity
  - Skin Corrosion/Irritation
  - Serous Eye Damage/Eye Irritation
  - Respiratory or Skin Sensitization
  - Germ Cell Mutagenicity
  - Carcinogenicity
  - Reproductive Toxicology
  - Target Organ Systemic Toxicity – Single Exposure
  - Target Organ Systemic Toxicity – Repeated Exposure
  - Aspiration Toxicity

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Health Hazards

Hazard Class	Hazard Category			
Acute Toxicity	1	2	3	4
Skin Corrosion/Irritation	1A	1B	1C	2
Serious Eye Damage/ Eye Irritation	1	2A	2B	
Respiratory or Skin Sensitization	1			
Germ Cell Mutagenicity	1A	1B	2	
Carcinogenicity	1A	1B	2	
Reproductive Toxicity	1A	1B	2	Lactation
STOT – Single Exposure	1	2	3	
STOT – Repeated Exposure	1	2		
Aspiration	1			
Simple Asphyxiants	Single Category			

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Globally Harmonized System Training

Labeling of Chemicals

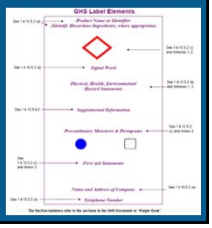
GHS Labels

- **Three standardized GHS label elements:**
  - Symbols (Hazard Pictograms) that convey health, physical, and environmental hazard information assigned to a GHS hazard class and category
  - Signal Words "Danger" or "Warning" used to emphasize hazards and relative level of severity of the hazard and assigned to a GHS hazard class and category
  - Hazard Statements which are standard phrases assigned to a hazard class and category that describe the nature of the hazard

GHS Labels

- **Key Elements**
  - Product Identifier
  - Supplier Identifier
  - Chemical Identity
  - Hazard Pictograms*
  - Signal Words*
  - Hazard Statements*
  - Precautionary Information

  *** Standardized**



GHS Labels

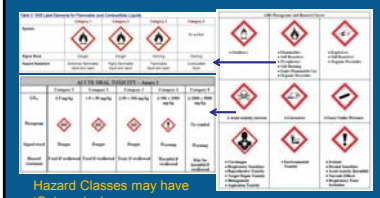


*Red border GHS

Black border Transport

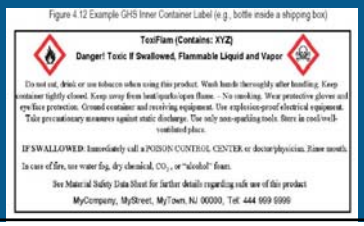


GHS Labels

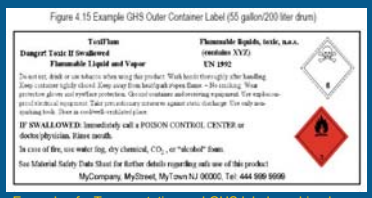


Hazard Classes may have 'Categories'

GHS Labels



GHS Labels



Example of a Transportation and GHS label combined

GHS Labels

- **Each container must be labeled, tagged or marked**
- **Warning can be a message, words, pictures or symbols**
- **Labels must be written in English and prominently displayed**



GHS Labels

- **Warning labels provide important information about the chemical:**
  - DANGER
  - WARNING
- **Always read the label before you begin a job using a potentially hazardous chemical**



GHS Labels

- **Employers who only store chemicals may either use OSHA's new labeling system or continue using the NFPA 704 rating system or HMIS system**
- **(OSHA plans to change the labeling system June 1, 2016)**



GHS Labels

GHS classification ratings order of severity differ from NFPA and HMIS:



HMIS/NFPA
0 = Least Hazardous
4 = Most Hazardous

GHS
4 = Least Hazardous
1 = Most Hazardous



GHS Labels

- **Used to describe:**
  - Carcinogen
  - Mutagenicity
  - Reproductive toxicity
  - Respiratory sensitizer
  - Target organ toxicity
  - Aspiration toxicity
  - Germ cell mutagens





GHS Labels

- **Describes:**
  - Flammables
  - Pyrophorics
  - Self-heating
  - Emits flammable gas
  - Self-reactives
  - Organic peroxides





GHS Labels

- **Describes:**
  - Irritant (skin and eye)
  - Skin sensitizer
  - Acute toxicity (harmful)
  - Narcotic effects
  - Respiratory tract irritant
  - Hazardous to ozone layer (non-mandatory)





GHS Labels

- **Describes:**
  - Gases under pressure





GHS Labels

- **Describes:**
  - Skin corrosion/burns
  - Eye damage
  - Corrosive to metals





GHS Labels

- **Describes:**
  - Explosives
  - Self-reactives
  - Organic peroxide





GHS Labels

- **Describes:**
  - Oxidizers



Anything wrong with this picture?



GHS Labels

- **Describes:**
  - Acute toxicity (fatal or toxic)





GHS Labels

- **Employers are responsible for maintaining the labels on the containers, including, but not limited to, tanks, totes, drums, and for training their employees on the hazards listed on the labels in the workplace.**
- **Labels must continue to be:**
  - legible
  - contain the pertinent information (such as the hazards and directions for use)
  - not able to be defaced, (i.e., fade, get washed off,) or removed in any way as stated in revised Hazard Communication Standard, 29 CFR 1910.1200(f)(9)

On containers



On shipping boxes



GHS Sample Label: Suspected Carcinogen (inhalation)

My Product

Warning!
Cause Skin And Eye Irritation
Suspected of causing cancer by inhalation
Contains: XYZ
Do not breathe vapors or mist. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling

FIRST AID
EYES: Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
SKIN: In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Get medical attention if irritation develops and persists.

Company name, Address, Phone number

HAZARDS (Liquid): moderate skin and eye irritant, possible cancer hazard by inhalation

Globally Harmonized System Training

Safety Data Sheets (SDS's)

Safety Data Sheet Format

1. **Identification of the substance or mixture and of the supplier**
2. **Hazards identification**
3. **Composition/information on ingredients**
4. **First-aid measures**
5. **Fire-fighting measures**
6. **Accidental release measures**
7. **Handling and storage**
8. **Exposure controls/personal protection**
9. **Physical and chemical properties**
10. **Stability and reactivity**
11. **Toxicological information**
12. *Ecological information (non-mandatory)*
13. *Disposal considerations (non-mandatory)*
14. *Transport information (non-mandatory)*
15. *Regulatory information (non-mandatory)*
16. **Other information, including date of preparation or last revision**

Safety Data Sheets (SDS)

- **Must be readily accessible to employees during their work shift.**
- **Are typically kept in a centralized location.**
- **Must be updated as new information becomes available**



Respiratory Protection

Michael Matilainen CIH, CSP
michael.matilainen@atcassociates.com
413.522.8833

OSHA's Respiratory Protection Standard 29 CFR 1910.134

Respirator Program Elements

1. Selection
2. Medical evaluation
3. Fit testing
4. Use
5. Maintenance and care
6. Breathing air quality and use
7. Training
8. Program evaluation



Tight -Fitting Coverings


Quarter Mask


Half Mask


Full Facepiece


Mouthpiece/Nose Clamp
(no fit test required)

Self-Contained Breathing Apparatus (SCBA)

An atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.



Identification of Filters, Cartridges, and Canisters

- All filters, cartridges and canisters used in the workplace must be labeled and color coded with the NIOSH approval label
- The label must not be removed and must remain legible
- "TC number" is no longer on cartridges or filters (Part 84)
- Marked with "NIOSH", manufacturer's name and part number, and an abbreviation to indicate cartridge or filter type (e.g., N95, P100, etc.)
- Matrix approval label supplied, usually as insert in box



Assigned Protection Factors (APF's)

- Must use the APF's listed in Table 1 to select a respirator that meets or exceeds the required level of protection
- When using a combination respirator (e.g., airline with an air-purifying filter), must ensure that the APF is appropriate to the mode of operation in which the respirator is being used

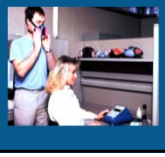


Medical Evaluation Procedures

- Must provide a medical evaluation to determine employee's ability to use a respirator, before fit testing and use
- Must identify a PLHCP to perform medical evaluations using a medical questionnaire or an initial medical examination that obtains the same information
- Medical evaluation must obtain the information requested by the questionnaire in Sections 1 and 2, Part A of App. C
- Follow-up medical examination is required for an employee who gives a positive response to any question among questions 1 through 8 in Section 2, Part A of App. C or whose initial medical examination demonstrates the need for a follow-up medical examination

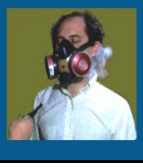
Fit Testing

Before an employee uses any respirator with a **negative or positive pressure tight-fitting facepiece**, the employee must be fit tested with the same make, model, style, and size of respirator that will be used.



Qualitative Fit Test (QLFT)

A pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.



User Seal Check

An action conducted by the respirator user to determine if the respirator is properly seated to the face.



Positive Pressure Check



Negative Pressure Check

Maintenance and Care



- **Provide each user with a respirator that is clean, sanitary and in good working order**
- **Use procedures in Appendix B-2 or equivalent manufacturer's recommendations**
- **Clean and disinfect at the following intervals:**
  - as often as necessary when issued for exclusive use
  - before being worn by different individuals when issued to more than one employee
  - after each use for emergency respirators and those used in fit testing and training

Training and Information (cont'd)

- **Training must be provided prior to use, unless acceptable training has been provided by another employer within the past 12 months**
- **Retraining is required annually, and when:**
  - changes in the workplace or type of respirator render previous training obsolete
  - there are inadequacies in the employee's knowledge or use
  - any other situation arises in which retraining appears necessary
- **The basic advisory information in Appendix D must be provided to employees who wear respirators when use is not required by this standard or by the employer**

Recordkeeping

- **Records of medical evaluations must be retained and made available per 29 CFR 1910.1020**
- **A record of fit tests must be established and retained until the next fit test is administered**
- **A written copy of the current program must be retained**
- **Written materials required to be retained must be made available upon request to affected employees and OSHA**

Appendix G

Street Sweeping & Catch Basin Cleaning Log

BELCHERTOWN DPW- STREET SWEEPING -YEAR 2017

2Street Name	Date Completed	Amount of Material (Yards)	Total Material Used (Yards)	Not Developed or non-jurisdictional (Other)
Alden Avenue	6.22.2017	2yds	2	
Aldrich Street	4.11.2017 4.12.2017	6yds 8yds	6 8	
Allen Street	5.12.2017 5.15.2017 5.25.2017 5.25.2017	1 1/2yds 1/2yd 12yds 6yds	1.5 .50 12 6	
Amherst Road	6.2.2017	6yds	6	
Atherton Lane	6.19.2017	1yd	1	Pt. of Dana Woods
Autumn Lane	6.22.2017	2yds	2	
Azalea Way	4.28.2017	2yds	2	
Ballou Street	0	0	0	Gravel
Bardwell Street	6.14.2017 6.16.2017	5yds 6yds	5 6	
Barrett Street	6.16.2017 6.22.2017	12yds 1yd	12 1	
Barton Avenue	5.3.2017 5.4.2017	5yds 2 ½ yds	5 2.5	
Bay Path Road	4.24.2017	5yds	5	
Bay Road	4.12.2017 4.13.2017 4.14.2017 4.14.2017 4.24.2017	4yds 3 ½ yds 1yd 2yds 4yds	4 3.50 1 2 4	
Berkshire Avenue	0	0	0	Salt Only
Blacksmith Road	5.4.2017	2 ½ yds	2.5	
Blossom Lane	6.15.2017	3yds	3	
Blue Meadow Rd	5.10.2017 5.11.2017	8yds 1 1/2yds	8 1.5	
Boardman Street	5.3.2017	10yds	10	
Brandywine Dr.	5.12.2017 5.15.2017	2 1/2yds 1/2yd	2.50 .50	
Brenda lane	0	0	0	w/Raymond Drive
Bridge Street	4.28.2017	1 ½ yds	1.5	
Brianna Way	6.21.2017	1yd	1	
Bunker Way	6.15.2017	2yds	2	
Business Tech Dr. East	Na	0	0	Not Developed
Business Tech Dr. – West	Na	0	0	Not Developed
		Total Yards:	130.5	

BELCHERTOWN DPW- STREET SWEEPING -YEAR 2017

Cadwell Lane	6.19.2017	1yd	1	
Canal Drive	6.15.2017	3yds	3	
Carol Ann Drive	6.15.2017	2yds	2	
Catherine Drive	4.13.2017	1yd	1	
Cedar Glen Drive	6.15.2017	2yds	2	
Center Street	0	0	0	w/Main Street
Chadbourne Rd.-(North Section)	4.10.2017	½ yd	.50	
Chadbourne Rd-(Dead-end)	0	0	0	W/Lloyd Ave,
Channel Drive	0	0	0	Private
Chartier Drive	4.13.2017	1yd	1	
Chauncey Walker Street	6.14.2017	3yds	3	
Cheryl Circle	4.26.2017	3yds	3	
Chestnut Drive	4.28.2017	2yds	2	
Clark Street	6.19.2017	1yd	1	
Clearbrook Drive	0	0	0	W/ Stebbins St.
Clover Hill Road	6.21.2017	1yd	1	
Cobb Lane	6.19.2017	1yd	1	
Cold Spring Road	5.4.2017 5.5.2017	6yds 6yds	6 6	
Concord Road	6.2.2017	2yds	2	
Cordner Road	5.4.2017	4yds	4	
Cottage Street	0	0	0	w/East Walnut St.
Cottage Street (Between 21 & 37 East Walnut St.)	0	0	0	w/East Walnut St.
Country Lane	4.26.2017	1yd	1	
Crestview Drive	4.28.2017	2yds	2	

Dana Woods	6.19.2017	1yd	1	
Daniel Shays Hghy	0	0	0	Mass Highway
Daniel Square	4.14.2017	2 ½ yds	2.5	
Daniel Square Ext.	0	0	0	W/ Dan. Square
Deer Run	5.11.2017	1 ½ yd	1.5	
Depot Street	0	0	0	w/ Rte 181
Diane Drive	0	0	0	Not Recq'd
Doe Hollow	5.11.2017	1 ½ yd	1.5	
Dogwood Drive	0	0	0	NA
Dressel Avenue	5.3.2017	6yds	6	
		Total Yards:	55	

BELCHERTOWN DPW- STREET SWEEPING -YEAR 2017

Eagle Heights	4.14.2017	1 1/2yds	1.50	
Earley Street	0	0	0	Gravel
East Walnut St.	4.11.2017	2yds	2	
East Street	5.5.2017	8yds	8	
Eastview Drive	4.11.2017	1.5yds	1.5	
Edelcy Drive	4.11.2017	2yds	2	
Emily Lane	4.14.2017	1yd	1	
Enoch Sanford Dr.	5.5.2017	5yds	5	
Eskett Street	5.3.2017	4yds	4	
Eugene Drive	6.16.2017	3yds	3	
Everett Avenue	4.10.2017	2yds	2	

Federal Street	4.26.2017 5.31.2017	24yds 12yds	24 12	Mass Highway
Fletcher Avenue	5.15.2017	1.5yds	1.50	
Forest Road	4.27.2017	9yds	9	
Fox Run Drive	6.21.2017	2yds	2	
Franklin Street	6.21.2017	2yds	2	
Front Street	4.28.2017	1 ½ yds	1.5	
Fuller Street	4.11.2017	½ yd	.50	

George Hannum Road	4.10.2017 5.3.2017	8yds 18yds	8 18	
Gold Street	6.26.2017 6.30.2017	21yds 2yds	21 2	
Goodell Street	5.31.2017	9yds	9	
Granby Road	6.6.2017 6.7.2017	2 ½ yds 1yd	2.50 1	
Green Avenue	6.8.2017	5yds	5	
Greenwich Hill	6.19.2017	1yd	1	w/Dana Wood
Grela Terrace	0	0	0	Gravel
Gulf Road	6.23.2017 6.30.2017	2yds 2yds	2 2	

Hamilton Street	5.1.2017	4yds	4	
Harris Way	4.13.2017	3yds	3	Private
Helen Lane	4.27.2017	2yds	2	
Heritage Drive	5.11.2017	½ yd	.50	
Hemlock Hollow	4.28.2017	2yds	2	
Henry Drive	5.3.2017	2yds	2	
Hickory Hills	0	0	0	Not Developed
High Meadow/Bluff	0	0	0	Not developed
		Total Yards :	167.5	

BELCHERTOWN DPW- STREET SWEEPING -YEAR 2017

Howard Street	4.28.2017 5.1.2017	1yd 2yds	1 2	
Howe Street	6.19.2017	1yd	1	w/Dana Woods

Jabish Street	4.10.2017 4.11.2017	1yd 9yds	1 9	
Jackson Street	4.10.2017	0	0	w/ Main- No.Main
Jason's Way	4.11.2017	1yd	1	
Jeffrey Lane	5.3.2017	1yd	1	
Jensen Street	4.10.2017 4.11.2017	4yds 5yds	4 5	
Johnson Road	4.10.2017	2yds	2	
Jon Drive	5.3.2017	1yd	1	
Juckett Hill	5.12.2017	6yds	6	

Keith Avenue	0	0	0	Gravel
Kennedy Road	5.4.2017	10yds	10	
Keyes Street	6.21.2017	2yds	2	
Kimball Street	6.23.2017	3yds	3	Not Regulated
Knight Street	0	0	0	w/Gold Street
Kopiac Avenue	5.16.2017	4yds	4	

Lake Drive	0	0	0	Gravel
Lamson Avenue	4.24.2017	2yds	2	
Laurel Ridge Drive	4.28.2017	2yds	2	
Lawrence Road	5.3.2017	1yd	1	
Ledgewood Drive	4.27.2017 4.28.2017	9yds 3yds	9 3	
Ledgewood Circle	4.27.2017	6yds	6	
Lexington Drive	5.16.2017	½ yd	.50	
Lloyd Avenue	4.10.2017	½ yd	.50	
Ludlow Street	6.6.2017 6.7.2017	1yd 7yds	1 7	

Main Street	4.10.2017	1 yd	1	
Magnolia Lane	0	0	0	w/Hickory Hills
Maple Street	4.10.2017 4.28.2017	5yds 1 ½ yds	5 1.5	
Maplecrest Drive	6.8.2017	1yd	1	
Martin Circle	4.12.2017	1yd	1	
Meadow Pond Rd.	4.11.2017	1yd	1	
		Total Yards:	95.5	

BELCHERTOWN DPW- STREET SWEEPING -YEAR 2017

Mercier Drive	4.14.2017	1yd	1	
Metacomet Street	4.25.2017 4.26.2017	2 ½ yds 9yds	2.5 9	
Metacomet Circle	4.26.2017	1yd	1	
Michael Sears Road-lower	6.16.2017 6.21.2017	3yds 15yds	3 15	
Michael Sears Road-upper	5.5.2017	9yds	9	
Mill Valley Road	4.11.2017 4.12.2017	2 yds 3yds	2 3	
Mills Road	0	0	0	Gravel
Moss Lane	5.4.2017	1yd	1	
Mountain View Dr.	4.28.2017	12yds	12	
Munsell Street	6.23.2017 6.26.2017	5yds 1yd	5 1	

Nathanial Way	4.12.2017	1/2yd	.50	
Newton Street	6.19.2017	1yd	1	
North Gulf Road	0	0	0	w/Gulf & So.Gulf
North Liberty Street	6.15.2017 6.23.2017	6yds 4yds	6 4	
North Main Street	4.10.2017	4 yds	4	
North Street	6.1.2017 6.2.2017	12yds 8yds	12 8	
North Washington Street	4.11.2017 6.15.2017 6.22.2017 6.23.2017	1yd 9yds 2yds 4yds	1 9 2 4	

Oak Ridge Drive	4.27.2017	3yds	3	
Oak Ridge Drive-(upper)	4.28.2017	12yds	12	
Oakwood Drive	5.4.2017	2 ½ yds	2.5	
Oasis Drive	6.26.2017	3yds	3	
Old Amherst Road	6.2.2017	6yds	6	
Old Bay Road	4.24.2017	3yds	3	
Old Enfield Road	5.11.2017	9yds	9	
Old Farm Circle	0	0	0	w/Old Farm Rd
Old Farm Road	4.26.2017	2yds	2	
Old Pelham Road	5.25.2017	15yds	15	
Old Sawmill Road	4.11.2017	2yds	2	
Oliver Street	0	0	0	Gravel
Orchard Street	5.31.2017	17yds	17	
		Total Yards:	190.5	

BELCHERTOWN DPW- STREET SWEEPING -YEAR 2017

Overlook Drive	4.28.2017	2yds	2	

Park Street	0	0	0	w/Main- No.Main
Pease Lane	0	0	0	w/Kennedy Rd
Pelham Road	5.25.2017 6.19.2017	2yds 12ds	2 12	
Pendleton Road	6.14.2017	1yd	1	
Pepper Ridge Road	6.14.2017	1yd	1	w/Pendleton Rd.
Pheasant Run	6.14.2017	2yds	2	
Pine Street	6.21.2017	12yds	12	
Pinebrook Drive	0	0	0	w/Stebbins St
Plaza Avenue	4.24.2017	1yd	1	
Pondview Circle	5.15.2017	2.5yds	2.50	
Poole Road	4.12.2017	1yd	1	
Prescott Hill	6.19.2017	1yd	1	

Railroad Street	6.22.2017	12yds	12	
Rainbow Drive	5.4.2017	1yd	1	
Raymond Drive	6.2.2017	4yds	4	
Rimrock Drive	6.8.2017	1yd	1	
Rockrimmon Street	6.6.2017 6.8.2017	2yds 1yd	2 1	
Rita Lane	4.12.2017	1yd	1	
River Street	6.21.2017	4yds	4	
Robin Lane	5.4.2017	2yds	2	
Rural Street	5.3.2017	10yds	10	

Sabin Street	0	0	0	Under Construct.
Sarah Lane	4.13.2017	1yd	1	
Sargent Street	0	0	0	Rte 9
Segur Lane	4.11.2017	2yds	2	
Shaw Street	6.7.2017	3yds	3	
Shea Avenue	6.21.2017	14yds	14	
Sheffield Drive	5.15.2017 5.16.2017	4yds ½ yd	4 .50	
Sherwood Drive	5.15.2017	1yd	1	
South Gulf Road	6.23.2017	2yds	2	
So Liberty Street	6.23.2017	4yds	4	
South Main Street	4.11.2017	4yds	4	
		Total Yards:	111	

BELCHERTOWN DPW- STREET SWEEPING -YEAR 2017

South Street	6.21.2017 6.22.2017	9yds 9yds	9 9	
So Washington Street	6.22.2017 6.23.2017	8yds 15yds	8 15	
Spring Hill Road	5.16.2017	½ yd	.50	
Springfield Road	6.14.2017	5yds	5	
Stadler Street	5.1.2017	2yds	2	
State Street	4.10.2017	5yds	5	
State School	5.1.2017	6yds	6	
Stebbins Street	4.14.2017	6yds	6	
Summit Street	4.27.2017	14yds	14	
Sycamore Circle	0	0	0	w/Hickory Hills
Sylvan Circle	6.22.2017	2yds	2	
Terry Lane	4.28.2017	2yds	2	
Town Beech Road	4.26.2017	1yd	1	
Trillium Way	6.26.2017	2yds	2	
Tucker Lane	4.10.2017	1yd	1	
Turkey Hill Road	4.27.2017 6.6.2017	15yds 2yds	15 2	
Two Ponds Road	6.1.2017	2yds	2	
Underwood Street	5.3.2017	2yds	2	
Ware Road	0	0	0	Rte 9
Warner Street	5.11.027	7 1/2yds	7.5	
Warren Wright Street	6.2.2017	10yds	10	
Waterford Drive	5.16.2017	1/2yd	.50	
West Street	6.22.2017	6yds	6	
Westview Drive	4.13.2017	1yd	1	
Westwood Drive	5.25.2017	3yds	3	
Whispering Pines	0	0	0	Private/Gravel
Whitlock Way	0	0	0	W/State School
Willow Lane	4.11.2017	½ yd	.50	
Wilson Street	6.1.2017 6.2.2017	6yds 1yd	6 1	
Woodhaven Drive	4.10.2017	1yd	1	
		Total Yards:	145.00	
		Total Yards Material -2017	895	

Split Excavating, Inc

PO Box 471
Hadley, MA 01035

Invoice

Date	Invoice #
4/30/2017	14657

Bill To	Job Location
Town of Belchertown Dept of Public Works PO Box 306 Belchertown, MA 01007	

Terms	P.O. No.
Net 30	

Date	Description	Amount
4/10/2017	Sand sweeping 7:00am-3:00pm	840.00
4/11/2017	Sand sweeping 7:30am-3:30pm	840.00
4/12/2017	Sand sweeping 7:00am-2:00pm	735.00
4/12/2017	Sand sweeping 7:00am-9:00am (sweeper 2)	210.00
4/13/2017	Sand sweeping 7:00am-12:00pm	525.00
4/14/2017	Sand sweeping 7:00am-3:00pm	840.00
4/24/2017	Sand sweeping 7:00am-3:00pm	840.00
4/25/2017	Sand sweeping 7:00am-9:00am	210.00
4/27/2017	Sand sweeping 7:00am-3:00pm	840.00
4/28/2017	Sand sweeping 7:00am-2:00pm	735.00

Appd 5-15-17

P.O. 170906

Phone #	Fax #	E-mail
(413) 582-1262	(413) 582-1264	tracym@splitexcavating.net

Total $6,615.00

Office of Town Accountant
Lawrence Memorial Hall
2 Jabish Street, P.O. Box 610
Belchertown, MA 01007-0610
Tel: 413-323-0410/Fax:413-323-0107

Purchase Order 00170906-00 FY 2017

The Above Purchase Order Number Must Appear On All Correspondence - Packing Sheets And Bills Of Lading

ORIGINAL

Vendor
SPLIT EXCAVATING, INC.
P.O. BOX 471
8 MILL VALLEY ROAD
HADLEY, MA
01035

Ship To
DEPARTMENT OF PUBLIC WORKS
290 JACKSON STREET
P.O. BOX 306
BELCHERTOWN, MA
01007-0670

Date Ordered	Vendor Number	Date Required	Ship Via	Terms	Department
04/06/17	014536				DEPARTMENT OF PUBLIC WORKS

LN	Description / Account	Unit	Qty	Unit Price	Net Price
001	10432-52481 STREET SWEEP/OPERATOR	EACH	80.00	105.00000	8400.00
				PO Total	8400.00

TOWN OF BELCHERTOWN IS TAX EXEMPT

K O'Grady

Chief Procurement Officer

Tax Exempt # 04-6001083

Office of
DEPARTMENT OF PUBLIC WORKS
290 Jackson Street, P.O. Box 306
Belchertown, Massachusetts 01007-0306
Telephone: (413) 323-0415

CATCH BASIN CLEANING REPORT
YEAR 2017

The following Streets with Basins were cleaned in Year 2017

Aldrich Road	Brandywine Drive	Bay Road	Brenda Lane
Cottage Street	Edelcy Drive	East Walnut Street	Federal Street
Forest Road	Helen Lane	Jabish Street	Jeffrey Lane
Juckett Hill Road	Jasons Way	Jon Drive	Ledgewood Circle
Lexington Drive	Ledgewood Drive	Lawrence Road	Meadow Pond Road
North Washington @ RXR Underpass	Old Sawmill Road	Old Farm Road	Oak Ridge & Summit Street
Old Farm Circle	Pondview Circle	Raymond Drive	South Street & South Liberty Street
South Liberty Street	Sherwood Drive	Segur Lane	Sheffield Drive
Spring Hill Road	Summit Street	Two Ponds Road	Underwood Drive
Willow Lane	Woodhaven Drive	Waterford Drive	
			Total : 39

Approximately 380 Basins were cleaned in 120 total hours. There was approximately 110.97 of tons removed from the basins at a cost of $9292.83.00. Basin material was hauled to UMM –United Materials Management of Holyoke, Inc., 700 Main Street c/o: Complete Disposal Company, Holyoke, MA 01040.

/dml

Eastern Pipe Service, LLC
2 Thibeault Drive
Bow NH 03304

Invoice

Date	Invoice #
10/6/2017	1722

Town of Belchertown
PO Box 306
Belchertown MA 01007

Town of Belchertown
Belchertown MA

Make Checks Payable To: Eastern Pipe Services, LLC	P.O. No.	Terms	Job Number
		Net 30	3447

120	Catch Basin Cleaning Service Contract New Hampshire Council of Governments Bid # 1137 9/20/17 = 8 Hours EPS 8 9/21/17 = 8 Hours EPS 8 9/22/17 = 8 Hours EPS 8 9/25/17 = 8 Hours EPS 15 9/26/17 = 8 Hours EPS 15 9/27/17 = 8 Hours EPS 15 9/28/17 = 8 Hours EPS 15 9/29/17 = 8 Hours EPS 15 10/2/17 = 8 Hours EPS 18 10/2/17 = 8 Hours EPS 19 10/3/17 = 8 Hours EPS 18 10/3/17 = 8 Hours EPS 19 10/4/17 = 8 Hours EPS 18 10/4/17 = 8 Hours EPS 19 10/5/17 = 4 Hours EPS 18 10/5/17 = 4 Hours EPS 19 Certified Payroll Attached W/E 9/23/17 Certified Payroll Attached W/E 9/30/17 Certified Payroll Attached W/E 10/7/17	219.00	26,280.00

We appreciate your prompt payment.

Fed ID #: 45-2251297

Phone #	Fax #	Web Site
603-424-4600	603-856-8657	www.easternpipeservice.com

Total	$26,280.00
Payments/Credits	$0.00
Balance Due	$26,280.00

Office of Town Accountant
Lawrence Memorial Hall
2 Jabish Street, P.O. Box 610
Belchertown, MA 01007-0610
Tel: 413-323-0410/Fax:413-323-0107

Purchase Order 00180488-00 FY 2018

The Above Purchase Order Number Must Appear On All Correspondence - Packing Sheets And Bills Of Lading

ORIGINAL

Vendor
EASTERN PIPE SERVICE, LLC
2 THIBEAULT DRIVE

BOW, NH
03304

Ship To
DEPARTMENT OF PUBLIC WORKS
290 JACKSON STREET
P.O. BOX 306
BELCHERTOWN, MA
01007-0670

Date Ordered	Vendor Number	Date Required	Ship Via	Terms	Department
09/21/17	014928				DEPARTMENT OF PUBLIC WORKS

LN	Description / Account	Unit	Qty	Unit Price	Net Price
001	10432-52945 CATCH BASIN CLEANING AND VACUUM ** HCGOG BID# 1137 **	EACH	1.00	26280.00000	26280.00

PO Total 26280.00

TOWN OF BELCHERTOWN IS TAX EXEMPT

Chief Procurement Officer

Tax Exempt # 04-6001083

EASTERN PIPE SERVICE
2 THIBEAULT DRIVE
BOW, NH 03304

Phone (603) 424-4600
Fax (603) 856-8657

www.easternpipeservice.com

9/18 + 9/19 + TV with Cut Roots TOPS Rich

Work Order

DATE: 9/20/17

SERVICE ADDRESS WWTP 175 George Hannah Rd Belchertown MA.

BILLING ADDRESS

NAME: Belchertown MA

ADDRESS: 280 Jackson St

Belchertown MA.

PHONE: 413 284 7451

CONTACT: Chris

JOB NUMBER/P.O.

NAME: Hampshire council of Governments

ADDRESS:

PHONE:

CONTACT:

EMAIL:

DESCRIPTION OF WORK	ITEM PRICE	QUANTITY	TOTAL
120 HRS of USC work		120 HRS	
WED 8 HRS 8'70 32 Brkvs		- 24 HRS 96 HRS Remaining	
Thursday 8/31 8 HRS 20 Brkvs 70' Line Jetting			
Friday 9/1 8 HRS 31 Brkvs			
Streets completed			
Skyline Dr, Wheelock, [illegible] Spring Hill, Broadview			
Jacket 50% done			

NOTES:

Monday Jacket, Shorewood, Pondview, Eddy, Summit, Segue

CUSTOMER SIGNATURE Chris Jacket DRIVER Mark C DATE 22 Sept 17

EASTERN PIPE SERVICE
2 THIBEAULT DRIVE
BOW, NH 03304

Phone (603) 424-4600
Fax (603) 856-8657

www.easternpipeservice.com

Work Order

DATE: 9/25/17

SERVICE ADDRESS

NAME: Belchertown MA

ADDRESS: 290 Jackson St
Belchertown, MA

PHONE: 413 284 7451

CONTACT: Chris

JOB NUMBER/P.O. _____

BILLING ADDRESS

NAME: _____

ADDRESS: _____

_____

PHONE: _____

CONTACT: _____

EMAIL: _____

DESCRIPTION OF WORK	ITEM PRICE	QUANTITY	TOTAL
9/25 39 basins		8	
9/26 32 basins		8	
9/27 25 basins		8	
9/28 21 basins		8	
9/29 22 basins		8	
Total 139			

NOTES:

_____

_____

_____

CUSTOMER SIGNATURE [signature] DRIVER [signature] DATE 9-29-17

EASTERN PIPE SERVICE
2 THIBEAULT DRIVE
BOW, NH 03304

Phone (603) 424-4600
Fax (603) 856-8657

B. J

www.easternpipeservice.com

Work Order

DATE: 10/1/17

SERVICE ADDRESS

NAME: Belchertown MA

ADDRESS: 250 Jackson St

Belchertown MA

PHONE: 413 284 74511

CONTACT: Chris

JOB NUMBER/P.O. _____

BILLING ADDRESS

NAME: Hampshire Council of Governments

ADDRESS: _____

_____

PHONE: _____

CONTACT: _____

EMAIL: _____

DESCRIPTION OF WORK	ITEM PRICE	QUANTITY	TOTAL
10/2 - 7AM - 3:00pm		16 HRS	
10/3 - 7AM - 3pm		16	
10/4 - 7AM - 3pm		16	
10/5 - 7AM - 11AM		8	
~~DATE~~			
B. J Two Trucks need To Do 28 HRS			
Esch you should Be All Done on Thurs			
AT 11 AM.			

NOTES:

_____

_____

_____

CUSTOMER SIGNATURE _____ DRIVER BJ/Greg DATE 10-2/10-5

UMM OF HOLYOKE, INC.
700 MAIN ST
c/o COMPLETE DISPOSAL COMPANY
HOLYOKE, MA 01040
Phone: (413) 572-0015
Fax: (413) 538-6060
umm.net

CUSTOMER NO	004415
INVOICE DATE	10/21/2017
INVOICE NO	0000261429
CUSTOMER PO	
DUE DATE	11/20/2017

BALANCE FWD	$6,869.50
PAYMENTS	$-2,727.74
CREDITS	$0.00
CHARGES	$9,739.53
BALANCE DUE	$13,881.29

CURRENT	1-30 DAYS	31-60 DAYS	61-90 DAYS	OVER 90 DAYS	BALANCE DUE
$13,881.29	$0.00	$0.00	$0.00	$0.00	$13,881.29

Thank you for your business. Please make check payable to UMM of Holyoke, Inc. Balance due within 30 days.

DATE	QUANTITY	FREQUENCY	DESCRIPTION	WORK ORDER	TICKET	AMOUNT
New Charges						
Site 004415-0001 - BELCHERTOWN, TOWN OF - PO BOX 306, BELCHERTOWN						
10/16/2017	17.18		CATCH BASIN - TRANSFER		230313	$1,460.30
10/16/2017	17.75		CATCH BASIN - TRANSFER		230349	$1,508.75
10/16/2017	15.13		CATCH BASIN - TRANSFER		230373	$1,286.05
10/17/2017	16.55		CATCH BASIN - TRANSFER		230510	$1,406.75
10/17/2017	16.40		CATCH BASIN - TRANSFER		230557	$1,394.00
10/17/2017	11.17		DISPOSAL CHARGE - MSW		230560	$809.83
10/17/2017	16.79		CATCH BASIN - TRANSFER		230585	$1,427.15

Total New Charges: $9292.83

PLEASE RETURN THIS PORTION WITH YOUR PAYMENT

UMM OF HOLYOKE, INC.
700 MAIN ST
c/o COMPLETE DISPOSAL COMPANY
HOLYOKE, MA 01040
Phone: (413) 572-0015

CUSTOMER NO	INVOICE DATE	INVOICE NO	BALANCE DUE
004415	10/21/2017	0000261429	$13,881.29
CHECK NO		AMOUNT ENCLOSED	
		$	

Be sure to write your customer number on your check

BELCHERTOWN, TOWN OF
ATTN: STEVE WILLIAMS
PO BOX 306
BELCHERTOWN, MA 01007

Office of Town Accountant
Lawrence Memorial Hall
2 Jabish Street, P.O. Box 610
Belchertown, MA 01007-0610
Tel: 413-323-0410/Fax:413-323-0107

Purchase Order 00180571-00 FY 2018

The Above Purchase Order Number Must Appear On All Correspondence - Packing Sheets And Bills Of Lading

ORIGINAL

Vendor
UMM OF HOLYOKE, INC.
C/O COMPLETEL DISPOSAL
700 MAIN STREET
HOLYOKE, MA
01040

Ship To
DEPARTMENT OF PUBLIC WORKS
290 JACKSON STREET
P.O. BOX 306
BELCHERTOWN, MA
01007-0670

Date Ordered	Vendor Number	Date Required	Ship Via	Terms	Department
10/17/17	015095				DEPARTMENT OF PUBLIC WORKS

LN	Description / Account	Unit	Qty	Unit Price	Net Price
001	10432-52945 CATCH BASIN CLEANINGS	EACH	1.00	8925.00000	8925.00
				PO Total	8925.00

TOWN OF BELCHERTOWN IS TAX EXEMPT

K O'Grady

Chief Procurement Officer

Tax Exempt # 04-6001083

c/o Complete Disposal Co., Inc.
686 Main Street
Holyoke, MA 01040

Date: 10/16/2017
Time: 08:01:54 - 08:08:14

			Scale
Gross:	62100 lb	In	Scale 1
Tare:	27740 lb	Out	Scale 1
Net:	34360 lb		

Truck: B16
Customer: 0044150001/BELCHERTOWN, TOWN

Comment:

Origin	Materials & Services	Quantity	Unit
NA/Not Applicable	HLCBASIN/CATCH BASIN - TRANS	17.18	Ton

Driver: _____

Deputy Weighmaster: _____
Kylie Ryan

HOLYOKE TRANSFER
c/o Complete Disposal Co., Inc.
686 Main Street
Holyoke, MA 01040

Inbound

Ticket: 230349
Date: 10/16/2017
Time: 10:02:41 - 10:09:19

			Scale
Gross:	63160 lb	In	Scale 1
Tare:	27660 lb	Out	Scale 1
Net:	35500 lb		

Truck: B16
Customer: 0044150001/BELCHERTOWN, TOWN

Comment:

Origin	Materials & Services	Quantity	Unit
NA/Not Applicable	HLCBASIN/CATCH BASIN - TRANS	17.75	Ton

Driver: _____

Deputy Weighmaster: _____
Kylie Ryan

c/o Complete Disposal Co., Inc.
686 Main Street
Holyoke, MA 01040

Date: 10/16/2017
Time: 11:18:23 - 11:27:50

		Scale	
Gross:	57960 lb	In	Scale 1
Tare:	27700 lb	Out	Scale 1
Net:	30260 lb		

Truck: B16
Customer: 0044150001/BELCHERTOWN, TOWN

Comment:

Origin	Materials & Services	Quantity	Unit
NA/Not Applicable	HLCBASIN/CATCH BASIN - TRANS	15.13	Ton

Driver: _____ Deputy Weighmaster: _____
Kylie Ryan

HOLYOKE TRANSFER
c/o Complete Disposal Co., Inc.
686 Main Street
Holyoke, MA 01040

Inbound

Ticket: 230510
Date: 10/17/2017
Time: 07:58:56 - 08:06:11

		Scale	
Gross:	60840 lb	In	Scale 1
Tare:	27740 lb	Out	Scale 1
Net:	33100 lb		

Truck: B16
Customer: 0044150001/BELCHERTOWN, TOWN

Comment:

Origin	Materials & Services	Quantity	Unit
NA/Not Applicable	HLCBASIN/CATCH BASIN - TRANS	16.55	Ton

Driver: _____ Deputy Weighmaster: _____
Kim Brodeur

HOLYOKE TRANSFER
c/o Complete Disposal Co., Inc.
686 Main Street
Holyoke, MA 01040

Inbound

Ticket: 230585
Date: 10/17/2017
Time: 11:29:44 - 11:34:51

		Scale	
Gross:	61300 lb	In	Scale 1
Tare:	27720 lb	Out	Scale 1
Net:	33580 lb		

Truck: B16
Customer: 0044150001/BELCHERTOWN, TOWN

Comment:

Origin	Materials & Services	Quantity	Unit
NA/Not Applicable	HLCBASIN/CATCH BASIN - TRANS	16.79	Ton

Driver: _____

Deputy Weighmaster: _____
Kim Brodeur

HOLYOKE TRANSFER
c/o Complete Disposal Co., Inc.
686 Main Street
Holyoke, MA 01040

Inbound

Ticket: 230557
Date: 10/17/2017
Time: 10:10:35 - 10:20:52

		Scale	
Gross:	60540 lb	In	Scale 1
Tare:	27740 lb	Out	Scale 1
Net:	32800 lb		

Truck: B16
Customer: 0044150001/BELCHERTOWN, TOWN

Comment:

Origin	Materials & Services	Quantity	Unit
NA/Not Applicable	HLCBASIN/CATCH BASIN - TRANS	16.40	Ton

Driver: _____

Deputy Weighmaster: _____
Kim Brodeur

Appendix H

Detention Pond Cleaning List

2017 - 2018 Detention Pond Inspection Report

Pond	*Location*	*Outfall I.D.- NPDES*	*Outfall Pass/Fail*	*Veg.*	*Mowing Required*	*Comment(s)*
1 Atherton Lane	10 Atherton Lane	NA	P	OK	Cut January 2018	Minor Sand/Silt
2 Barton Ave	Across from 214 Barton Ave.	#10	P	OK	Cut January 2018	Minor Sand/Silt
3 Barton Ave	Before 251 Barton Ave.	#10	P	OK	Cut January 2018	Minor Sand/Silt
4 Cadwell Lane	Cadwell Lane Access from Greenwich & Clark Intersection	NA	P	OK	Cut January 2018	NA
5 Cobb Lane	12 Cobb Lane	NA	P	OK	Cut January 2018	Minor Sand/Silt
6 Clark Street	Clark Street (Same Access as Cadwell)	NA	P	OK	Cut January 2018	Minor Sand/Silt
7 Cheryl Circle	18 Cheryl Circle	NA	P	OK	Cut January 2018	Outfall is buried from land side, requires excavator for needed repairs.
8 Crestview Drive	Crestview Dr. (Left Side or Entrance)	NA	P	OK	Cut January 2018	Cattails
9 Crestview Drive	Crestview Dr (End of Cul-de-sac) .	NA	P	OK	Cut January 2018	NA
10 Dana Hill	Between House number 11 & 15 Dana Hill	NA	P	OK	Cut January 2018	Minor Sand/Silt
11 Edelcy Drive	14 Edelcy Dr.	NA	P	OK	Cut February 2018	Pond partially filled w/water & cattails
12 Emily Lane	Emily Lane	NA	P	OK	Cut January, 2018	Water-Filled
13 Emily Lane	Pond behind 19, 23 & 29 Emily Lane	NA	P	OK	Cut January 2018	NA
14 Emily Lane	Behind 40 Emily Lane	NA	P	OK	Cut January 2018	NA
15 Eugene Drive	17 Eugene Drive	NA	P	OK	Cut February, 2018	NA
16 George Hannum	23 Prescott Hill (Access from George Hannum)	NA	P	OK	Cut January 2018	Minor Sand/Silt

17 Hickory Hill	Right side of Hickory Hill Entrance George Hannum St.	NA	P	OK	Cut January 2018	NA
18 Hickory Hill	Hickory Hill (Left Side Entrance)	NA	P	OK	Contractor Maintains until Finished	Cattails
19 Helen Lane	33 Helen Lane	NA	P	OK	Cut January 2018	Pond partially filled w/water & cattails
20. Hemlock Hollow	Off Private Drive Hemlock Hollow	#17	P	OK	Cut January 2018	NA
21 High School	High School Pond (maintained by DPW)	NA	P	OK	Cut February 2018	Located west of BHS., Minor Sand/Silt
22 Jason's Way	Across from 36 Jason's Way	NA	P	OK	Contractor Maintains until Finished	Cattails and trees in outer perimeter that requires cutting.
23 Meadow Pond	71 Meadow Pond Rd.	NA	P	OK	Contractor Maintains until Finished	NA
24 Newton Street	16 Newton St.	NA	P	OK	Cut January 2018	Minor Sand/Silt
25 Oak Ridge	Across from 47 Oak Ridge Dr.	NA	P	OK	Cut January 2018	NA
26 Oasis Drive	36 Oasis Dr.	NA	P	OK	Cut January 2018	Outfall has (2 pipes)
27 Old Saw Mill	39 Old Sawmill Rd	NA	P	OK	Contractor to Maintain until finished	NA
28 Pheasant Run	Behind 16 Pheasant Run	NA	P	OK	Cut January 2018	NA
29 Pepper Ridge	Pepper Ridge (One in Front)	NA	P	OK	Cut January 2018	3 Total
30 Pepper Ridge	Pepper Ridge 3 in back on left side of Cul-de-sac)	NA	P	OK	Cut January 2018	NA
31 Pendleton Ave.	41 Pendleton Ave	#23	P	OK	Cut January 2018	NA
32 Plaza Ave.	20 Plaza Ave. Beginning on Right Emily Lane	NA NA	P P	OK OK	Cut January 2018 Cut January 2018	Minor Sand/Silt
33 Rimrock	14 Rimrock Drive	NA	P	OK	Cut February 2018	NA

34 Sheffield	Sheffield Dr.- Pond A Bottom of Hill	NA	P	OK	Cut January 2018	Has two(2) outfalls. 1st: Outfall is ok
35 Sheffield	130 Sheffield	NA	P	OK	Cut February, 2018	NA
36. Sheffield	Pond Behind 130 Sheffield Dr.	NA	P	OK	Cut February, 2018	NA
37 Sheffield	170 Sheffield Dr.- Pond C	NA	P	OK	Cut January 2018	NA
38 Spring Hill	14 Spring Hill Rd	NA	P	OK	Cut January 2018	People are dumping Lawn debris in or near Inlet
39 Segur Lane	55 Segur Lane	NA	P	OK	Incomplete	NA
40 Tucker Lane	Left Side of 30 Tucker Lane	NA	P	OK	Cut January 2018	NA
41 Two Ponds	8 Two Ponds Rd.- A	NA	P	OK	Cut January 2018	NA
42 Two Ponds	30 Two Ponds Rd.-B	NA	P	OK	Cut January 2018	NA
43 Two Ponds	Two Ponds Rd. C (End of Cul-de-sac On right)	NA	P	OK	Cut January 2018	NA
44 Trillium Way	Left Side of 25 Trillium Way	NA	P	OK	Cut January 2018	Cattails, Minor Sand/Silt
45 Willow Lane	11 Willow Lane	NA	P	OK	Cut January 2018	NA
Total: 45						

- Inspection completed March 14,2018 with a few ponds still in the process of being mowed/brush cut.
- All ponds will be cleared of brush by Aril 31, 2017 with only summer time mowing to be completed.
- Conditions for all locations have shown improvement since year 2014.
- Work performed was conducted by the Belchertown Maintenance Division.

Appendix I

SPCC Facility Inspection Reports

SPCC Inspection Sheet

Date: 5/15/2017 Time: 9:25 AM Inspector: E. Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	3- 55 gal. Hydra Oil	EMB	Main Hwy Garage Spill
2.	1- 55 gal Anti. Freeze	"	containment Area
3.	1- 55 gal 5W-30 Oil	"	
4.			
5.	6- 55 gal Waste Oil	"	Back Hwy Garage
6.	1- 55 gal Waste Coolant	"	Spill Pallets
7.	1- 55 gal 5W-30 Oil	"	
8.			
9.			
10.	1- 55 gal Waste	"	Maint Garage
11.	1- 55 gal Anti Freeze	"	Spill Pallets
12.	1- 55 gal 5W-30 Oil	"	"
13.	1- 55 gal 15W-40 Oil	"	"
14.	1- 55 gal 30W Oil	"	"
15.	1- 55 gal Hydra Oil →	"	{ Spill Pallet on order }
16.			
17.			
18.			
19.			
20.			

Any addition comments on Drum and Portable Containers :_____

_____

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Security

All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	✓
2. Maintenance Garage	✓

Inspector's Signature: [signature]

Supervisor's Signature: [signature] 5/15/17

SPCC Inspection Sheet

Date: 6/21/2017 Time: 11:15 Inspector: E. Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	3 - 55 gal Hydraulic Oil	EMB	Main Hwy Garage
2.	1 - 55 gal Anti Freeze	"	Spill Cont. Area
3.	1-55 gal 5w-30 Oil	"	"
4.	2-5 gal Tranny Oil	"	"
5.	2-5 gal Hydraulic	"	"
6.	2 - 5 gal 80w-90 Gear	"	"
7.	2 - 5 gal Grease	"	"
8.			
9.	6-55 gal Waste Oil	EMB	Back Hwy Garage
10.	1-55 gal Waste Anti Freeze	"	Spill Pallets
11.	1-55 gal 5w-30 Oil	"	"
12.			
13.			
14.	1-55 gal Waste Oil	EMB	Maint. Garage
15.	1-55 gal Hydraulic	"	Spill Pallets
16.	1-55 gal 5w-30	"	"
17.	1-55 gal Anti Freeze	"	"
18.	1-55 gal 30w Oil	"	"
19.	1-55 gal 15w-40 Oil	"	"
20.			

Any addition comments on Drum and Portable Containers :_____

_____

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Security

All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	YES
2. Maintenance Garage	YES

Inspector's Signature: [signature]

Supervisor's Signature: [signature]

SPCC Inspection Sheet

Date: 7/18/2017 Time: 10:30 Inspector: E Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	1- 5W-30 55gal Oil	EMB	MAIN Hwy GARAGE
2.	2 - 424 Hydraulic Oil 55gal	"	Spill Cont. AREA
3.	1- 55gal Anti-Freeze	"	"
4.	2-5gal 80W-90 Oil	"	"
5.	1-5 gal Hydraulic Oil	"	"
6.	3-5 gal ATF	"	"
7.			
8.	3-55 gal WASTE Oil	EMB	Back Hwy GARAGE
9.	3-55 gal WASTE Oil	"	Spill Pallets
10.	1-55 gal WASTE Anti-Freeze	"	"
11.			
12.			
13.	1-55 gal WASTE Oil	EMB	MAINT. GARAGE
14.	1-55 gal Hydraulic Oil	"	Spill Pallets
15.	1-55 gal 5W-30 Oil	"	
16.	1-55 gal Anti-Freeze	"	
17.	1-55 gal 15W-40 Oil	"	
18.	1-55 gal 30W Oil	"	
19.			
20.			

Any addition comments on Drum and Portable Containers : 2 Empty 55gal Drum on Floor - to be picked up.

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Security

All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	YES
2. Maintenance Garage	YES

Inspector's Signature: [signature]

Supervisor's Signature: [signature]

SPCC Inspection Sheet

Date: 8/25/2017 Time: 11:00 Inspector: E. Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	3-55 gal. Hydraulic 46# Oil	EMB	Main Hwy Garage
2.	2-55 gal 5w-30 Oil	EMB	Spill Cont. Area
3.	1-55 gal. Antifreeze	EMB	"
4.	3-5 gal 80-90 Gear Oil	EMB	"
5.	3-5 gal ATF	EMB	"
6.	2-5 gal Grease	EMB	"
7.			
8.	6-55 gal waste Oil	EMB	Back Hwy Garage
9.	1-55 gal waste Antifreeze	EMB	Spill Pallets
10.	1-5 gal Grease	EMB	"
11.			
12.	1-55 gal waste Oil	EMB	Mainten. Garage
13.	1-55 gal Antifreeze	EMB	Spill Pallets
14.	1-55 gal Hydraulic Oil	EMB	"
15.	1-55 gal 5w-30 Oil	EMB	"
16.	1-55 gal 15w-40 Oil	EMB	"
17.	1-55 gal 30w Oil	EMB	"
18.			
19.			
20.			

Any addition comments on Drum and Portable Containers :_____

_____

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Security

All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	YES
2. Maintenance Garage	YES

Inspector's Signature: Edward A. Bo

Supervisor's Signature: Ayn Wh

SPCC Inspection Sheet

Date: 9/27/17 Time: 8:00 Inspector: E. Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	3-55gal Hydraulic Oil	EMB	Main Hwy Garage
2.	2-55 gal 5w-30 oil	"	Spill Cont. Area
3.	1-55 gal Antifreeze	"	"
4.	3-5gal 80-90 Gear Oil	"	"
5.	3-5gal ATF	"	"
6.	2-5gal Grease	"	"
7.			
8.			
9.	6-55 gal waste Oil	EMB	Back Hwy Garage
10.	1-5 gal Grease	"	Spill Pallets
11.	1-55 gal waste Antifreeze	"	"
12.			
13.			
14.	1-55 gal Hydra Oil	EMB	Maint Garage
15.	1-55 gal 5w-30 Oil	"	Spill Pallets
16.	1-55 gal Antifreeze	"	"
17.	1-55 gal 15w-40 Oil	"	"
18.	1-55 gal 30 w Oil	"	"
19.	1-55 gal waste Oil	"	"
20.			

Any addition comments on Drum and Portable Containers :_____

_____

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Security

All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	YES
2. Maintenance Garage	YES

Inspector's Signature: [signature]

Supervisor's Signature: [signature]

SPCC Inspection Sheet

Date: 10/23/2017 Time: 8:30 Inspector: E. Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	3-55 gal Drum Hydraulic Oil	EMB	MAIN Hwy GARAGE
2.	2-55 gal Drum 5w-30 Oil	"	Spill Cont AREA.
3.	1-55 gal Drum Antifreeze	"	"
4.	1-5 gal GREASE	"	"
5.	2-5 gal ATF	"	"
6.	2-5 gal 80w-90 Oil	"	"
7.			
8.			
9.	6-55 gal WASTE Oil	EMB	BACK GARAGE @ Hwy
10.	1-55 gal WASTE Antifreeze	"	Spill PALLETS
11.	1-5 gal GREASE	"	"
12.			
13.			
14.	1-55 gal WASTE Oil	EMB	MAINT. GARAGE
15.	1-55 gal Antifreeze	"	Spill PALLETS
16.	1-55 gal Hydraulic Oil	"	"
17.	1-55 gal 5w-30 Oil	"	"
18.	1-55 gal 30w Oil	"	"
19.	1-55 gal 15w-40 Oil	"	"
20.			

Any addition comments on Drum and Portable Containers : _____

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Security

All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	YES
2. Maintenance Garage	YES

Inspector's Signature: [signature]

Supervisor's Signature: [signature]

SPCC Inspection Sheet

Date: 11/21/17 Time: 10:00 Inspector: E. Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	3-55 gal Hyd. Oil	EMB	Main Hwy Garage
2.	1-55 gal 5w-30 Oil	"	Spill Cont. Area
3.	1-55 gal Antifreeze	"	"
4.	2-5 gal 80w90 Gear Oil	"	"
5.	3-5 gal Tack	"	"
6.	2-5 gal ATF	"	"
7.	2-5 gal Grease	"	"
8.			
9.	6-55 gal Waste Oil	EMB	Back Hwy Garage
10.	1-55 gal Waste Antifreeze	"	Spill Pallets
11.			
12.			
13.	1-55 gal Waste Oil	EMB	Maint Dept Garage
14.	1-55 gal Hydr Oil	"	Spill Pallets
15.	1-55 gal Antifreeze	"	"
16.	1-55 gal 5w-30 Oil	"	"
17.	1-5 gal Hydr Oil	"	"
18.	1-55 gal 30w Oil	"	"
19.	1-55 gal 15w-40 Oil	"	"
20.			

Any addition comments on Drum and Portable Containers: 1 Empty 55 gal Drum waiting for Return

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Security

All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	YES
2. Maintenance Garage	YES

Inspector's Signature: [signature]

Supervisor's Signature: [signature]

SPCC Inspection Sheet

Date: 12/21/2017 Time: 13:00 Inspector: E. Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	3-55 gal. Hydraulic Oil	EMB	MAIN Hwy GARAGE
2.	2-5W30 Oil 55gal	"	Spill Cont AREA
3.	1-55 gal Antifreeze	"	"
4.	3-5 gal 80W90 Gear Oil	"	"
5.	2-5 gal ATF	"	"
6.	2-5 gal Grease	"	"
7.			
8.			
9.	6-55 gal WASTE Oil	EMB	BACK Hwy GARAGE
10.	1-55 gal WASTE Antifreeze	"	Spill Pallets
11.			
12.			
13.			
14.	1-55 gal WASTE Oil	EMB	MAINT. GARAGE
15.	1-55 gal Antifreeze	"	Spill Pallets
16.	1-55 gal 5W-30 Oil	"	"
17.	1-55 gal Hydraulic Oil	"	"
18.	1-55 gal 15W-40 Oil	"	"
19.			
20.			

Any addition comments on Drum and Portable Containers : _____

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Security

All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	YES
2. Maintenance Garage	YES

Inspector's Signature: [signature]

Supervisor's Signature: [signature]

SPCC Inspection Sheet

Date: 1/19/2018 Time: 1:00 pm Inspector: E. Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	plastic cap broken
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	3-55 gal Hydraulic Oil	EMB	MAIN Highway Garage
2.	2-55 gal 5W-30 Oil	"	Spill Cont. AREA
3.	1-55 gal Anti-FREEZE	"	"
4.	2-5 gal 80W-90 GEAR Oil	"	"
5.	2-5 gal GREASE	"	"
6.	2-5 gal TRANNY Oil	"	"
7.			
8.			
9.	6-55 gal WASTE Oil	EMB	Back Highway Garage
10.	1-55 gal WASTE Anti FREEZE	"	Spill Pallets
11.			
12.			
13.	1-55 gal WASTE Oil	EMB	Maint Garage
14.	1-55 gal Anti FREEZE	"	Spill Pallets
15.	1-55 gal 5W-30 Oil	"	"
16.	1-55 gal Hydraulic Oil	"	"
17.	1-55 gal 15W-40 Oil	"	"
18.			
19.			
20.			

Any addition comments on Drum and Portable Containers : _____

_____

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	–	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Security

All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	YES
2. Maintenance Garage	YES

Inspector's Signature: _____

Supervisor's Signature: _____

SPCC Inspection Sheet

Date: 2/27/18 Time: 9:38 Inspector: E. Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	2-55 gal Hydr Oil	EMB	Highway Garage
2.	2-55 gal 5W-30 Oil	"	Spill Cont. Area
3.	2-55 gal Anti Freeze	"	
4.	2-5 gal 80W-90 Gear	"	
5.	2-5 gal Hydro Oil	"	
6.	2-5 gal Tranny Oil	"	
7.	2-5 gal Grease	"	
8.			
9.			
10.	6-55 gal Waste Oil		Spill Pallets
11.	1-55 gal Waste Antifreeze		Back Highway Garage
12.			
13.			
14.	1-55 gal 15W-40 Oil		Maint. Garage
15.	1-55 gal Hydro Oil		Spill Pallets
16.	1-55 gal 5W-30 Oil		
17.	1-55 gal Anti Freeze		
18.	1-55 gal Waste Oil		
19.			
20.			

Any addition comments on Drum and Portable Containers : _____

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

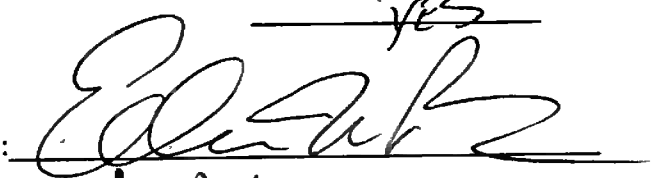
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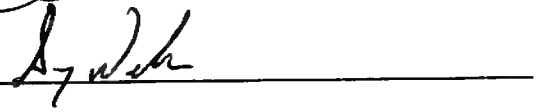
All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	YES
2. Maintenance Garage	YES

Inspector's Signature: 

Supervisor's Signature: 

SPCC Inspection Sheet

Date: 3/9/2018 Time: 1:00 pm Inspector: E. Burton

Above Ground Storage Tanks

1. Roth nonmetallic 275 gal. cap. tank for Heating Oil – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Kohler 30 Emergency Generator 253 gal. cap. diesel tank – outside northwest side of building.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

3. 275 gal. cap. Oil Tank (15w-40) – inside containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

4. 50 gal. cap. Hydraulic Oil Tank for floor lift in Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

5. 500 gal. cap. Waste Oil Furnace Storage Tank in containment area of Highway Garage.

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Oil Filled Equipment

1. Floor Mounted Hydraulic Lift in Highway Garage -1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

2. Floor Mounted Hydraulic Lift in Maintenance Garage – 1 gal. storage

Items to inspect	yes/no	Comments
a. Tank condition good	✓	
b. Bolts, rivets, or seams O.K.	✓	
c. Tank foundation intact	✓	
d. Level gauges and alarms working	✓	
e. Vents not obstructed	✓	
f. Valves, Flanges, and gaskets leak free	✓	
g. Containment walls intact	✓	
h. Tank and ground surface checked for leaks	✓	
i. Piping connected to system leak free	✓	

Security

All locks, fences, gates, and lighting systems for the above areas are in good working order. YES yes/no

Spill Response Material

Spill response materials (spill kits, granular absorbents, pads, booms, etc.) are in proper areas for deployment.

Area	yes/no
1. Highway Garage	YES
2. Maintenance Garage	YES

Inspector's Signature: Edward R

Supervisor's Signature: CK Jones

Drums and Portable Containers

Areas to inspect: Exterior surfaces, free of corrosion, signs of leakage, and that drums have secondary containment.

	Drum size and contents	Inspected	Location
1.	3-55 gal. Hydraulic Oil	EMB	Main Highway Garage
2.	2-55 gal 15W-30 Oil	EMB	Spill Containment area
3.	2-55 gal. Antifreeze	EMB	
4.	3-5 gal 80W-90 Gear Oil	EMB	
5.	3-5 gal Grease	EMB	
6.	3-5 gal ATF	EMB	
7.			
8.			
9.	6-55 gal Waste Oil	EMB	Back Garage Highway
10.	1-55 gal Waste Ant. freeze	EMB	Dept. Spill Pallets
11.			
12.			
13.			
14.	1-55 gal Hydraulic oil	EMB	Maintenance Garage
15.	1-55 gal. Antifreeze	EMB	Spill Pallets
16.	1-55 gal 5w-30 oil	EMB	
17.	1-55 gal waste oil	EMB	
18.	1-55 gal 15w-40 oil	EMB	
19.			
20.			

Any addition comments on Drum and Portable Containers :_____

_____

Appendix J

Infiltration & Inflow Analysis Report



Tighe&Bond

Infiltration / Inflow Analysis Report

Prepared For:

Town of Belchertown

March 2018

Tighe&Bond
Engineers | Environmental Specialists

110341-16
February 28, 2018

Mr. Steven Williams, Director of the Department of Public Works
290 Jackson Street
Belchertown, MA 01007

Re: Town of Belchertown Infiltration/Inflow Analysis

Dear Mr. Williams:

Tighe & Bond is pleased to submit to the Town of Belchertown two copies of the Draft Infiltration/Inflow (I/I) Analysis Report for Town review.

Executive Summary

This report includes a summary of the field investigations and evaluations performed to identify sewer drainage areas within the Town's wastewater collection system with excessive infiltration and inflow. Fieldwork was conducted from March 20, 2017 to June 1, 2017. Additionally, we have provided I/I abatement recommendations for the Town of Belchertown's consideration.

I/I is a concern because it reduces the capacity of the sewers in Belchertown to convey sanitary flow and it can increase the cost of wastewater conveyance and treatment. This project also is being performed to comply with Massachusetts Regulation 314 CMR 12.00 - *Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers.* 314 CMR 12.00 requires that all sewer system authorities develop and implement an ongoing plan to control I/I to their sewer system and, specifically, that an I/I Analysis be performed by December 31, 2017.

The Town's wastewater collection system consists of approximately 28 miles of sewer mains ranging in diameter from 2-inch to 15-inch. Most of the wastewater collected in Belchertown's sewer system is treated at the Belchertown Water Reclamation Facility. Wastewater from the South End Sewer District, which is a small portion of the Town's collection system, is treated in the Town of Palmer at the Palmer Wastewater Treatment Facility.

I/I Study Tasks

The Town of Belchertown's sanitary sewer system was divided into 8 sanitary sewer drainage areas for this evaluation, and I/I data was collected within each of these drainage areas. These sewer drainage areas are shown on the sewer system map in Appendix A. The following tasks were performed during this evaluation:

Manhole Inspections – A total of 281 manholes were inspected in March and April, 2008 as part of previous I/I work performed in the Town, and those inspections were used in the current study to help evaluate the condition of the sewer system and the presence of I/I. All inspected manholes were in the older portion of the Town's collection system (i.e., Drainage Areas 3, 4, 5, and 6).

The manholes were observed to be in generally good condition. However, structural deficiencies were observed in some manholes; the walls, tables, and inverts were in "bad" condition in 14%, 17%, and 15% of the inspected manholes, respectively. Moderate to heavy I/I was observed in approximately 20% of the inspected manholes. Signs of surcharging were observed in 14% of

the inspected manholes. Periodic removal of accumulated sediment is recommended to reduce the potential for pipe blockages and subsequent sewer backups to occur.

Groundwater monitoring - Groundwater levels were monitored weekly from March 20, 2017 to June 1, 2017 in the same seven manholes where flow meters were installed in Drainage Areas 1-7. Groundwater levels were monitored by installing temporary piezometers through the walls of each of the noted manholes. Refer to the wastewater collection system map in Appendix A for groundwater gauge locations. Groundwater levels were highest in mid-April 2017 during the monitoring period. Regional groundwater level data indicated that groundwater levels were lower during the study period than is typical.

Groundwater level data were used to determine when infiltration rates were likely to be greatest (i.e., when groundwater levels are highest).

Rainfall Monitoring - Rainfall was monitored between March 20, 2017 and June 1, 2017 using a temporary, continuously recording, tipping-bucket rain gauge located on the roof of the Belchertown Water Reclamation Facility at 175 George Hannum Road. It rained frequently during the study period, and inflow entering the sewer system within each drainage area was estimated during the storms on May 5th, May 13th, and May 25th.

Historical spring rainfall data collected at the Quabbin Visitor Center, located at the eastern end of Belchertown, was reviewed and compared to the rainfall data collected during this evaluation. The total rainfall measured in the Belchertown area during the study period was higher than the average rainfall measured during the spring period from 2007 to 2016. However, the total rainfall measured during the study period was composed primarily of several small rain events.

Continuous Flow Monitoring - Wastewater flow monitoring was performed, concurrent with rainfall and groundwater monitoring, to identify sewer drainage areas that contribute excessive quantities of infiltration or inflow. Continuous wastewater flow monitoring data was collected at 5-minute or 15-minute intervals using temporary area/velocity type flow meters installed at the outlets of Drainage Areas 1-7 during the study period. The wastewater flow from Drainage Area 8 was collected weekly by an existing, permanent flow meter located at the River Street Pumping Station.

Instantaneous Flow Monitoring – Instantaneous flow monitoring was performed as part of this study to determine the infiltration rates in sewer segments where high infiltration was expected based on conversations with the Town. Instantaneous flow monitoring was conducted in portions of Drainage Areas 3, 5, 7, and 8 on May 4, 2017. Wastewater flows were measured during the late night/early morning hours, when sanitary flow is typically minimal, using portable, pre-calibrated v-notch weirs. The flow from all connected upstream sewer segments was captured by the instantaneous flow meters because upstream manholes were not plugged.

Total Flow Comparison – The two most downstream meters, 3 and 5, measured an average flow of 471,200 gpd, while the plant flow data from the Parshall flume measured an average of 446,700 gpd. Based on these values the metered data was within 5.2% of the plant flow data.

I / I Study Evaluations

Infiltration – Both the average and peak infiltration during the study period were calculated within Drainage Areas 1-7. The total estimated average and peak infiltration entering the

Town's central sewer system during the study was approximately 251,400 gallons per day (gpd) and 446,500 gpd, respectively. The average infiltration was approximately 53% of the total average wastewater flow measured during this period. Peak infiltration rates were determined to be greater than 4,000 gpd per inch of pipe diameter per mile of pipe length (4,000 gpd/idm) in Drainage Area 5, which is located in the older, central portion of the sewer system. Infiltration rates exceeding 4,000 gpd/idm are considered excessive by MassDEP, warranting further investigation. The average infiltration rate in Drainage Area 8 was estimated to be 1,500 gpd/idm using instantaneous flow gauging data; thus, infiltration was not considered excessive there.

Inflow – Peak inflow rates, direct inflow volumes, and delayed inflow volumes were calculated for Drainage Areas 1-7, in accordance with MassDEP guidelines. Direct inflow is the portion of the total inflow that is generated from direct connections to the collection system such as catch basins, roof leaders, and manhole covers and results in a rapid increase in wastewater flow in the sewer system during a rain event. Delayed inflow is the portion of the total inflow that is generated from indirect connections to the collection system or connections that produce inflow after a significant time delay from the beginning of a storm. Delayed inflow sources include sump pumps, foundation drains, and indirect sewer/drain cross-connections.

The predicted total direct inflow volume entering the Belchertown sewer system, excluding Drainage Area 8, for the 1-year, 6-hour design storm was estimated to be 294,800 gallons. Inflow volumes could not be determined in Drainage Area 8 because its flow meter only reported weekly flow volumes. Inflow was determined to be of greatest concern in Drainage Areas 3, 4, and 5, based on MassDEP criteria that the drainage areas that contribute 80% of the sewer system inflow should be evaluated further. Note that although the measured direct inflow volumes were moderate in Drainage Areas 4 and 5, their delayed inflow volumes were high during the three storms that were analyzed.

Recommendations

Follow up investigations during a Sewer System Evaluation Survey (SSES) are recommended to identify and pinpoint the I/I sources within the drainage areas where infiltration and inflow were determined to be excessive during this I/I Analysis. We recommend that the SSES fieldwork be divided into three phases: Phase A to identify and locate infiltration sources, Phase B to identify and locate direct inflow sources, and Phase C to identify and locate delayed inflow sources (if necessary). If Phase B identifies sufficient inflow, then Phase C may not be warranted.

Infiltration – Additional infiltration investigations are recommended in Drainage Area 5 because the peak infiltration rates were greater than 4,000 gpd in these areas, which is considered excessive by MassDEP. A flow isolation program and a sewer television inspection program are recommended to pinpoint infiltration sources in these drainage areas.

Inflow – Additional inflow investigations are recommended in Drainage Areas 3, 4, and 5, which together contributed more than 80% of the direct inflow volume to the collection system. We recommend that the Town investigate direct inflow through smoke testing and dyed water testing prior to investigating delayed inflow through building inspections. If sufficient inflow is identified through direct inflow investigations, then building inspections may not be necessary.

A summary of the estimated quantities and costs for the above tasks is presented in Table EX-1.

TABLE EX-1

Estimated SSES Costs

Task	Drainage Area(s)	Quantity	T&B Labor & Expenses	Subcontractor Cost	Total Cost
Year 1					
Meetings					$0
Manhole Inspections	3, 4, 5	177 Manholes	$2,500	$11,500	$14,000
Flow Isolation Gauging	5	21,800 feet	$2,500	$7,600	$10,100
Data Evaluation			$3,700		$3,700
Report Preparation			$5,100		$5,100
SUBTOTAL			**$13,800**	**$19,100**	**$32,900**
Year 2					
Sewer TV Inspections	5	10,900 feet	$2,500	$19,300	$21,800
Smoke Testing	3, 4, 5	76,900 feet	$3,100	$25,400	$28,500
Data Evaluation			$9,800		$9,800
Report Preparation			$8,500		$8,500
SUBTOTAL			**$23,900**	**$44,700**	**$68,600**
Year 3					
Dyed Water Testing	3, 4, 5	60 Testing/ 30 Flooding	$11,100	$16,500	$27,600
Building Inspections[1]	4	230 Bldgs	$1,500	$15,600	$17,100
Data Evaluation			$6,100		$6,100
Report Preparation			$11,800		$11,800
SUBTOTAL			**$30,500**	**$32,100**	**$62,600**
Year 4					
Building Inspections[1]	3, 5	665 Bldgs	$2,800	$45,200	$48,000
Data Evaluation			$4,900		$4,900
Report Preparation			$8,500		$8,500
SUBTOTAL			**$16,200**	**$45,200**	**$61,400**
TOTAL			**$84,400**	**$141,100**	**$225,500**

[1] Building inspections may not be necessary, depending on the amount of inflow identified in other tasks.

Acknowledgments

We wish to thank you, Steven Williams, Rollin DeWitt, and the other Town staff who provided assistance throughout the project and the development of this report.

This report was prepared by Zach Chornyak and Sarah Keithley, with oversight provided by Bill Hardy.

Following the Town's review of this report, we recommend that we meet to discuss the report recommendations, obtain Town input, and address any questions or comments that the Town has on the study.

Very truly yours,

TIGHE & BOND, INC.





William N. Hardy, P.E.
Chief Operating Officer

Zachariah P. Chornyak, P.E.
Project Manager

Enclosure

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Section 1
Introduction

1.1 Purpose

The purpose of this evaluation is to determine whether infiltration and inflow (I/I) are excessive within the Town of Belchertown's sanitary sewer system and to provide I/I abatement recommendations if I/I is determined to be excessive. This study, an Infiltration/Inflow Analysis, is the first phase of a two-phase program to evaluate I/I. This first phase of work is performed to locate sub-areas within the sewer system where I/I is excessive, warranting further investigation. The second phase, a Sewer System Evaluation Survey (SSES), is performed to identify specific I/I sources in the sub-areas where I/I was identified as excessive during the first phase of work.

For informational purposes, infiltration and inflow are defined below:

- Infiltration is the extraneous water entering a sewer system from the ground through defective pipes, pipe joints, connections, manhole walls, etc. Infiltration is, in most cases, directly related to the elevation of the groundwater table in relation to the pipe invert.

- Inflow is the extraneous water discharged into a sewer system from a distinct source, such as sump pumps, roof leaders, cellar drains, foundation drains, surface drains, drains from springs and swampy areas, manhole covers, catch basins, cross-connections with storm drains, cooling water discharges, etc. Inflow is, in most cases, directly related to the quantity and intensity of rainfall.

Infiltration/inflow is a concern because it reduces the capacity of the collection system and pump stations to convey sanitary flow, reduces the capacity of the treatment facility to treat sanitary flow, and increases operating costs. In addition, excessive I/I can result in wastewater treatment facility effluent limit violations and unauthorized discharges of wastewater (overflows and bypasses). These consequences increase public health risks and can negatively impact the environment.

This project is being performed to comply with Massachusetts (MA) Regulation 314 CMR 12.00 - *Operation, Maintenance and Pretreatment Standards for Wastewater Treatment Works and Indirect Dischargers.* MA Regulation 314 CMR 12.00 requires that all sewer system authorities develop and implement an ongoing plan to control I/I to the sewer system and that an I/I Analysis be performed by December 31, 2017.

1.2 Scope

The following tasks were performed during the I/I Analysis and are detailed in this report:

1. Review of background information
2. Collection of field data
    a. Limited manhole inspections (data from manholes recently inspected prior to this study were used for the evaluation)
    b. Groundwater monitoring

c. Rainfall monitoring

d. Continuous wastewater flow monitoring

e. Instantaneous wastewater flow monitoring

3. Data analysis
4. Report preparation

In general, the work was performed in accordance with the Massachusetts Department of Environmental Protection's (MassDEP's) guidelines for performing I/I studies, entitled *Guidelines for Performing Infiltration/Inflow Analyses and Sewer System Evaluation Survey*, revised January 1993. Although MassDEP's I/I guidelines were recently updated, the study was initiated prior to the release of the updated guidelines.

The Town of Belchertown's sanitary sewer system was divided into eight sanitary sewer drainage areas as part of this evaluation, and I/I data was collected within each of these drainage areas. These sewer drainage areas are shown on the sewer system map in Appendix A. Table 1-1 summarizes each drainage area, and Figure 1-1 presents a schematic showing the connectivity of the eight sanitary sewer drainage areas. These lengths are approximate and exclude forced mains.

TABLE 1-1

Description of Sewer Drainage Areas

Drainage Area No.	Description	Sewer Length (ft)	Sewer Inch Diameter-Miles[1]
1	Metacomet Street	20,600	19.9
2	Bay Road / Federal Street	11,100	24.4
3	George Hannum Street	33,600	51.0
4	South Main Street / Jabish Street	21,500	31.8
5	Howard Street / Jackson Street	21,800	36.3
6	Berkshire Avenue / Stadler Street	11,500	21.3
7	Plantation Street / Springfield Road	21,600	29.3
8	River Street	4,600	6.9
TOTAL		**146,300**	**220.8**

[1]Calculated as the sum of the pipe length in miles multiplied by the pipe diameter in inches for each sewer segment.

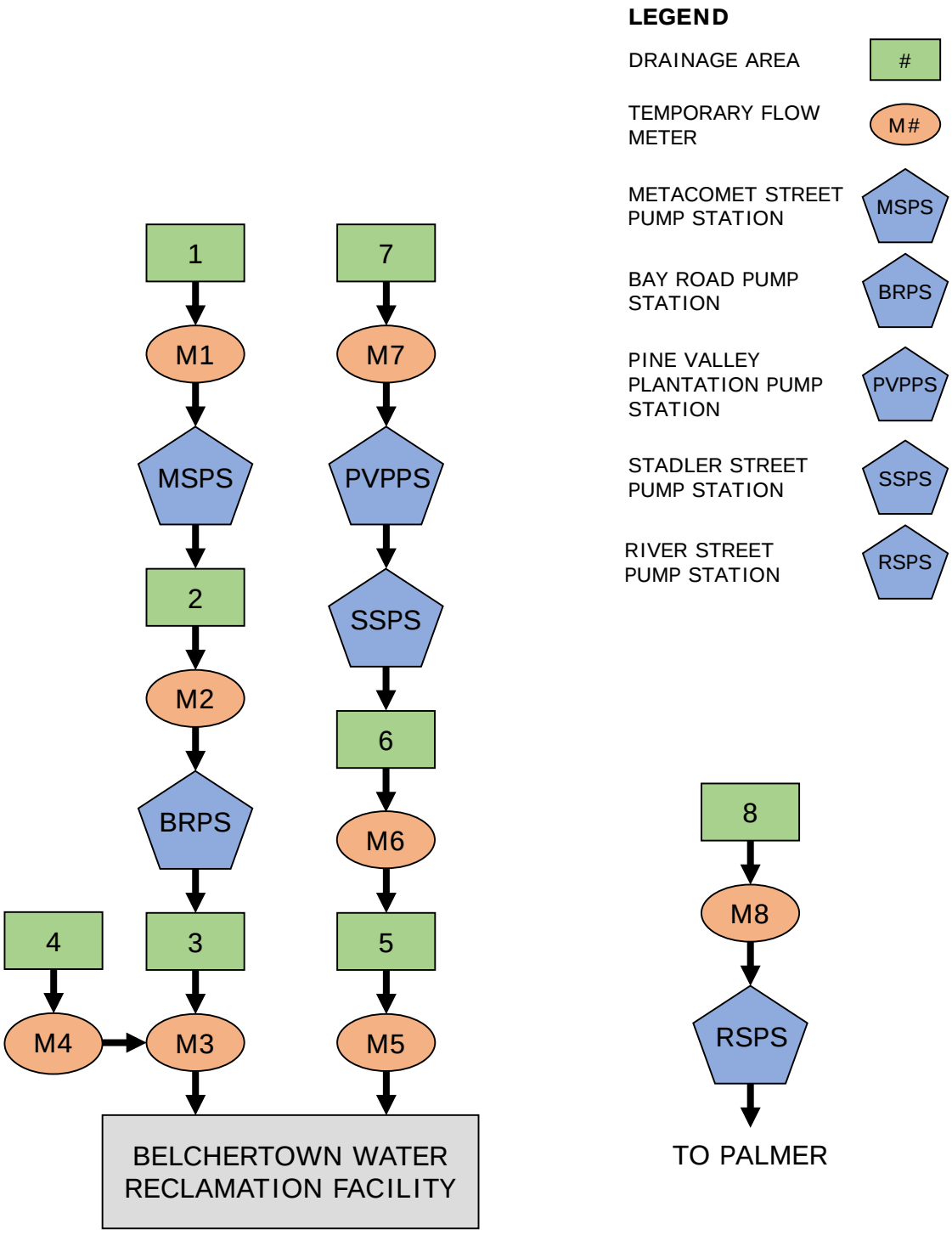


FIGURE 1-1

Drainage Area Connectivity Schematic

Section 2
Background

2.1 The Belchertown Sanitary Sewer System

The Town of Belchertown (the Town) owns, operates, and maintains a separate wastewater collection system consisting of approximately 27 miles of mainline gravity sewers, residential sewer services, force mains, and five pumping stations. In addition, there are approximately 18,500 linear feet (3.5 miles) of 1.5-inch through 4-inch low pressure sewers that serve the Tri-Lakes area in the northern portion of the collection system, which convey wastewater flow to the gravity sewer system on Federal Street (Route 9).

The Town's wastewater collection system serves approximately 1,100 residential, commercial, and municipal customers. The collection system is comprised of two districts: the Central Sewer District (Drainage Areas 1-7) and the South End Sewer District (Drainage Area 8). The Town's Central Sewer District is comprised of three main areas: the original collection area and oldest portion of the collection system (Drainage Areas 3, 4, 5, and 6), the Pine Valley Plantation area (Drainage Area 7), and the Tri-Lakes area (Drainage Areas 1 and 2). Wastewater from the Central Sewer District flows to the Belchertown Water Reclamation Facility (WRF) for treatment and subsequent discharge to Lampson Brook. The South End Sewer District is a small sewered area along the Town's southern border with the Village of Bondsville in Palmer. The Town owns, operates, and maintains the gravity sewers and the River Street Pump Station in the South End Sewer District and pays a fee to the Town of Palmer for treatment at the Palmer Wastewater Treatment Facility.

The pipes in the collection system are predominately PVC (67%), but there are some vitrified clay (VC) sewers (19%) and asbestos concrete (AC) sewers (6%). The amount/percentage of PVC, VC, and AC sewer pipe in each drainage area varies by drainage area (Table 2-1). Drainage Area 4 contains the longest length and highest percentage of VC pipes, and Drainage Areas 3 and 5 also contain a substantial amount of VC pipes (Table 2-1). Most pipes in Drainage Area 8 (South End Sewer District) are TRUSS pipes, which are plastic pipes manufactured with concentric inner and outer walls braced by a truss-type structure between them.

TABLE 2-1

Pipe Materials in the Collection System[1]

Drainage Area	Sewer Length (ft)			
	PVC	VC	AC	Total[1]
1	19,300 (94%)	--	--	20,600
2	9,500 (86%)	1,300 (12%)	--	11,100
3	22,300 (66%)	5,900 (18%)	--	33,600
4	3,800 (18%)	11,300 (52%)	3,900 (18%)	21,500
5	9,300 (43%)	5,800 (27%)	4,300 (20%)	21,800
6	11,500 (100%)	--	--	11,500
7	18,700 (87%)	--	--	21,600
8	4,200 (91%)	--	--	4,600
Total	**97,600 (67%)**	**27,700 (19%)**	**8,200 (6%)**	**146,300**

[1]Some pipe materials are unknown.
[2]Inch-diameter miles.

The Town should monitor the collection system to identify changes in flow or hydraulic capacity that may impact its ability to accommodate the discharged wastewater. Wastewater flows can increase as a result of the extension of sewers to unsewered areas, new sewer service connections in sewered areas, or changes in wastewater discharges from existing sewered customers. The hydraulic capacity of a sewer might decrease because of debris accumulation, pipe sags, offset joints, root intrusion, or a pipe break/collapse. These changes in the collection system can result in sanitary sewer overflows (SSOs) through discharges of sewage to the ground surface, a nearby waterbody, or into the basement of a sewer system customer. Maintenance of the collection system is critical to reducing the potential for SSOs to occur and to providing continuous service to the Town's sewered customers.

The Town was issued a National Pollutant Discharge Elimination System (NPDES) permit by the Environmental Protection Agency (EPA) that went into effect October 1, 2014 (Permit No. MA0102148). The permit includes effluent limitations, monitoring requirements, and other conditions related to the Town's WRF and wastewater collection system. The Town prepared a Collection System Operation and Maintenance (O&M) Plan and a detailed wastewater collection system map to comply with the permit.

2.2 Historical Belchertown Wastewater Flows

The last 5 years of flow data (2012-2016) from the Town's WRF were reviewed as part of this evaluation. Wastewater flows were approximately 10% higher in the spring, when groundwater levels typically are highest, as compared to the average annual flow (Table 2-2). Comparing average daily wastewater flows to daily precipitation indicates that wastewater flows typically increase on the day of or the day after a significant rain event (Appendix B). The flow data confirm that both infiltration and inflow are present in Belchertown's sewer system. The average daily spring flow of 0.43 mgd is well below the WRF average day design flow of 1.0 mgd. The total daily flow at the WRF exceeded the average day design flow once during the past five years on April 1, 2014 when the rate was 1.07 mgd. The highest peak flow in the past six years was 2.78 mgd and occurred on

March 31, 2014, which was below the WRF peak hour design capacity of 3.5 mgd. These high flows occurred after it had rained 3.5 inches and during the spring high groundwater period. Overall, the WRF appears to have sufficient hydraulic capacity to accommodate the I/I currently experienced in the collection system. Additionally, neither overflows nor bypasses related to high I/I have been observed in the Town's sewer system.

TABLE 2-2

Historical Flows at the Belchertown Water Reclamation Facility

	Annual Flow (mgd)			Spring Flow (mgd)[1]		
Year	Max. Daily Peak	Average Daily Min.	Average Day	Max. Daily Peak	Average Daily Min.	Average Day
2012	1.77	0.024	0.33	1.56	0.020	0.34
2013	2.39	0.038	0.37	2.09	0.034	0.39
2014	2.78	0.063	0.39	2.78	0.19	0.61
2015	2.41	0.032	0.33	1.88	0.070	0.44
2016	2.09	0.032	0.31	1.59	0.050	0.38
2017	1.71	0.027	0.38	1.58	0.046	0.43
Average[2]	2.19	0.038	0.35	1.91	0.072	0.43

[1]Estimated as the average daily flow from March 20th-May 31st of each year.
[2]Average of 2012-2016 data.

2.3 Previous Sewer System Investigations

Tighe & Bond developed an I/I control plan for the Town in March 2006. Work completed under that control plan included:

- Updating the Town's sanitary sewer mapping (including GIS mapping)
- Conducting manhole inspections
- Identifying areas for I/I investigations based on the age of the sewers and the manhole inspections
- Performing sewer CCTV inspections and flow isolation gauging
- Performing cleaning and corrective maintenance, including manhole rehabilitation and pipe replacement (ongoing)
- Investigating illegal sump pump connections

Three major construction projects have been completed since the 2006 I/I control plan to replace sewers that had large amounts of I/I, as identified during the fieldwork described above. In total, approximately 11,100 linear feet of old VC pipe were replaced with new PVC pipe. VC pipe is prone to I/I because it was manufactured of short lengths (commonly 2 to 5 feet long), resulting in more joints than modern PVC sewer pipes that are 13 feet long. In addition, the VC pipe joints were more prone to leakage because they were not constructed with gasketed joints, which are now used in PVC sewer construction. Approximately 7,700 linear feet of sewer mains were replaced in Drainage Area 5, along Jackson Street and Howard Street. The other 3,400 linear feet of sewer mains were replaced in Drainage Area 4, along Main Street. The previous I/I plan was instrumental in guiding the Town's efforts, and these construction projects and ongoing investigations demonstrate the Town's commitment to reducing I/I.

Section 3
Data Collection

3.1 General

Several field data collection tasks were performed as part of this evaluation, including:

- Manhole inspections
- Groundwater monitoring
- Rainfall monitoring
- Wastewater flow monitoring

This section describes these tasks and summarizes the collected data.

3.2 Manhole Inspections

3.2.1 Description of Work

A total of 280 manholes (41%) were inspected in March and April, 2008 as part of a previous I/I study for the Town. The current study utilized these inspections because they covered a large portion of the collection system and were assumed to still be valid for the purposes of this limited evaluation because they were performed in the recent past. Only manholes in the older portion of the wastewater collection system (Drainage Areas 3, 4, 5, and 6) were inspected during the 2008 study. This portion of the collection system is of greatest concern because of its age. The Tri-Lakes area of the collection system was constructed between 2002-2005 and, as such, its condition of the system is of less concern. The inspected manholes are shown on the sewer system map in Appendix A. Appendix C contains a summary table of the manhole inspections conducted in the Spring of 2008 and any repairs and inspections performed since then.

Tighe & Bond performed the manhole inspection program. The manhole inspections provided data on manhole construction and condition, leakage problems (infiltration), the potential for inflow, and debris accumulation at the inspection locations.

3.2.2 Manhole Inspection Findings

Tables 3-1, 3-2, and 3-3 summarize the manhole materials, conditions, and I/I observed during the inspection program.

TABLE 3-1

Summary of Inspected Manhole Materials

Drainage Area	Total	Number Inspected	Precast Concrete	Brick or Concrete Block
1	67	0 (0%)	0	0
2	54	0 (0%)	0	0
3	136	126 (93%)	106 (84%)	20 (16%)
4	94	78 (83%)	7 (9%)	71 (91%)
5	89	55 (62%)	12 (22%)	43 (78%)
6	54	22 (41%)	19 (86%)	3 (14%)
7	195	0 (0%)	0	0
TOTAL	689	281 (41%)	144 (51%)	137 (49%)

TABLE 3-2

Summary of Inspected Manhole Conditions

Drainage Area	Wall			Table			Invert		
	Good	Fair	Bad	Good	Fair	Bad	Good	Fair	Bad
1	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
2	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
3	114 (90%)	6 (5%)	6 (5%)	121 (96%)	1 (1%)	4 (3%)	121 (96%)	2 (2%)	3 (2%)
4	21 (27%)	36 (46%)	21 (27%)	20 (26%)	31 (40%)	27 (35%)	20 (26%)	32 (41%)	26 (33%)
5	35 (64%)	9 (16%)	11 (20%)	32 (58%)	7 (13%)	16 (29%)	32 (58%)	11 (20%)	12 (22%)
6	18 (82%)	2 (9%)	2 (9%)	18 (82%)	2 (9%)	2 (9%)	18 (82%)	2 (9%)	2 (9%)
7	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
TOTAL	188 (67%)	53 (19%)	40 (14%)	191 (68%)	41 (15%)	49 (17%)	191 (68%)	47 (17%)	43 (15%)

TABLE 3-3

Summary of I/I in Inspected Manholes

Drainage Area	Potential Inflow through Covers					Infiltration through Walls					Other	
	None	Trace	Light	Moderate	Heavy	None	Trace	Light	Moderate	Heavy	No	Yes
1	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
2	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
3	28 (22%)	27 (21%)	65 (52%)	6 (5%)	0 (0%)	85 (67%)	0 (0%)	36 (29%)	3 (2%)	2 (2%)	98 (78%)	28 (22%)
4	8 (10%)	2 (3%)	61 (78%)	7 (9%)	0 (0%)	16 (21%)	4 (5%)	34 (44%)	23 (29%)	1 (1%)	68 (87%)	10 (13%)
5	15 (27%)	0 (0%)	31 (56%)	6 (11%)	3 (5%)	13 (24%)	1 (2%)	23 (42%)	17 (31%)	1 (2%)	37 (67%)	18 (33%)
6	18 (82%)	0 (0%)	3 (14%)	1 (5%)	0 (0%)	18 (82%)	1 (5%)	2 (9%)	1 (5%)	0 (0%)	21 (95%)	1 (5%)
7	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
TOTAL	69	29	160	20	3	132	6	95	44	4	224	57

The inspected manholes were split evenly between being constructed of precast concrete (51%) and brick or concrete block construction (49%, Table 3-1). The greatest number and percentage of brick/block manholes were found in Drainage Areas 4 and 5. This indicates that the sewer system is oldest in these areas and, correspondingly, that there is a greater potential for infiltration in these areas.

The majority of the manholes were found to be in good condition. However, the condition of the walls, tables, and inverts were classified as "bad" in 14%, 17%, and 15% of the inspected manholes, respectively (Table 3-2). Drainage Areas 4 and 5 contained the most manholes with components in bad condition. This result is unsurprising because these manholes are in the oldest section of the sewer system. Typically, there is a greater potential for infiltration where there is greater sewer system deterioration.

Infiltration through manhole walls was documented during the 2008 manhole inspections. Infiltration was observed in 149 of the 281 inspected manholes (53% of the total). Drainage Areas 4 and 5 contained the greatest number of manholes with infiltration, which is unsurprising because the manholes in these areas had the most deterioration.

The potential for inflow through manhole covers was estimated during the inspections (Table 3-3). It was estimated that inflow has the potential to enter manhole covers in 212 of the 281 manholes inspected (75% of the total). However, at 90% of the manholes where there was a potential for inflow, the potential inflow was characterized as trace or light, rather than moderate or heavy. Based on the inspected manholes, inflow through manhole covers does not appear to be a large problem.

Manholes with maintenance concerns, such as accumulated debris and grease, were observed within 21 manholes during the inspections (7.5% of the total). The accumulation of debris and grease is a concern because it can result in surcharging in the manhole and within upstream sewers. The greatest number and percentage of manholes with maintenance concerns were found in Drainage Area 5 (12 and 22%, respectively).

Signs of surcharging were observed in 39 (14%) of the inspected manholes, mostly in Drainage Areas 4 and 5. Signs of surcharging within a manhole are an indication that the capacity of the downstream sewer was exceeded at some point in the recent past, either due to insufficient pipe capacities or the accumulation of material that has resulted in a reduction in hydraulic capacity of the downstream sewer. Accumulated sediment and grease should be removed periodically to reduce the potential for pipe blockages and subsequent sewer backups to occur.

Since 2008, the Town has repaired 47 of the inspected manholes. These repairs include replacing the frame, replacing the cover, replacing courses of brick, repairing the mortar, and lining the manhole, as appropriate.

3.3 Groundwater Monitoring

3.3.1 Description of Work

Infiltration occurs when groundwater above the sewer invert enters the sewer system through cracked pipes or manholes, open joints, or through construction defects in a pipeline, such as poor service connections. The potential for infiltration increases as the

groundwater level above the pipe increases, but no infiltration will occur if groundwater levels are below sewer inverts.

The potential for infiltration may be evaluated by comparing sewer depths to groundwater levels. Groundwater levels can vary depending on soil conditions and local topography. Similarly, sewer depths can vary depending on topography and hydraulic requirements.

The groundwater monitoring program was managed and organized by Tighe & Bond, but performed by Tighe & Bond's subcontractor, EST Associates, Inc. Groundwater levels were monitored weekly from March 20, 2017 to June 1, 2017 in the same manholes where flow meters were installed in each drainage area, as shown on the sewer system map in Appendix A. Groundwater levels were monitored by installing piezometric tubes through the manhole walls and then measuring the water level above the sewer invert in the tube. Groundwater monitoring field data is summarized in Table 3-4. Measured flow rates were compared with groundwater levels during the study to determine the impact of the groundwater levels on the infiltration rates.

Regional groundwater data was collected from the United States Geological Survey (USGS) groundwater monitoring station Site Number 422103072241102 – MA-PDW 23, located in Pelham, MA, from January 1, 2012 to July 24, 2017. Pelham is just north of and adjacent to Belchertown. Groundwater data were reported daily at this station from 1986 to January 30, 2017, after which the data were reported monthly. The regional data was used to confirm the groundwater level trends observed using the piezometers installed during the current study and to compare the groundwater levels measured during this study to those measured in prior years. Figure 3-1 shows the regional groundwater levels over the past 5 years. Regional groundwater levels were lower during the study period than in the previous 5 years, particularly during late March and early April. However, note that because groundwater level data was only reported on a monthly basis during 2017, peak groundwater levels between data points may have been higher than is represented by the monthly values.

The relationship between groundwater gauging data and flow monitoring data is discussed further in the Data Analysis section of this report (Section 4).

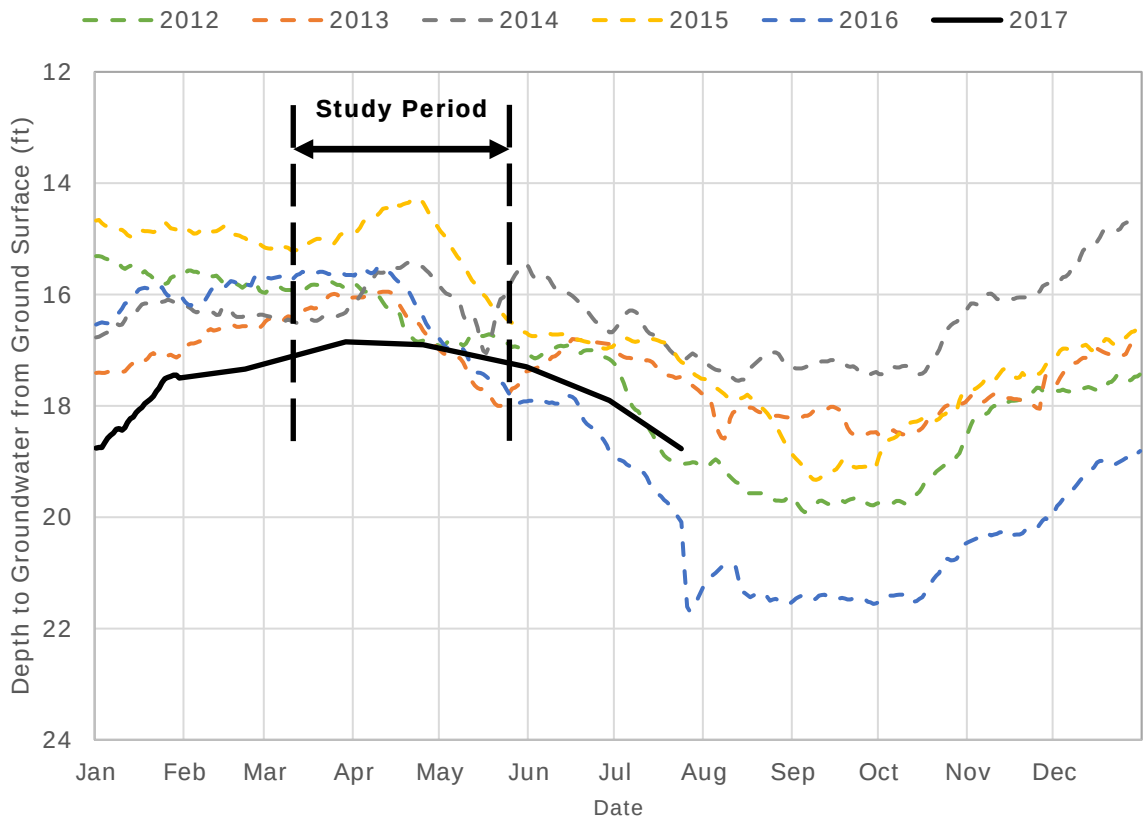


FIGURE 3-1
Historical Groundwater Levels

3.3.2 Groundwater Monitoring Findings

Groundwater levels above sewer inverts were observed at the outlet of Drainage Areas 1, 2, 3, 6, and 7 during the study and were highest in Drainage Area 2. Groundwater levels throughout the system were highest from April 5, 2017 to April 12, 2017. As such, this period was designated the high groundwater period for calculating the peak infiltration rate. The measurement of 0 inches of groundwater above the sewer invert in Drainage Area 3 on April 12, 2017 was considered an anomaly.

Groundwater was not detected in the outlet manholes for Drainage Areas 4 and 5, but infiltration was measured in these areas, as described in Section 4. It is possible that groundwater levels were higher in other parts of these drainage areas and that local geologic conditions at these two manholes led to lower groundwater levels there.

TABLE 3-4

Groundwater Monitoring Findings

	Drainage Area Outlet Manhole						
	1	2	3	4	5	6	7
Date Monitored	Groundwater Level Above Sewer Invert (in)						
3/20/17	109.5	115	27	0	0	49.5	0
3/29/17	112.75	118.5	42.25	0	0	77.5	0
4/5/17[1]	122.75	135.75	55.25	0	0	80.5	17
4/12/17[1]	128.5	136.5	0	0	0	75.5	17.25
4/19/17	127.5	135	27	0	0	78	15.5
4/26/17	124.5	132.75	42	0	0	73	14
5/3/17	118.5	129.5	38.5	0	0	67.5	12.5
5/10/17	119.5	129	35	0	0	67.5	12
5/16/17	118.75	130.75	34	0	0	75.5	13
5/24/17	118.5	128.5	34	0	0	68	12
6/1/17	120	132.5	43.25	0	0	74.75	14
MH Depth (in)	**174**	**193**	**111**	**68**	**124**	**157**	**138**

[1]High groundwater period

3.4 Rainfall Monitoring

3.4.1 Description of Work

Rainfall was monitored by EST Associates, Inc. while the temporary flow meters were in place, from March 20, 2017 to June 1, 2017, so that the impacts of rainfall on sewer system flow could be assessed. Rainfall was measured using a temporary, continuously recording tipping-bucket rain gauge located on the roof of the lab building at the WRF.

Total rainfall measured each day of the monitoring period and a summary of the measured wastewater flow data are presented graphically in Appendix D (Figures D-1 through D-8).

3.4.2 Rainfall Monitoring Findings

Historical spring rainfall data, from 2007 to 2017, were reviewed and compared to the rainfall data collected during this evaluation (Table 3-5). Historical rainfall data was collected by the National Oceanic and Atmospheric Administration's National Climactic Data Center at Station USC00190562 at the Quabbin Visitor Center. The total rainfall measured in Belchertown during the study period (March 20, 2017 to June 1, 2017) of 11.61 inches was higher than the average rainfall measured over the previous 10 years (2007 to 2016) of 8.49 inches. However, the rainfall measured during the study period primarily consisted of several small rain events.

TABLE 3-5

Historical Spring[1] Precipitation in Belchertown

Year	Total Precipitation (in.)	Max. Day Precipitation (in.)
2007	10.11	2.47
2008	7.88	2.24
2009	8.82	1.28
2010	8.45	1.41
2011	10.50	1.45
2012	6.10	1.55
2013	8.46	1.90
2014	14.30	2.24
2015	5.12	0.81
2016	5.16	0.94
2017	11.61	1.45
Average[2]	**8.49**	**1.63**

[1]From March 20th to June 1st

[2]Average over previous 10 years (from 2007 through 2016)

The most significant rain events measured during the study period are summarized in Table 3-6. These rain events had total precipitation greater than 0.2 inches and were considered separate events if the time between precipitation was longer than 6 hours.

Noticeable inflow was detected in some of the drainage areas during the rain events on 5/5/17, 5/13/17, and 5/25/17. These storms had total precipitation amounts greater than or equal to 0.95 inches and peak intensities greater than or equal to 0.19 inches/hour. They were used to estimate inflow entering the Town's sewer system (Section 4.3). Small rain events were not used to estimate inflow because they may incorrectly indicate that inflow is insignificant in areas where it may be a concern during larger storm events.

TABLE 3-6

Rain Events during the Study Period[1]

Start Date	End Date	Duration (h)	Total Precipitation (in)	Average Intensity (in/h)	Peak Intensity (in/h)
3/27/17 6:30 AM	3/27/17 12:30 PM	6.00	0.50	0.08	0.25
3/28/17 4:00 PM	3/29/17 1:30 AM	9.50	0.69	0.07	0.17
3/31/17 9:15 AM	3/31/17 8:45 PM	11.50	0.43	0.04	0.06
4/1/17 10:45 AM	4/1/17 6:45 PM	8.00	0.72	0.09	0.21
4/4/17 2:45 AM	4/4/17 11:15 PM	20.50	0.74	0.04	0.16
4/6/17 10:00 AM	4/6/17 9:00 PM	11.00	0.67	0.06	0.28
4/21/17 12:45 AM	4/21/17 10:45 AM	10.00	0.50	0.05	0.15
5/5/17 7:15 AM [2]	5/6/17 8:45 AM	25.50	0.95	0.04	0.23
5/13/17 6:15 PM [2]	5/14/17 10:45 AM	16.50	1.12	0.07	0.19
5/15/17 2:00 AM	5/15/17 12:45 PM	10.75	0.28	0.03	0.05
5/25/17 2:45 PM [2]	5/26/17 8:00 PM	29.25	1.46	0.05	0.33

[1] Only events with greater than 0.2 inches of precipitation were included.

[2] Rain events used for inflow analysis.

3.5 Flow Monitoring

3.5.1 Description of Work

3.0.0.1 Continuous Flow Monitoring

Wastewater flow monitoring was performed in the Town, concurrent with rainfall and groundwater monitoring, to identify sewer drainage areas that contribute excessive quantities of infiltration or inflow. As with the rainfall and groundwater monitoring, the flow monitoring was performed by EST Associates, Inc., Tighe & Bond's subcontractor, under the direct supervision of Tighe & Bond.

The sewer system was separated into eight sewer drainage areas, as described in Section 1.2 and shown on the sewer system map in Appendix A. Continuous flow monitoring data was collected at the outlet of Drainage Areas 1 through 7 from March 20 to June 1, 2017 (i.e., one meter per drainage area). The wastewater flows from each drainage area were collected using temporary area/velocity type flow meters that collected flow data continuously and reported that data in 5- or 15-minute intervals. The shorter 5-minute interval was used for meters strongly impacted by pumping stations (Meters 2 and 6) to capture the more rapid changes in flow.

Wastewater from Drainage Area 8 is pumped at the River Street Pumping Station to the City of Palmer for treatment. The pumping station has a permanent flow meter that measures and records the total volume of wastewater discharged each week. I/I was estimated in this drainage area using instantaneous flow data and pump station flow data.

3.0.0.2 Instantaneous Flow Monitoring

Instantaneous flow monitoring was performed as part of this study to determine the infiltration rates in sewer segments where high infiltration was expected based on conversations with the Town. In addition, instantaneous flow monitoring data was collected in Drainage Area 8 because continuous flow data was not collected in that area.

Instantaneous flow monitoring was conducted on May 4, 2017 in Drainage Areas 3, 5, 7, and 8. The instantaneous flow monitoring locations are shown on the sewer system map in Appendix E. Monitoring was conducted using portable, pre-calibrated v-notch weirs during the late night/early morning hours, when sanitary flow typically is minimal. The flow through all connected upstream sewer segments was captured by the instantaneous flow meters because the upstream manholes were not plugged.

3.5.2 Flow Monitoring Findings

3.0.0.1 Continuous Flow Data

The continuous flow monitoring data collected over the study period represents a large quantity of flow information. To aid the reader in reviewing this data, the flow data is summarized in this report as described below:

- A tabular summary of the minimum daily flows, average daily flows, and the peak hourly flows recorded by each flow meter is presented in this section (refer to Table 3-7).

- A graphical summary of the daily minimum, average, and peak hourly wastewater flows recorded by each flow meter is presented in Figures D-1 through D-8 in Appendix D. Total daily rainfall also is presented on these figures.

The average minimum daily flows, average daily flows, and peak flows recorded by the continuous flow meters during the study period (March 20 to June 1, 2017) are listed in Table 3-7. These flow rates show how flow accumulates through the collection system and have not been adjusted to present flows from each drainage area.

TABLE 3-7

Continuous Flow Monitoring Data Summary[1]

Flow Monitoring Site	Avg. Min. Daily Flow (gpd)	Avg. Daily Flow (gpd)	Peak Flow[2] (gpd)
1	13,500	35,100	104,900
2	5,400	49,000	709,200
3	172,900	223,300	563,800
4	78,300	113,000	312,300
5	106,500	247,900	655,800
6	11,900	79,700	366,400
7	5,400	14,800	120,000
8	n/a[3]	11,800	n/a[3]

[1]Measured at the outlet of each drainage area and includes flow from upstream drainage areas.

[2]Peak 5- or 15-minute flow.

[3]Could not be calculated with total weekly flow data.

Table 3-7 provides the following useful information:

- The average minimum daily flow values estimate the average infiltration rates measured during the study at each meter site.
- The average daily flow values show the distribution of flow in the sewer system.
- The peak flow values, and associated depth and velocity values, can be used to evaluate sewer system capacity.

The average daily wastewater flow conveyed to the Belchertown WRF during the study period, as measured by the continuous flow meters, was approximately 471,200 gpd. This estimate was calculated by summing the average daily flow values from Meters 3 and 5. The average daily flow measured at the WRF was 446,700 gpd during this same period, which was similar (within 5.2%) to the flow measured using the temporary meters.

Flow is measured at the WRF using a Parshall flume. We tested the accuracy of the flow meter by manually measuring the water depth in the flume and calculating the flow rate. The manually measured flow rate was within 5% of the flow rate recorded in the SCADA system. This result confirmed the accuracy of the WRF reported flows.

We compared the flow data from Meter 2 to the pump run time data from the Bay Road Pump Station for May 24 to May 25, 2017. The meter recorded a total volume of 92,000

gallons, and the pump run time data estimated a total volume of 80,000 gallons for that two-day period. These values are very similar, which suggests that some flow meters were fairly accurate. Pump run time data was not available for the other pump stations, so a similar comparison could not be conducted.

The metered flow data likely overestimated I/I within the sewer system, but the flow meters captured the flows within the system at a higher resolution than did the WRF. The metered data can identify areas requiring more detailed evaluation in the second phase of the I/I analysis, i.e., the SSES.

Through a detailed review of the flow depth and velocity data recorded at each flow meter site, questionable data was identified and deleted for the purposes of determining the flows presented in Table 3-7.

Wastewater flow depths did not exceed 50% of the associated pipe diameters at each flow meter site, except Meter 4. At Meter 4, the pipe flow depth exceeded 50% of the pipe diameter for less than 10% of the study, with a peak flow at 66% of the pipe depth. These data suggest that the wastewater collection system has sufficient hydraulic capacity to accommodate the current sanitary and I/I flows.

3.0.0.2 Instantaneous Flow Data

The late night/early morning instantaneous flow data collected on May 4, 2017 in Drainage Areas 3, 5, 6, 7, and 8 are presented in Table 4-3. This data, in conjunction with the continuous flow data, helps identify where infiltration is excessive in the sewer system. The infiltration evaluation is described in Section 4.2.

Section 4
Data Analysis

4.1 General

The flow, groundwater, and rainfall monitoring data collected from March 20, 2017 to June 1, 2017 were used to determine areas of high infiltration and inflow in the Town's sewer system. In addition, the manhole inspection data was used to aid in locating infiltration and inflow problem areas. The results of the infiltration and inflow analyses are presented in Sections 4.2 and 4.3, respectively.

Although the evaluation of the extraneous water entering the sewer system is separated into an analysis of the infiltration-related flows and the inflow-related flows, infiltration and inflow are not mutually exclusive. For example, increased infiltration, through a rise in groundwater levels during a storm event, would be recorded as inflow rather than infiltration. Similarly, sump pumps connected to the sanitary sewer system (inflow sources) often discharge to the system during dry weather, high groundwater periods. Flow from these sources would be recorded as infiltration.

4.2 Infiltration

Infiltration is the extraneous water entering a sewer system from the ground through defective pipes, pipe joints, connections, manhole walls, etc. Infiltration is, in most cases, directly related to groundwater levels.

The standard measure for evaluating the severity of infiltration is the calculation of an infiltration rate based on sewer system characteristics. The infiltration rate typically is normalized to the length and diameter of pipe under review, expressed in gallons per day of flow per mile of pipe length per inch of pipe diameter (gpd/idm). As an example, if 10,000 gpd of infiltration were measured within a 1 mile length of 10-inch pipe (10 inch diameter-miles), the calculated infiltration rate would be 10,000 gpd/10 idm=1,000 gpd/idm.

As noted previously, the MassDEP I/I study guidelines stipulate that where infiltration rates are less than 4,000 gpd/idm, further study to investigate flow sources and possible corrective action is not warranted. The MassDEP has determined that, generally, infiltration can be cost-effectively removed from a sewer system drainage area when rates exceed 4,000 gpd/idm. Infiltration rates greater than 4,000 gpd/idm are considered excessive, warranting further investigation during the second study phase (an SSES).

4.2.1 Methodology

Peak infiltration was estimated in this evaluation using the measured continuous flow data for Drainage Areas 1 through 7. Peak infiltration was estimated in these drainage areas as the average of the minimum daily flow values observed on at least three consecutive dry days during the high groundwater period. Wet weather periods were not considered to separate infiltration from inflow. Although it is likely that the minimum measured daily flow values included some small sanitary flow contribution, sanitary flows were considered negligible.

Based on the regional groundwater data, the groundwater data collected as part of this study, and the flow data collected, the high groundwater conditions were determined to occur in mid-April 2017. The high groundwater observed in mid-April is most likely due to both the consistent rain events in early spring and the drier conditions in late spring. The peak infiltration rates in the sewer drainage areas were estimated using minimum continuous flow data collected during the 5-day, dry weather, high groundwater period from April 8 to April 12. Although it stopped raining on April 6, April 7 was not included in the peak infiltration calculation to minimize the potential impact of inflow.

The peak infiltration rate in Drainage Areas 3, 5, and 6 was calculated by subtracting the infiltration rates from upstream areas calculated during the same high groundwater, dry weather period noted above. The infiltration rate in Drainage Area 2 was not adjusted to account for upstream flows from Drainage Area 1 because the average daily minimum flow in Drainage Area 2 was substantially lower than in Drainage Area 1. The Bay Road Pumping Station appeared to pump at a higher rate than necessary.

The average infiltration rate during the study period also was calculated for each drainage area. The minimum flows on each dry day during the entire study period (March 20 to June 1) were averaged, and minimum flows from upstream drainage areas were subtracted as needed.

In addition, infiltration rates were estimated for Drainage Area 8 and within sewer reaches in Drainage Areas 3, 5, 6, and 7 by performing late night/early morning instantaneous flow monitoring, as described in Section 3.5.1.2. The late night/early morning flows were assumed to approximate the infiltration entering the sewer system because sanitary flows typically are negligible during this period.

4.2.2 Results

A summary of the average and peak infiltration rates observed in Drainage Areas 1-7 during the study period are presented in Table 4-1. Only Drainage Area 5 had a peak infiltration rate greater than 4,000 gpd/idm, which is considered excessive by MassDEP. The infiltration rates in the remaining drainage areas were determined to be of less concern, with infiltration rates less than 2,000 gpd/idm.

TABLE 4-1

Infiltration Summary

Ranking	Drainage Area	Length of Pipe (feet)	Sewer idm[1]	Average Infiltration (gpd)[2]	Peak Infiltration (gpd)[3]	Average Infiltration Rate (gpd/idm)[4]	Peak Infiltration Rate (gpd/idm)
1	5	21,800	36	79,100	251,200	2,200	6,900
2	4	21,500	32	72,200	124,500	2,300	3,900
3	1	20,600	20	14,300	23,000	700	1,200
4	6	11,500	21	6,100	13,100	300	600
5	3	33,600	51	68,900	21,700	1,400	400
6	7	21,600	29	5,400	9,300	200	300
7	2	11,100	24	5,400	3,700	200	100
8	8[5]	4,600	7	10,300	--	1,500	--
TOTAL	**0**	**141,700**	**214**	**251,400**	**446,500**	**1,200**	**2,100**

[1] Inch-diameter miles.

[2] Calculated as the average of the minimum flows measured during dry weather periods.

[3] Calculated as the average of the minimum flow measured from 4/9/17 - 4/12/17 (the high groundwater period).

[4] Drainage area infiltration calculated by subtracting flows from upstream drainage areas.

[5] The average infiltration rate in Drainage Area 8 was taken from instantanteous flow monitoring data. The peak infiltration rate in Drainage Area 8 could not be determined because no infiltration data was available during the high groundwater period.

The total estimated peak infiltration rate entering the sewer system in the Town's Central Sewer District (i.e., Drainage Areas 1-7) during the high groundwater period is approximately 446,500 gpd, and the average infiltration rate over the study period is approximately 251,400 gpd.

Belchertown's average daily spring, dry-weather wastewater flow measured during the study period was separated into two components: base sanitary flow and infiltration (Table 4-2). Infiltration appeared to contribute substantially to the total sewer flow during the study period.

TABLE 4-2

Average Spring Dry-Weather Flow Components

Flow Component	Average Daily Flow (gpd)	Percentage of Total
Base Sanitary Flow	219,800	47%
Infiltration	251,400	53%
Total	**471,200**	**100%**

Historical spring flows at the Belchertown WRF, which receives flows from Drainage Areas 1-7, were reviewed and compared to the 2017 spring flows (Table 2-2). The average daily minimum flow observed during the study period at the WRF of 0.039 mgd was lower than the previous 5-year average of 0.070 mgd. The lower groundwater levels might have resulted in less infiltration during the study period than is typical.

Table 4-3 summarizes the infiltration rates estimated using the early morning instantaneous flow measurements recorded at the seven locations shown on the sewer system map in Appendix E on May 4, 2017. Excessive infiltration rates (i.e., >4,000 gpd/idm) were measured at two locations. The measurement location in Drainage Area 3 has a large, private residential complex upstream for which the pipe length is unknown, so the rate likely is improperly high. In Drainage Area 6, the measured rate might have reflected more flow than was entering the sewer system from the 1,100± feet of upstream gravity sewers if the upstream Pine Valley Pumping Station was active when the measurement was taken. In Drainage Area 7, the manholes in the Pine Valley Plantation neighborhood, which were not inspected, might be sources of infiltration because it is unlikely that the PVC pipes contribute substantial infiltration. The instantaneous flow monitoring indicated that infiltration was low in Drainage Area 8, as shown in Tables 4-11 and 4-3. Surprisingly, all the flow at Location G seemed to come from 110 feet of pipe between manholes SMH-513 and SMH-511.

TABLE 4-3

Infiltration Determined by Instantaneous Flow Monitoring

Drainage Area	Location	Street	Sewer Length (ft)	Sewer idm[1]	Infiltration (gpd)	Infiltration Rate (gpd/idm)
3	A[2]	George Hannum Street	334	0.51	27,000	53,400
6	C	Stadler Street	1,090	2.47	15,900	6,400
7	D	Random Road	2,724	4.13	11,300	2,700
8	G	River Street	4,170	6.35	10,300	1,600
7	E	First Street	2,452	3.72	400	100
5	B	Howard Street	193	0.18	0	0
8	F	River Street	4,060	6.15	0	0

[1] Inch diameter-miles.
[2] This location drains a network of upstream private sewers, whose lengths are unknown.

4.3 Inflow

Inflow is the extraneous water discharged into a sewer system from a distinct source, such as sump pumps, roof leaders, cellar drains, foundation drains, surface drains, drains from springs and swampy areas, manhole covers, catch basins, cross-connections with storm drains, cooling water discharges, etc. Inflow is, in most cases, directly related to the quantity of rainfall that a sewer system experiences.

Inflow has been separated into two components in this evaluation: direct inflow and delayed inflow. Direct inflow is defined as the portion of total inflow that is generated from direct connections to the collection system, such as catch basins, roof leaders, and manhole covers. Direct inflow sources allow stormwater runoff to rapidly impact the collection system and produce an inflow hydrograph that sharply increases soon after the start of the rain event and decreases swiftly upon the conclusion of the event.

Delayed inflow is defined as the portion of total inflow that is generated from indirect connections to the collection system or connections that produce inflow after a significant time delay from the beginning of a rain event. Delayed inflow sources include sump pumps, foundation drains, and indirect sewer/drain cross-connections. Through the analysis of flow meter data, rainfall-induced infiltration cannot be distinguished from delayed inflow. Delayed inflow sources exert a gradual impact on the collection system and produce an inflow hydrograph that decreases gradually upon the conclusion of the rain event and after peak inflow caused by direct connections.

Further investigations during a Phase 2 I/I study (an SSES) are recommended in the drainage areas where inflow is determined to be excessive during a Phase 1 I/I study (an I/I Analysis). Phase 2 inflow investigations typically include smoke testing, dye water testing, building inspections, and manhole inspections to identify inflow sources to the sewer system.

4.3.1 Methodology

The peak hourly inflow rate, direct inflow volume, and delayed inflow volume were calculated for Drainage Areas 1-7 using the continuous flow data collected. Inflow was determined for the May 5th, May 13th, and May 25th rain events.

These three inflow parameters are determined by subtracting infiltration and base sanitary flow from the wet-weather flow. The sum of infiltration and base sanitary flow during the rain event was approximated as the dry-weather flow just prior to the rain event at the same time of day.

Appendix F contains figures showing the wet- and dry-weather hydrographs along with rainfall in each drainage area for the May 5th, May 13th, and May 25th rain events. The rolling hourly average flow rate was calculated for each flow meter, except Meter 2. The discharge from the Metacomet Street Pump Station strongly affected the flow rate at Meter 2, so its flow rate was averaged over a longer period (4 hours) and not on a rolling basis to resolve differences between the wet- and dry-weather periods.

The estimated travel time of wastewater flow through each drainage area and between each temporary flow meter were considered to determine the peak hourly inflow rate in a downstream drainage area and the end of the direct inflow period. The travel time within a drainage area, where there was not an upstream drainage area, was calculated using the length of the longest sewer reach and the average velocity measured at the meter during the rain event. The approximate travel time between each temporary flow meter was calculated using the length from the upstream meter to the downstream meter and the average velocity measured at both meters during the rain event.

The peak hourly inflow rate was calculated by finding the maximum difference in the hourly average flow rate between the wet- and dry-weather periods during the storm and the period immediately after the storm when inflow from the drainage area is still being measured at the flow meter. The peak hourly inflow rate in a downstream drainage area was adjusted by subtracting the hourly inflow rate from the upstream drainage area at that time minus the travel time between the two flow meters.

Direct and delayed inflow volumes were calculated by integrating the hourly average flow rate during the wet- and dry-weather periods using the midpoint approximation. Briefly, the rolling-average hourly flow rates at the start and end of the time interval were averaged and then multiplied by the time interval (Equation 1).

$$\sum_{i=1}^{T} V_i = \frac{1}{2} * (Q_i + Q_{i-1}) * (t_i - t_{i-1}) \qquad Equation\ 1$$

$$Q = rolling\ average\ hourly\ flow\ rate\ (gpd)$$
$$t = time\ (days)$$
$$T = inflow\ period\ (days)$$
$$V = volume\ (gallons)$$

The inflow volume was determined by subtracting the dry-weather volume from the wet-weather volume. The direct inflow period was estimated for each drainage area as the period from the beginning of the storm until the time when the storm ended, plus the travel time within the drainage area. The delayed inflow period was estimated as the time

from when the direct inflow period ended to the time when the wet- and dry-weather hydrographs converged. Inflow volumes in downstream drainage areas were adjusted by subtracting the inflow volumes from upstream drainage areas.

To compare the inflow measured during a particular storm with inflow measured during other storms and in other communities, MassDEP requires that the measured inflow volumes and total rainfall amounts during the storm events under review be used to calculate the inflow during a standard storm event. The MassDEP I/I guidelines state that inflow should be calculated for the 1-year, 6-hour design storm, which has a total rainfall amount of 1.72 inches and a peak hourly intensity of 0.87 inches per hour. In the current study, a linear regression was fit between the measured direct inflow volumes and the total precipitation in each drainage area for the three rain events that were analyzed (Figures F4-1 to F4-7). The direct inflow volume in each drainage area for the 1-year, 6-hour design storm was calculated using the appropriate linear regression equation.

In accordance with Massachusetts Regulation 314 CMR 12.00, we also assessed the risk of sewer system overflows from a 5-year, 24-hour storm event. MassDEP has defined a 5-year, 24-hour storm event as an event with a total rainfall of 4.61 inches, a peak intensity of 1.0 inch/hour, and an average intensity of 0.19 inches/hour. Historical wastewater flow and rainfall data were reviewed to:

1. Identify storms that occurred in Belchertown that equal or exceed the 5-year, 24-hour design storm parameters.
2. Determine whether sanitary sewer overflows (SSOs) occurred during these storm events, based on Town records.

4.3.2 Results

A summary of the measured peak inflow rates and calculated inflow volumes for each sewer system drainage area is presented in Table 4-4. In addition, the estimated 1-year, 6-hour design storm inflow volume, calculated for each drainage area, except Drainage Area 8, is included in Table 4-4.

For the 5/25/17 storm, which was the largest and most intense rain event, the peak hourly inflow rate was highest in Drainage Areas 3 and 5. The predicted direct inflow volume for the design storm was highest in Drainage Area 3, and together Drainage Areas 3, 4, and 5 contribute more than 80% of the direct inflow to the Town's sewer system. The delayed inflow volume often was more than double the direct inflow volume in Drainage Areas 3, 4, and 5.

Based on a review of historical rainfall data, only one storm recorded over the last 10 years was greater than or equivalent to the 5-year, 24-hour design storm, as defined by the MassDEP. On September 7, 2008, 5.46 inches of rain fell. Historical precipitation data was only recorded daily, so the hourly intensity could not be determined. Based on input from Town staff, no SSOs occurred as a result of this rain event.

TABLE 4-4

Inflow Summary

Ranking	Drainage Area	Sewer Length (ft)	Peak Hourly Inflow Rate (gpd)			Measured Inflow Volume (gal)									Predicted Design Storm Inflow			
						Direct			Delayed			Total						
			5/5/17 Storm	5/13/17 Storm	5/25/17 Storm	5/5/17 Storm	5/13/17 Storm	5/25/17 Storm	5/5/17 Storm	5/13/17 Storm	5/25/17 Storm	5/5/17 Storm	5/13/17 Storm	5/25/17 Storm	Direct Inflow Volume (gal)	Direct Inflow Rate (gal/ft)	Percent of Direct Inflow Volume	Cumulative Percent Direct Inflow Volume
1	3	33,600	0	0	189,900	0	0	73,400	0	0	142,400	0	0	215,800	171,700	3.54	53%	53%
2	4	21,500	59,100	74,800	69,000	22,500	23,800	33,200	77,000	167,000	124,900	99,500	143,300	158,000	38,400	1.79	17%	71%
3	5	21,800	138,800	82,600	120,100	45,100	12,000	42,600	40,500	239,200	122,800	85,600	239,200	165,400	50,900	1.44	14%	85%
4	1	20,600	24,800	25,000	26,300	7,500	5,200	12,200	11,500	5,200	9,400	19,000	5,200	21,600	14,200	0.69	6%	91%
5	2	11,100	24,500	39,100	6,000	5,400	13,400	1,100	32,200	4,300	0	37,600	4,300	1,100	6,600	0.59	3%	94%
6	2	11,100	24,500	39,100	6,000	5,400	13,400	1,100	32,200	4,300	0	37,600	4,300	1,100	6,600	0.59	3%	97%
7	7	21,600	10,500	6,500	13,900	3,000	500	5,500	5,400	0	4,100	8,400	0	9,600	6,400	0.30	3%	100%
TOTAL	**--**	**141,300**	**282,200**	**267,100**	**431,200**	**88,900**	**68,300**	**169,100**	**198,800**	**420,000**	**403,600**	**287,700**	**396,300**	**572,600**	**294,800**	**--**	**100%**	**--**

Section 5
Recommendations

5.1 General

Tighe & Bond recommends that the Town of Belchertown proceed with the second phase of the I/I evaluation, the SSES. The SSES has two purposes: to identify and locate specific I/I sources in the drainage areas found to have excessive I/I during the I/I Analysis and to determine the cost effectiveness of removing those I/I sources. The following sections describe the recommended SSES tasks and implementation schedule.

5.2 SSES Fieldwork

The SSES would investigate infiltration, direct inflow, and delayed inflow. Tighe & Bond recommends investigating infiltration and direct inflow first and only investigating delayed inflow if the first two tasks to not identify sufficient I/I.

5.2.1 Identification of Infiltration Sources

Infiltration was determined to be excessive, in accordance with MassDEP's I/I Guidelines, in Drainage Area 5. We recommend a flow isolation gauging program, a manhole inspection program, and a television inspection program to identify infiltration sources and quantify their infiltration rate.

Manhole Inspections – A comprehensive manhole inspection program is recommended to evaluate manhole conditions, identify signs of I/I, and quantify the infiltration rate. This task would include all manholes in Drainage Area 5 that were not previously inspected as well as those inspected during 2008 that are not precast concrete, were found to be in fair or poor condition, or were found to have moderate to heavy I/I and have not been rehabilitated since then. In total, 67 manholes would be inspected in Drainage Area 5.

Flow Isolation Gauging – Flow isolation gauging is a more intensive flow monitoring program that would be performed to quantify infiltration within each manhole-to-manhole sewer reach. The infiltration rates measured during the SSES would be used to evaluate where I/I removal is cost-effective. Similar to the instantaneous flow monitoring program, the flow isolation gauging would be performed during the late night/early morning hours, when sanitary flow is minimal, using portable pre-calibrated weirs. The manhole just upstream of the sewer reach under review typically is plugged to more easily quantify infiltration. We recommend conducting flow isolation testing in all reaches in Drainage Area 5. The total length of pipe is 21,800 feet.

Sewer Television Inspections – A sewer television inspection program would be performed to determine the exact locations and sources of extraneous water entering the sewer system and subsequently the most appropriate sewer rehabilitation options. The television inspection work would be performed within the sewer reaches where excessive infiltration is identified through the flow isolation program. We estimate that the television inspection program would include approximately 10,900 feet of sewers in Drainage Area 5.

5.2.2 Identification of Direct Inflow Sources

Inflow was determined to be most significant in Drainage Areas 3, 4, and 5, and Tighe & Bond recommends additional investigations in these areas to identify inflow sources. This phase would target direct inflow sources because often they are easier to identify than are delayed inflow sources.

Manhole Inspections - A comprehensive manhole inspection program is recommended to evaluate manhole conditions, identify signs of I/I, and document whether drainage runoff can enter the sewer system through the manhole covers. I/I identified would be quantified during this task. This task would include all manholes in Drainage Areas 3 and 4 that were not previously inspected as well as those inspected during 2008 that are not precast concrete, were found to be in fair or poor condition, or were found to have moderate to heavy I/I and have not been rehabilitated since then. In total, 36 and 74 would be inspected in Drainage Areas 3 and 4, respectively. Manhole inspections in Drainage Area 5 are recommended as part of infiltration investigations.

Smoke Testing - Smoke testing would be performed throughout Drainage Areas 3, 4, and 5 by blowing smoke into isolated sewer reaches and then observing where smoke exits the ground or potential inflow sources. Direct inflow sources, such as catch basins and roof leaders, typically would be identified through this work. Observed inflow sources would be documented through reports and photographs, and their flow contribution would be estimated. Approximately 76,900 feet of sewer would be smoke tested during the SSES.

Rainfall Simulation – Dyed water testing would be performed to confirm potential inflow sources identified during smoke testing. This testing involves injecting dyed water into a potential inflow source, such as a yard drain or roof leader, and then observing whether the dyed water enters the sewer system. Additionally, dyed water flooding would be performed to locate potential cross-connections between sanitary sewers and storm drains by filling a plugged section of storm drain and then observing whether dyed water enters the sewer system. We estimate that dyed water testing would be performed at 60 sites and that dyed water flooding would be performed at 30 sites.

5.2.3 Identification of Delayed Inflow Sources

Delayed inflow sources can be difficult to identify and redirect, so Tighe & Bond recommends that the Town identifies direct inflow sources before investigating delayed inflow sources. If the I/I identified through direct inflow investigations correspond well to the I/I identified in the current study (i.e., the I/I Analysis), then delayed inflow investigations might not be necessary. Delayed inflow can be identified through building inspections, as described below.

Building Inspections – Building inspections would be performed by visiting each building within the drainage areas where additional investigations were determined to be warranted (within Drainage Areas 3, 4, and 5). Private inflow sources, such as sump pumps, basement drains, yard drains, and roof leaders that discharge to the sewer system, would be identified and their flow contribution would be estimated. Detailed inspection logs would be prepared. If additional inflow investigations are determined to be warranted in Drainage Areas 3, 4, and 5, then approximately 895 buildings would be inspected during the SSES.

5.3 Recommended SSES Schedule and Costs

During the SSES, the field work recommended above would be performed. The I/I identified would be totaled and compared to the I/I quantities measured during this Phase 1 evaluation to determine whether a substantial portion of the I/I in the areas of concern had been identified. The cost of improving the sewer system to eliminate the I/I sources would be compared to the cost of continuing to transport and treat the identified I/I. The field tasks, data evaluation, and recommended sewer system improvements would be presented in a detailed report.

Tighe & Bond recommends that SSES fieldwork be conducted over four years to fit within the Town's budget. Typically, infiltration investigations are performed during the spring when groundwater is higher, and inflow investigations are conducted during the late summer/ early fall when groundwater is lower. The follow-up investigations (i.e., TV inspection and dyed water testing) have been scheduled in the year after the initial fieldwork (i.e., flow isolation gauging and smoke testing) so that the initial data can be analyzed and the locations for follow-up testing can be determined.

The estimated costs of the recommended SSES tasks in the drainage areas with excessive I/I (per the MassDEP I/I Guidelines) are shown in Table 5-1. These estimates include infiltration investigations in Drainage Area 5 and inflow investigations in Drainage Areas 3, 4, and 5. The costs for sewer TV inspections and dyed water testing are estimates and could change based on flow isolation gauging and smoke testing results, respectively. The estimated cost is $225,500. Please note that these SSES project costs exclude traffic control costs.

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TABLE 5-1

Estimated SSES Costs

Task	Drainage Area(s)	Quantity	T&B Labor & Expenses	Subcontractor Cost	Total Cost
Year 1					
Meetings					$0
Manhole Inspections	3, 4, 5	177 Manholes	$2,500	$11,500	$14,000
Flow Isolation Gauging	5	21,800 feet	$2,500	$7,600	$10,100
Data Evaluation			$3,700		$3,700
Report Preparation			$5,100		$5,100
SUBTOTAL			**$13,800**	**$19,100**	**$32,900**
Year 2					
Sewer TV Inspections	5	10,900 feet	$2,500	$19,300	$21,800
Smoke Testing	3, 4, 5	76,900 feet	$3,100	$25,400	$28,500
Data Evaluation			$9,800		$9,800
Report Preparation			$8,500		$8,500
SUBTOTAL			**$23,900**	**$44,700**	**$68,600**
Year 3					
Dyed Water Testing	3, 4, 5	60 Testing/ 30 Flooding	$11,100	$16,500	$27,600
Building Inspections[1]	4	230 Bldgs	$1,500	$15,600	$17,100
Data Evaluation			$6,100		$6,100
Report Preparation			$11,800		$11,800
SUBTOTAL			**$30,500**	**$32,100**	**$62,600**
Year 4					
Building Inspections[1]	3, 5	665 Bldgs	$2,800	$45,200	$48,000
Data Evaluation			$4,900		$4,900
Report Preparation			$8,500		$8,500
SUBTOTAL			**$16,200**	**$45,200**	**$61,400**
TOTAL			**$84,400**	**$141,100**	**$225,500**

[1] Building inspections may not be necessary, depending on the amount of inflow identified in other tasks.

Appendix A
Town of Belchertown Sanitary Sewer System Map

Wastewater Collection System Map
Belchertown, Massachusetts

Channel Drive Odor Control Building

Town Beach Road Odor Control Building

Lake Holland

Arcadia Lake

Metacomet Lake

Metacomet Street Pump Station

Temporary Flow Meter

Temporary Flow Meter

36" Steel Sleeve for Gravity & Force Main

Bay Road Pump Station

Temporary Flow Meter

Temporary Flow Meter

Belchertown Water Reclamation Facility

Temporary Flow Meter

Twin 10" Siphons (PVC)

Temporary Flow Meter

See Detail B

See Detail A

Stadler Street Pump Station

Pine Valley Plantation Pump Station

Temporary Flow Meter

River Street Pump Station

Permanent Meter

1

2

3

4

5

6

7

8

Detail A
1"=100'

BERKSHIRE AVENUE

WHITLOCK WAY

Detail B
1"=50'

HOWARD STREET

South End Sewer District
1"=150'

Franklin St

Depot St

Keys Ave

River St

Swift River

Location Indicator

Map Extent

HADLEY
AMHERST
NEW SALEM
PETERSHAM
HARDWICK
SOUTH HADLEY
GRANBY
WARE
South End Sewer District
CHICOPEE
LUDLOW
PALMER
WARREN
BRIMFIELD

Legend

- Gravity Main
- Force Main
- Low Pressure
- Siphon
- Air Release Vault
- Clean-Out Vault
- Sewer Manhole
- Inspected Manholes
- Parcel Boundary
- Building Footprints
- Pump Station
- Odor Control Building
- Belchertown Water Reclamation Facility (WRF)
- Wetlands
- Waterbodies
- Open Space
- Railroads
- Sewershed Boundary

(#) Sewershed Number

Pipe Materials

ASB = Asbestos Cement DI = Ductile Iron
PVC = Polyvinyl Chloride VC = Vitrified Clay
TRUSS = Armco Truss Pipe (PVC)

N

0 1,200 2,400 Feet

Notes: Wetland, Parcels, Waterbodies and Open Space data provided by MassGIS. Data valid as of November 2017.

Tighe&Bond
Engineers | Environmental Specialists

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Appendix B
Historical Belchertown Water Reclamation Facility Flow and Rainfall Figures

FIGURE B-1

Belchertown Water Reclamation Facility Flow Summary - 2012

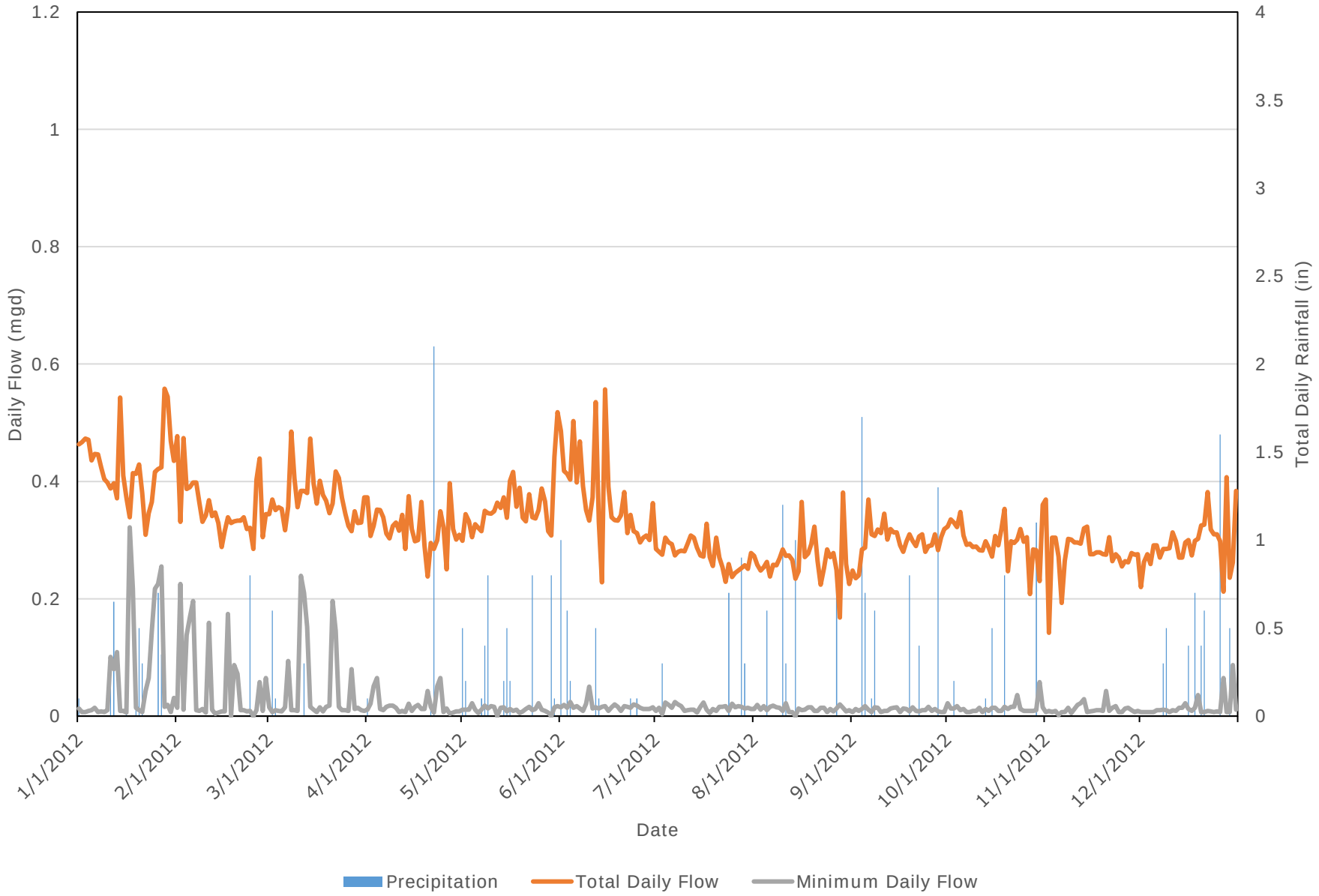


FIGURE B-2

Belchertown Water Reclamation Facility Flow Summary - 2013

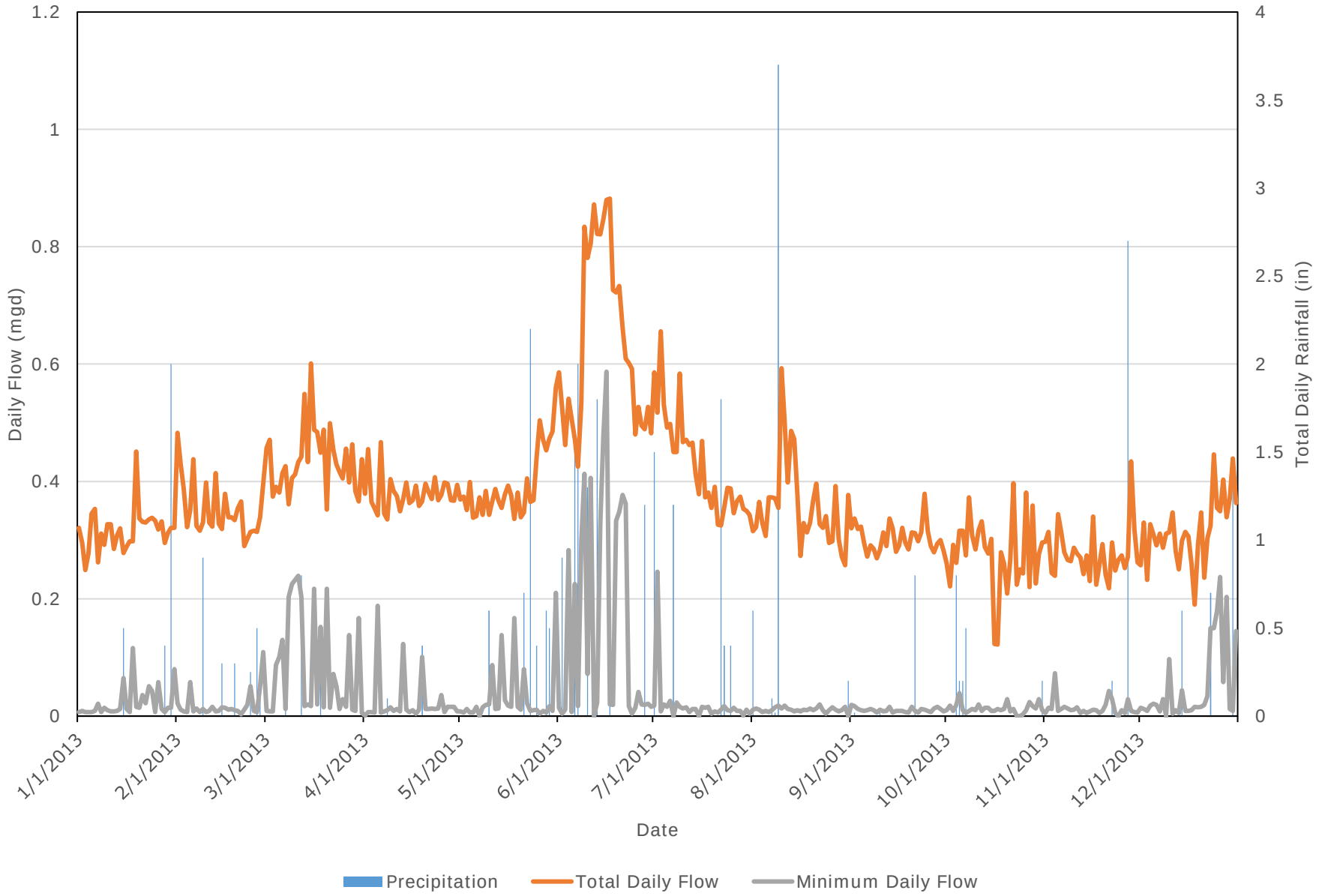


FIGURE B-3

Belchertown Water Reclamation Facility Flow Summary - 2014

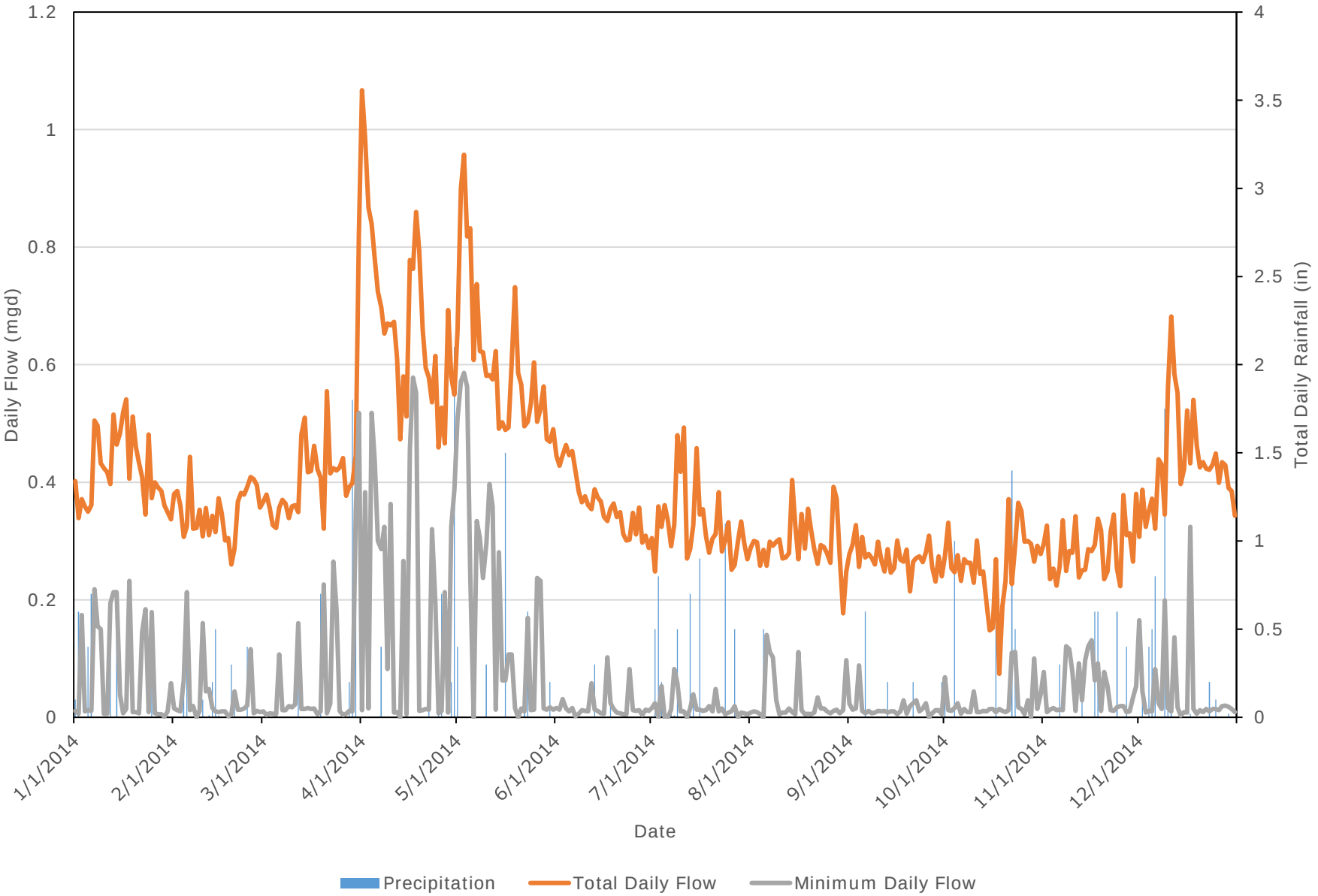


FIGURE B-4

Belchertown Water Reclamation Facility Flow Summary - 2015

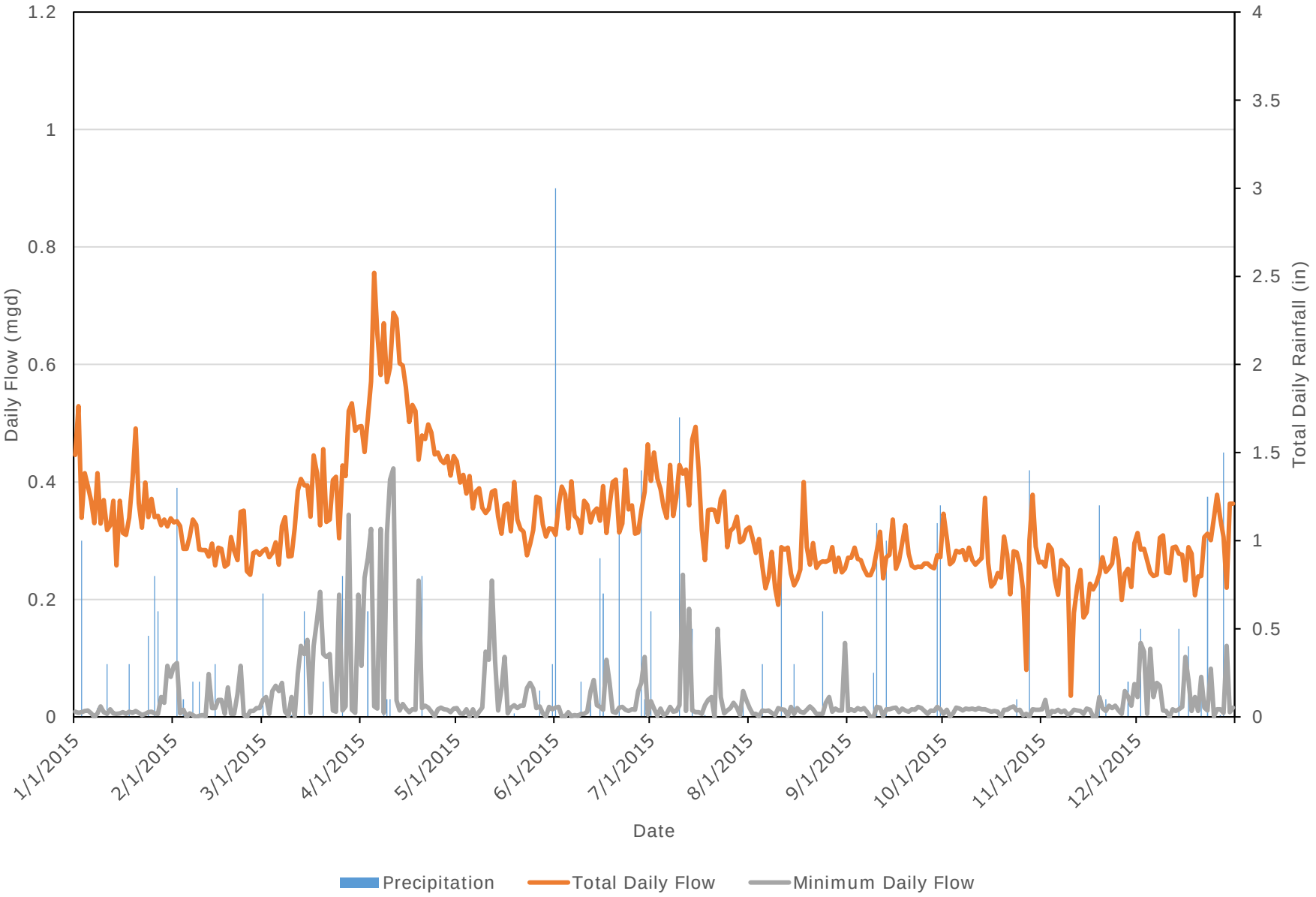
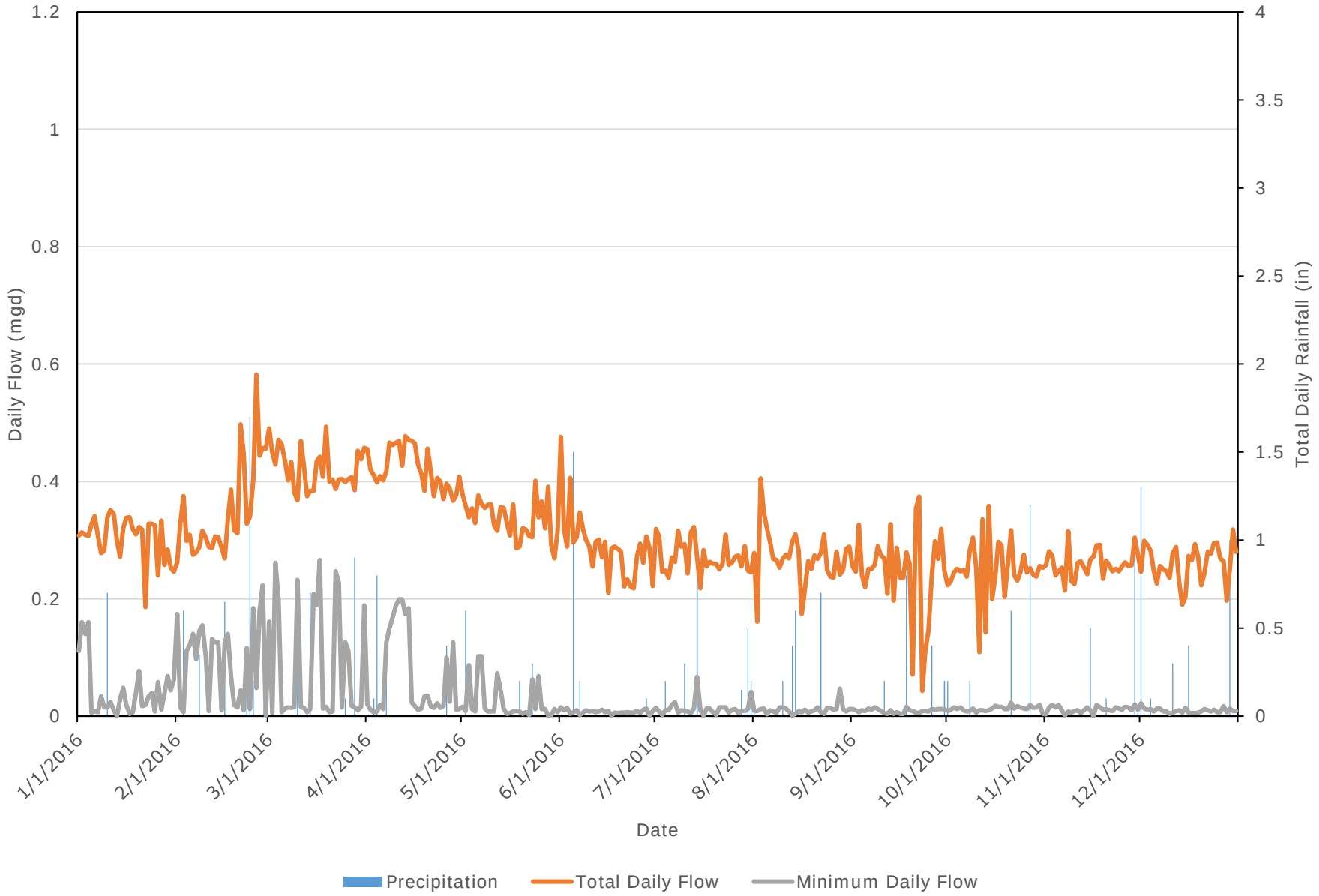


FIGURE B-5

Belchertown Water Reclamation Facility Flow Summary - 2016



Appendix C
Manhole Inspection Logs

MH_ID	Area	Location	Inspection Date	Material	Cover Condition	Frame Condition	Wall Condition	Steps Condition	Table Condition	Invert Condition	I/I through Cover	I/I through Walls	I/I in Other Areas?	Signs of Surcharging?	Repair Date	Repair Comments
SMH-099	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-100	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	None	None	Light, Through Brick Risers	No		
SMH-101	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Frame	No		
SMH-102	3	George Hannum Street	8/27/15	Precast	Good	Good	Fair	Good	Good	Good	None	None		No	8/27/15	Replaced frame and cover
SMH-103	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-104	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Frame	No		
SMH-106	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Frame	Yes, Chimney Causes Backup		
SMH-108	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-110	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-112	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-114	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-116	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Risers	No		
SMH-118	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Risers	No		
SMH-120	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Risers	No		
SMH-121	3	Lord Jeffrey	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Risers	No		
SMH-122	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Risers	No		
SMH-124	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	Light	Light, Around Risers	No		
SMH-126	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-128	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-130	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Risers	No		
SMH-131	3	Federal Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-132	3	Federal Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Moderate	Light		No		
SMH-134	3	Federal Street	4/1/08	Brick	Good	Good	Bad	N/A	Good	Good	Light	Light		No		
SMH-135	3	Federal Street	4/1/08	Concrete Block	Good	Good	Fair	N/A	Good	Good	Light	Light		No		
SMH-136	3	Federal Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Moderate	Moderate		No		
SMH-138	3	North Main Street In Front Of Mobile	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-140	3	North Main Street In Front Of Mobil	3/25/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		

MH_ID	Area	Location	Inspection Date	Material	Cover Condition	Frame Condition	Wall Condition	Steps Condition	Table Condition	Invert Condition	I/I through Cover	I/I through Walls	I/I in Other Areas?	Signs of Surcharging?	Repair Date	Repair Comments
SMH-141	4	Off Sargent Street	3/18/08	Precast	Good	Good	Good	N/A	Good	Good	None	None		No		
SMH-142	4	Off Sargent Street	3/18/08	Brick	Good	Good	Fair	Fair	Fair	Fair	Light	Light		Yes, Heavy Grease		
SMH-143	4	Off Sargent Street	3/18/08	Precast	Good	Good	Good	N/A	Good	Good	None	None		No		
SMH-144	4	Chadbourne Road	3/18/08	Brick	Good	Good	Good	N/A	Good	Good	None	None		No		
SMH-145	4	Off Sargent Street	3/18/08	Precast	Good	Good	Good	N/A	Good	Good	None	None		No		
SMH-146	4	Lloyd Avenue	3/18/08	Concrete Block	Good	Good	Good	N/A	Good	Good	Light	Light		Yes		
SMH-148	4	Chadbourne Road	3/18/08	Concrete Block	Fair	Fair	Bad	N/A	Bad	Bad	Light	Moderate		No		
SMH-150	4	Cross Country From Woodhaven Drive	3/18/08	Brick	Good	Good	Good	N/A	Good	Good	Light	Light		No		
SMH-152	4	Cross Country From Woodhaven Drive	3/18/08	Brick	Good	Good	Good	N/A	Good	Good	None	None		No		
SMH-154	4	Woodhaven Drive	1/16/18	Brick	Good	Good	Bad	N/A	Bad	Bad	Moderate	Moderate		No		
SMH-155	4	Woodhaven Drive	1/16/18	Brick	Good	Good	Bad	N/A	Bad	Bad	Light	Moderate		Yes, Already Flowing Full	1/16/18	Replaced pipe section, raised and new asphalt
SMH-157	4	Cross Country From Mill Hollow Estates	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Moderate		Yes, Surcharged		
SMH-158	4	Cross Country From Mill Hollow Estates	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Moderate		No		
SMH-160	4	Cross Country From Mill Hollow Estates	3/11/08	Brick	Good	Good	Good	N/A	Good	Good	Light	Light		No		
SMH-162	4	Mill Hollow Estates	3/11/08	Precast	Good	Good	Good	N/A	Good	Good	Light	None		No		
SMH-163	4	Mill Hollow Estates	1/16/18	Brick	Good	Good	Bad	N/A	Fair	Bad	Light	Light		Yes	1/16/18	Repaired and replaced upper brick courses
SMH-164	4	Mill Hollow Estates	3/18/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Light		No, Shelf Is Wet		
SMH-168	4	Mill Hollow Estates	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	None		Yes		
SMH-170	4	East Walnut Street	3/4/08	Brick	Good	Good	Good	N/A	Good	Good	Moderate	Light		No		
SMH-172	4	East Walnut Street	3/4/08	Brick	Good	Good	Bad	N/A	Bad	Bad	Light	Moderate	Moderate, Bottom Of Walls	Yes, Debris		
SMH-174	4	Jabish Street	3/4/08	Brick	Good	Good	Bad	Bad	Bad	Bad	Light	Moderate		No		
SMH-176	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Moderate		No		
SMH-180	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Moderate		No		
SMH-182	4	Cross Country From Mill Valley Road	3/11/08	Precast	Good	Good	Good	N/A	Good	Good	None	Moderate		No		
SMH-184	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Good	N/A	Good	Good	Light	Moderate		Yes, Moderate Debris		
SMH-186	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Fair	N/A	Bad	Bad	Light	Moderate		Yes, Moderate Debris		

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SMH-188	4	Cross Country From Mill Valley Road	8/1/13	Brick	Good	Good	Bad	N/A	Bad	Bad	None	Heavy		Yes	8/1/13	Raised frame and cover, remortared
SMH-190	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Light		Yes, Shelf Is Wet		
SMH-192	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Moderate		Yes, Debris On Shelf		
SMH-194	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Light		No		
SMH-196	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Moderate		Yes		
SMH-198	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Trace	Shelf & Wall Seam	No		
SMH-200	4	Valley Road & Fuller Street	3/25/08	Brick	Good	Good	Fair	Fair	Fair	Fair	Light	Light		No		
SMH-202	4	Valley Road & Fuller Street	11/10/15	Precast	Good	Good	Good	Good	Good	Good	None	None		No	11/10/15	Replaced structure and line
SMH-204	4	Mill Valley Road	11/10/15	Precast	Good	Good	Good	Good	Good	Good	None	None		No	11/10/15	Replaced structure and line
SMH-206	4	Mill Valley Road	11/10/15	Precast	Good	Good	Good	Good	Good	Good	None	None		No	11/10/15	Replaced structure and line
SMH-208	4	South Main Street	11/10/15	Precast	Good	Good	Good	Good	Good	Good	None	None		No	11/10/15	Replaced structure and line
SMH-212	4	South Main Street	11/10/15	Precast	Good	Good	Good	Good	Good	Good	None	None		No	11/10/15	Replaced structure and line
SMH-214	4	South Main Street	11/10/15	Precast	Good	Good	Good	Good	Good	Good	None	None		No	11/10/15	Replaced structure and line
SMH-216	4	South Main Street	11/10/15	Precast	Good	Good	Good	Good	Good	Good	None	None		No	11/10/15	Replaced structure and line
SMH-218	4	South Main Street	11/10/15	Precast	Good	Good	Good	Good	Good	Good	None	None		No	11/10/15	Replaced structure and line
SMH-220	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Fair	Good	Good	Good	Good	Light	Light		No		
SMH-222	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Through Hoist Holes	No		
SMH-224	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-226	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-228	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	Light	Light, Through Seams	No		
SMH-230	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-231	3	Howe Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-232	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-234	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-236	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light Around Risers	No		
SMH-238	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Moderate	None		No		
SMH-240	3	Cross Country From Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	Light		No		

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SMH-242	3	Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-244	3	Atherton Lane	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-246	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-248	3	Prescott Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-250	3	Prescott Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-252	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-254	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light between Risers & Precast	No		
SMH-258	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-260	3	Clark Street	3/20/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-262	3	Clark Street	3/20/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-264	3	Greenwich Hill	3/20/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-270	3	Greenwich Hill	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Risers	No		
SMH-272	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-274	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-278	3	Street & Atherton Lane	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-280	3	George Hannum Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-282	3	Greenwich Hill	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Risers	No		
SMH-284	3	Greenwich Hill	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	Moderate	Moderate, Around Risers	No		
SMH-286	3	Greenwich Hill	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Risers	0		
SMH-288	3	Greenwich Hill	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	Light	Light, Around Risers	0		
SMH-290	3	Greenwich Hill	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-292	3	Greenwich Hill	3/20/08	Precast	Good	Good	Good	Good	Good	Good	None	None	Light Around Risers	No		
SMH-294	3	Dana Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	Light		No		
SMH-296	3	Dana Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	Light		No		
SMH-298	3	Intersection of Clark Street & Dana Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	Light		No		
SMH-300	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-302	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	Light		No		

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SMH-304	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	Light		No		
SMH-306	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	Light		No		
SMH-308	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	Light		No		
SMH-310	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-312	3	Clark Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-314	3	Intersection of Clark Street & Dana Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-316	3	Dana Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	Light		No		
SMH-318	3	Dana Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-320	3	Dana Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-324	3	Dana Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-326	3	Dana Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	Light		No		
SMH-328	3	Dana Hill	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-330	3	Clark Street & Newton Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	Light		No		
SMH-332	3	Newton Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-334	3	Newton Street	4/1/08	Precast	Good	Good	Good	N/A	Good	Good	Trace	None		No		
SMH-336	3	Newton Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	Trace	None		No		
SMH-338	3	Cross Country From Federal Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-340	3	Cross Country From Federal Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-342	3	Cross Country From Federal Street	8/10/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No	8/10/08	Injected and remortared
SMH-344	3	Cross Country From Federal Street	8/10/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No	8/10/08	Installed a short liner at SMH boot
SMH-345	3	Westview Drive	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-346	3	Cross Country From Westview Drive	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-347	3	Westview Drive	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-348	3	Westview Drive	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-349	3	Westview Drive	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-350	3	Cross Country From Federal Street	3/18/08	Block with Grout	Fair	Fair	Fair	Fair	Bad	Bad	None	None		No		
SMH-351	3	Westview Drive	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	Light		No		

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SMH-352	3	Cross Country From Federal Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-353	3	Westview Drive	3/25/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-354	3	Cross Country From Federal Street	3/18/08	Block with Grout	Good	Good	Good	N/A	Good	Good	Light	None		No		
SMH-355	3	Westview Drive	3/25/08	Precast	Good	Good	Good	Good	Good	Good	None	None	Moderate, Through Risers	No		
SMH-356	3	Federal Street & Westview Drive	3/18/08	Block with Grout	Fair	Bad	Fair	N/A	Good	Fair	Light	None		No		
SMH-357	3	Westview Drive	3/25/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-358	3	Federal Street	3/25/08	Brick	Fair	Fair	Fair	N/A	Bad	Bad	Light	Light	Light, Around Shelf	No		
SMH-360	3	Westview Drive & Federal Street	3/25/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-362	3	Federal Street	3/25/08	Concrete Block	Fair	Fair	Good	Good	Good	Good	Light	Light		No		
SMH-365	3	Federal Street	3/25/08	Concrete Block	Fair	Fair	Good	Good	Good	Good	Light	Light		No		
SMH-366	3	Federal Street	3/25/08	Concrete Block	Fair	Fair	Good	Good	Good	Good	Light	Light		No		
SMH-368	3	Federal Street	3/25/08	Concrete Block	Fair	Fair	Good	Good	Good	Good	Light	None		No		
SMH-370	3	Pelham Road	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-372	3	Pelham Road	8/19/14	Precast	Fair	Good	Fair	Fair	Fair	Good	Light	None		No	8/19/14	Injected and remortared
SMH-374	3	Pelham Road	3/18/08	Precast	Fair	Good	Good	Good	Good	Good	Light	Heavy		No		
SMH-376	3	Pelham Road	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-380	3	North Main Street Behind Mobil	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Frame	No		
SMH-382	4	Lloyd Avenue	3/18/08	Concrete Block	Good	Good	Good	N/A	Good	Good	Light	Light		No		
SMH-384	4	Woodhaven Drive	8/1/17	Concrete Block	Good	Good	Good	N/A	Good	Good	None	Light		No	8/1/17	Replaced frame, cover, and 3 courses of brick
SMH-387	4	East Walnut Street	3/25/08	Brick	Good	Good	Fair	Fair	Fair	Fair	Light	Light	Light, Around Shelf	No		
SMH-396	4	East Walnut Street	3/25/08	Brick	Good	Good	Fair	Fair	Fair	Fair	Light	Light	Light, Around Bottom of Walls	No		
SMH-398	4	East Walnut Street	3/25/08	Brick	Good	Good	Fair	Fair	Fair	Fair	Light	Light		No		
SMH-400	4	Cottage Street	8/27/15	Brick	Good	Good	Fair	N/A	Bad	Bad	None	Light		Yes	8/27/15	Replaced frame and cover
SMH-402	4	Cottage Street	8/27/15	Brick	Good	Good	Fair	N/A	Bad	Bad	None	None		Yes	8/27/15	Replaced frame and cover
SMH-404	4	Cottage Street	8/27/15	Brick	Good	Good	Good	N/A	Good	Good	None	Light		No	8/27/15	Replaced frame and cover
SMH-406	4	East Walnut Street	11/15/17	Brick	Good	Good	Fair	N/A	Bad	Bad	None	None		No	11/15/17	Replaced cover

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SMH-408	4	Park Street	4/1/08	Brick	Good	Good	Fair	N/A	Bad	Bad	Light	None		Yes, Moderate Debris		
SMH-500	4	Jabish Street, Turn Around	7/1/15	Brick	Good	Good	Fair	N/A	Bad	Bad	None	Moderate	Moderate Around Shelf	Yes, Debris	7/1/15	Replaced frame, cover, and 4 courses of brick
SMH-502	4	Jabish Street	3/4/08	Brick	Good	Good	Good	N/A	Bad	Bad	Moderate	Light		No		
SMH-504	4	Jabish Street	3/4/08	Brick	Good	Good	Bad	N/A	Bad	Bad	Moderate	Light		No		
SMH-506	4	Jabish Street	3/4/08	Brick	Good	Good	Bad	N/A	Bad	Bad	Light	Light		No		
SMH-508	4	Jabish Street	3/4/08	Brick	Good	Good	Bad	N/A	Bad	Bad	Light	Moderate		No		
SMH-509	4	Jabish Street	9/1/17	Brick	Good	Good	Fair	N/A	Bad	Bad	None	Moderate		No		Located. Raised and replaced frame and cover
SMH-510	4	Intersection Of Jabish Street & Park Street	7/1/14	Brick	Good	Good	Bad	N/A	Bad	Bad	None	Moderate		No	7/1/14	Replaced frame and cover
SMH-512	4	Park Street	3/4/08	Brick	Good	Good	Bad	N/A	Bad	Bad	Light	Moderate		No		
SMH-518	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Light		Yes		
SMH-520	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Good	N/A	Good	Good	Light	None		No		
SMH-521	4	Cross Country From Mill Valley Road	1/16/18	Precast	Good	Good	Good	Good	Good	Good	Light	Trace		No		
SMH-522	4	Cross Country From Mill Valley Road	3/11/08	Brick	Good	Good	Bad	N/A	Bad	Bad	Light	Moderate		No		
SMH-523	4	Everett Avenue	3/25/08	Precast Concrete	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-524	4	Everett Avenue	3/11/08	Block	Good	Good	Fair	N/A	Fair	Fair	Trace	None		No		
SMH-525	4	Everett Avenue	3/11/08	Concrete Block	Good	Good	Bad	N/A	Bad	Bad	Light	None		No		
SMH-526	4	Everett Avenue	8/1/15	Brick	Good	Good	Bad	N/A	Bad	Bad	None	Moderate		No	8/1/15	Replaced frame and cover
SMH-527	4	Everett Avenue	3/11/08	Concrete Block	Good	Good	Fair	Good	Good	Good	Light	Light		No		
SMH-528	4	Everett Avenue	8/1/15	Brick	Good	Good	Bad	N/A	Bad	Bad	None	Light		No	8/1/15	Replaced frame and cover
SMH-530	4	Everett Avenue	8/1/15	Brick	Good	Good	Bad	N/A	Bad	Bad	None	Moderate		Yes, Debris on Shelf	8/1/15	Replaced frame and cover
SMH-532	4	Everett Avenue	8/1/15	Brick	Good	Good	Bad	N/A	Bad	Bad	None	Trace		No	8/1/15	Replaced frame and cover
SMH-540	4	Fuller Street	3/11/08	Brick	Good	Good	Fair	N/A	Bad	Fair	Trace	Light		No		
SMH-542	4	Fuller Street	3/18/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Light		No		
SMH-544	4	Fuller Street	3/11/08	Brick	Good	Good	Fair	N/A	Fair	Fair	Light	Light		Yes, Moderate Debris		
SMH-546	4	North Washington Street	3/25/08	Brick	Good	Good	Bad	Fair	Fair	Fair	Light	Light	I/I around base	No		
SMH-548	4	North Washington Street	3/25/08	Brick	Good	Good	Fair	Fair	Fair	Fair	Light	Light		No		

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SMH-550	4	North Washington Street	3/25/08	Brick	Good	Good	Fair	Fair	Bad	Bad	Light	Light	I/I around bottom of wall	No		
SMH-600	5	Off Jackson, DPW Yard	4/8/08	Precast	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-602	5	Off Jackson, DPW Yard	4/8/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-603	5	Off Jackson, DPW Yard	4/8/08	Precast	Good	Good	Good	Good	Good	Fair	None	None		No		
SMH-604A	5	Jackson Street Near DPW	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-626	5	Cross Country From Howard Street	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-630	5	Cross Country From Howard Street	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-631	5	Jackson Street	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-632	5	Cross Country From Howard Street	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-633	5	Jackson Street & Howard Street		Precast	Good	Good	Good	Good	Good	Good	None	None				
SMH-634	5	Cross Country From Howard Street	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-636	5	Cross Country From Howard Street	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-637	5	Howard Street, Hse #75	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-638	5	Howard Street, Hse #45	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-639	5	Howard Street	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-640	5	Howard Street, Hse #38	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Injected around pipes and holes
SMH-642	5	Howard Street, Hse #32	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-644	5	Howard Street, Hse #24	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-646	5	Howard Street, Hse #18	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-648	5	End Of Howard Street	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Replaced
SMH-649	5	In Yard on Maple Street, Hse #71	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Added during Howard St. Sewer Replacement
SMH-651	5	In Yard on Maple Street, Hse #71	8/15/08	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/08	Added during Howard St. Sewer Replacement
SMH-652	6	State Street, Hse #71	3/11/08	Concrete Block	Good	Good	Fair	N/A	Fair	Fair	None	None		No		
SMH-654	5	Cross Country From Springfield Road	3/18/08	Concrete Block	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-656	5	Cross Country From Springfield Road	3/11/08	Concrete Block	Good	Good	Fair	N/A	Fair	Fair	None	Light	Around Service Pipe	Yes		
SMH-658	5	Cross Country From Springfield Road	3/11/08	Concrete Block	Good	Good	Good	Good	Good	Good	None	Moderate	Shelf Is Wet	No		

MH_ID	Area	Location	Inspection Date	Material	Cover Condition	Frame Condition	Wall Condition	Steps Condition	Table Condition	Invert Condition	I/I through Cover	I/I through Walls	I/I in Other Areas?	Signs of Surcharging?	Repair Date	Repair Comments
SMH-660	5	Cross Country From Springfield Road	3/11/08	Concrete Block	Good	Good	Good	N/A	Good	Good	None	Light		Yes		
SMH-662	5	Cross Country From Springfield Road	3/11/08	Concrete Block	Good	Good	Good	N/A	Good	Good	None	Light	Outlet pipe goes through groundwater the entire way	Yes		
SMH-664	5	Cross Country From Springfield Road	3/11/08	Concrete Block	Good	Good	Good	N/A	Good	Good	None	None		No		
SMH-666	5	Cross Country From Springfield Road	3/11/08	Concrete Block	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-668	5	Cross Country From Springfield Road	3/11/08	Concrete Block	Good	Good	Good	N/A	Good	Good	None	Moderate		No		
SMH-670	5	Cross Country From Springfield Road	3/11/08	Concrete Block	Good	Good	Good	N/A	Good	Good	None	Light		No		
SMH-672	5	Cross Country From Springfield Road	3/11/08	Concrete Block	Good	Good	Good	N/A	Good	Good	None	Light		No		
SMH-674	5	Springfield Road	3/11/08	Concrete Block	Good	Good	Good	N/A	Fair	Fair	Light	Light		Yes, Moderate Debris		
SMH-676	5	Springfield Road	3/11/08	Concrete Block	Good	Good	Good	N/A	Good	Good	Light	Light		No		
SMH-678	5	Springfield Road	3/25/08	Concrete Block	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-680	5	Springfield Road	3/25/08	Concrete Block	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-682	5	Springfield Road	3/25/08	Concrete Block	Good	Good	Good	N/A	Fair	Fair	Light	Light		No		
SMH-684	5	Springfield Road	3/25/08	Concrete Block	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-686	4	Springfield Road	3/25/08	Brick Riser	Good	Good	Good	N/A	Good	Good	Light	None		No		
SMH-688	5	Jackson Street	8/15/14	Precast	Good	Good	Good	Good	Good	Good	None	None			8/15/14	Replaced
SMH-692	5	Jackson Street	3/25/08	Brick	Fair	Good	Fair	Fair	Fair	Fair	Light	Light		Yes, Debris		
SMH-694	5	Jackson Street	3/25/08	Brick	Fair	Fair	Fair	Fair	Fair	Fair	Light	Light		No		
SMH-696	5	Jackson Street	3/25/08	Brick	Fair	Good	Fair	N/A	Fair	Fair	Light	Light		No		
SMH-698	5	Jackson Street	3/25/08	Brick	Bad	Good	Bad	Bad	Bad	Bad	Light	Moderate		No		
SMH-700	5	Jackson Street	3/25/08	Brick	Bad	Good	Bad	Bad	Bad	Bad	Light	Light		No		
SMH-702	5	Jackson Street	3/25/08	Brick	Fair	Fair	Bad	Bad	Bad	Bad	Light	Moderate	Light, Around Pipes	No		
SMH-703	5	Main Street & Jackson Street	3/4/08	Brick	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-704	3	North Main Street @ Fire Fighter Museum	5/20/08	Brick	Good	Good	Bad	N/A	Good	Good	None	Light		No	5/20/08	Replaced frame, cover, and 4 courses of brick
SMH-705	3	North Main Street	3/4/08	Brick	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-706	3	North Main Street	5/20/08	Brick	Good	Good	Bad	N/A	Bad	Good	None	Light		No	5/20/08	Replaced frame, cover, and 4 courses of brick

MH_ID	Area	Location	Inspection Date	Material	Cover Condition	Frame Condition	Wall Condition	Steps Condition	Table Condition	Invert Condition	I/I through Cover	I/I through Walls	I/I in Other Areas?	Signs of Surcharging?	Repair Date	Repair Comments
SMH-710	3	North Main Street, Hse #55	5/20/08	Brick	Good	Good	Bad	N/A	Good	Good	None	Light		No	5/20/08	Replaced frame, cover, and 4 courses of brick
SMH-712	3	North Main Street	5/20/08	Brick	Good	Good	Bad	N/A	Bad	Bad	None	Moderate		No	5/20/08	Replaced frame and cover. Remortarted in 2014
SMH-714	3	Main Street & Jonquil Estates	3/4/08	Brick	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-716	3	Main Street & Tucker Lane	3/4/08	Precast	Good	Good	Good	Good	Good	Good	Light	Light		No		
SMH-718	3	North Main Street	5/20/08	Brick	Good	Good	Fair	N/A	Good	Good	None	Light		No	5/20/08	Replaced frame, cover, and 4 courses of brick
SMH-721	3	Lloyd Avenue	3/18/08	Concrete Block	Good	Good	Good	N/A	Good	Good	Light	Light		No		
SMH-722	3	North Main Street @ Subway	3/4/08	Brick	Good	Good	Good	N/A	Good	Good	Light	Light		No		
SMH-724	3	Main Street & Sargent Street	3/4/08	Brick	Good	Good	Good	N/A	Good	Good	Light	Light		No		
SMH-726	5	Cold Springs Commons	4/8/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-728	5	Cold Springs Commons	4/8/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Shelf Is Wet	No		
SMH-750	5	North Main Street	3/4/08	Brick	Good	Good	Good	Good	Bad	Good	Light	Light		No		
SMH-752	5	North Main Street	3/4/08	Brick	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-754	5	Main Street & Maple Street	3/4/08	Brick	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-756	4	Woodhaven Drive	3/18/08	Concrete block	Good	Good	Good	N/A	Fair	Fair	Light	Light		No		
SMH-758	3	Tucker Lane	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Frame	No		
SMH-760	3	Tucker Lane	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Light, Around Frame	No		
SMH-762	3	Tucker Lane	3/25/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-764	3	Off North Main Street, Behind Subway	4/1/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-766	3	Off North Main Street, Next To CVS	4/1/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-770	5	Maple Street, Hse #58	3/4/08	Brick	Good	Good	Good	N/A	Good	Good	Light	Trace		No		
SMH-772	5	Maple Street	3/4/08	Brick	Good	Good	Fair	N/A	Bad	Good	Moderate	Moderate	Moderate, Around Pipes	Moderate Debris		
SMH-780	5	Maple Street	3/4/08	Brick	Good	Good	Fair	N/A	Bad	Bad	Moderate	Light		No		
SMH-782	5	Maple Street, Beers & Story	7/1/14	Brick	Good	Good	Bad	N/A	Bad	Bad	None	Moderate	Light, Through Shelf	Yes, Heavy Debris	7/1/14	Replaced frame and cover
SMH-784	5	Off Maple Street	4/1/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-840	6	Near Police On State Street	3/20/08	Precast	Good	Good	Good	Good	Bad	Bad	Light	None		Yes		

MH_ID	Area	Location	Inspection Date	Material	Cover Condition	Frame Condition	Wall Condition	Steps Condition	Table Condition	Invert Condition	I/I through Cover	I/I through Walls	I/I in Other Areas?	Signs of Surcharging?	Repair Date	Repair Comments
SMH-846	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-848	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-850	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	Light		No		
SMH-852	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	Trace		No		
SMH-854	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-856	6	Stadler Street	3/18/08	Precast	Good	Fair - Cracked	Good	Good	Good	Good	None	None		No		
SMH-858	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-860	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-862	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-863	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-865	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-868	6	Near Day Care On State Street	3/20/08	Precast	Good	Good	Good	Good	Good	Good	None	None	Light, Around Risers	No		
SMH-870	6	Near Day Care On State Street	3/20/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-874	6	Near School On State Street	3/20/08	Precast	Good	Good	Good	Good	Good	Good	Light	None		No		
SMH-875	6	Near School On State Street	3/20/08	Precast	Good	Good	Bad	Good	Good	Good	Light	Moderate		No		
SMH-876	6	Near School On State Street	3/20/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-884	6	Near Day Care On State Street	3/20/08	Concrete Block	Fair	Fair	Fair	Fair	Fair	Fair	Moderate	Light		No		
SMH-886	6	Near Day Care On State Street	3/20/08	Concrete Block	Good	Good	Bad	Bad	Bad	Bad	None	None		No		
SMH-888	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-892	6	Stadler Street	3/18/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-900	5	Cold Springs Commons	4/8/08	Precast	Good	Good	Good	Good	Good	Good	None	None		No		
SMH-901	5	Cross Country From Cold Springs Commons	4/8/08	Precast	Good	Good	Good	Good	Good	Good	Light	None	Moderate, Dripping Around Risers	No		

Appendix D
Wastewater Flow and Rainfall Summary Figures

FIGURE D-1
Meter 1 Continuous Flow Monitoring Summary

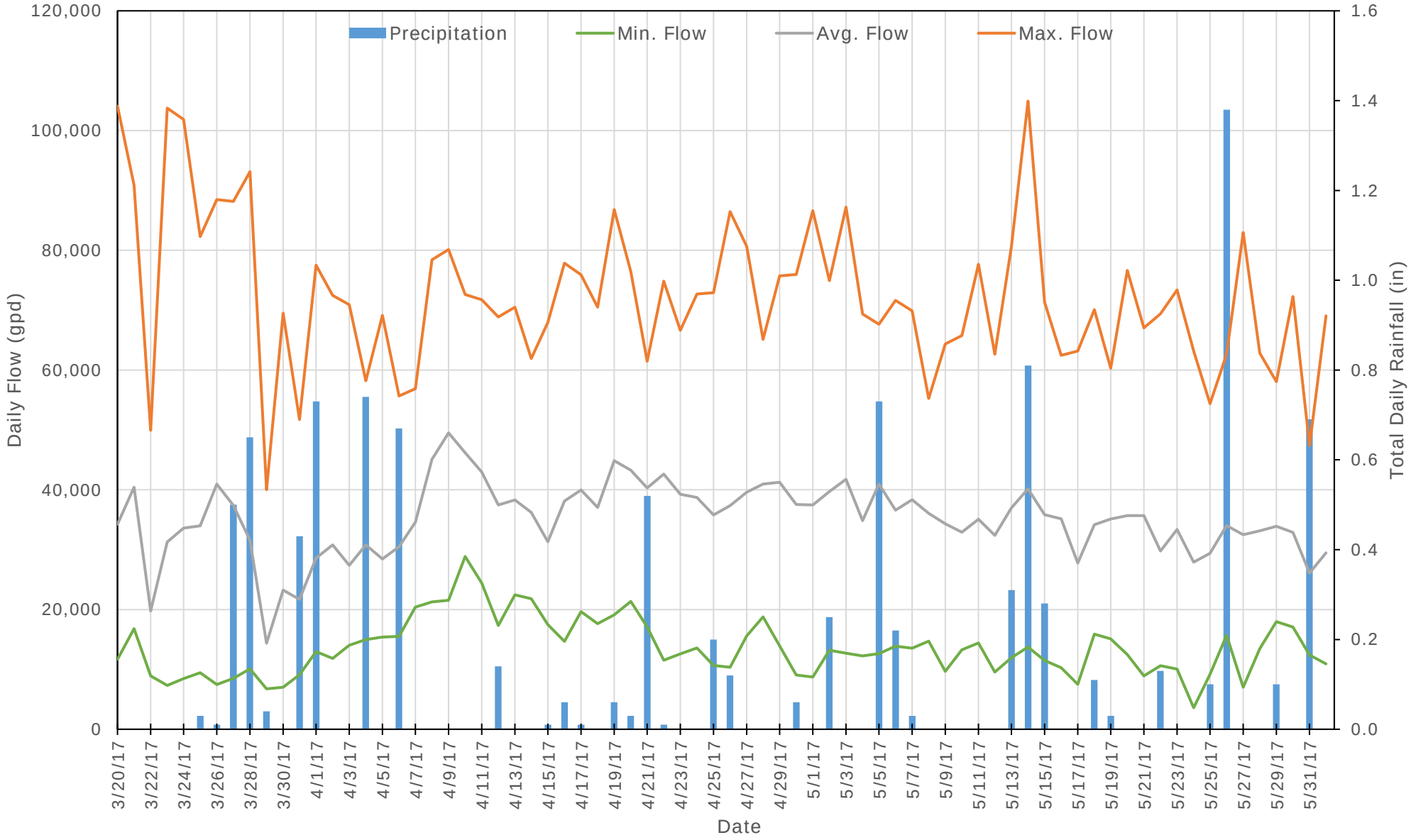
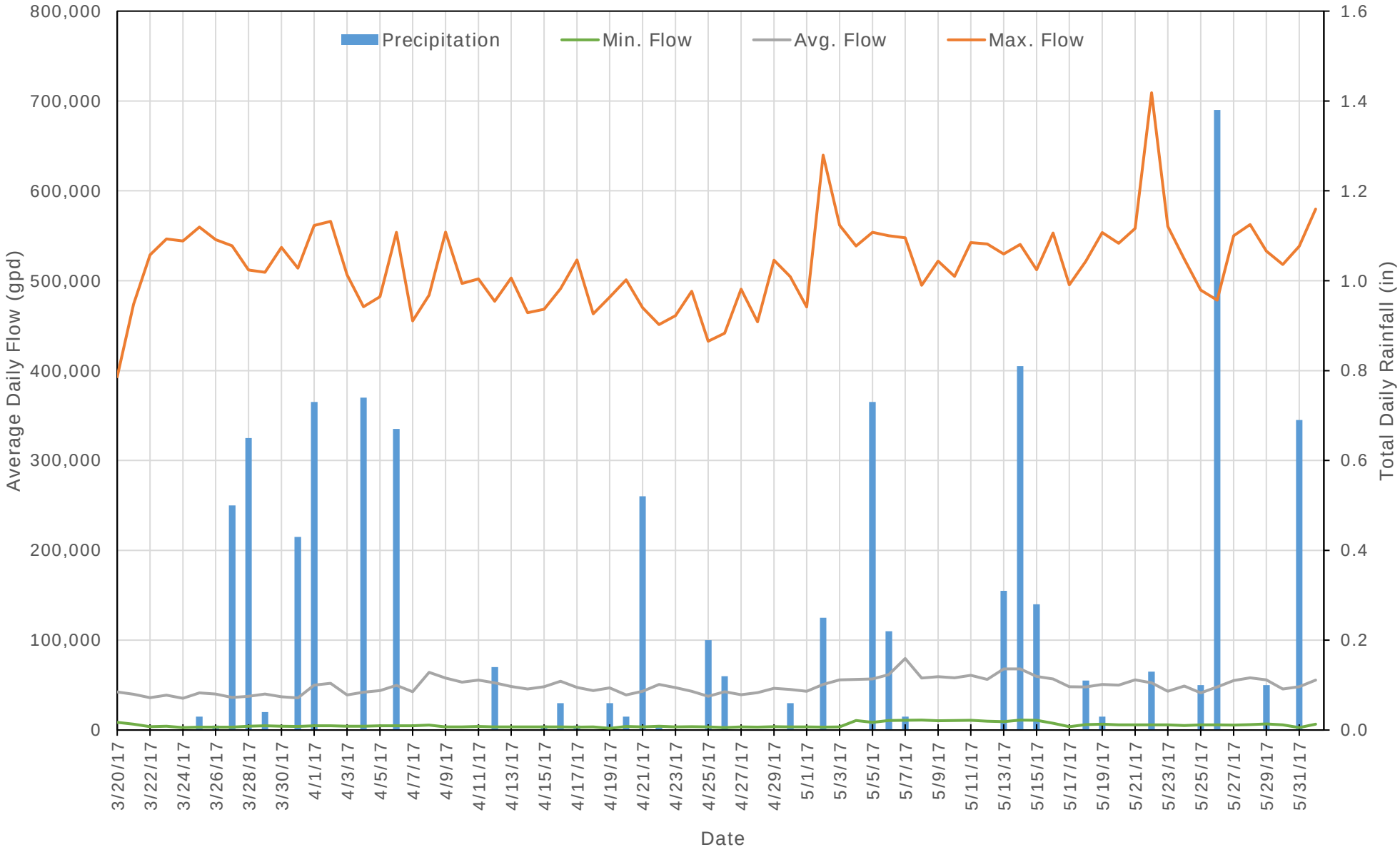


FIGURE D-2
Meter 2 Continuous Flow Monitoring Summary



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FIGURE D-3

Meter 3 Continuous Flow Monitoring Summary

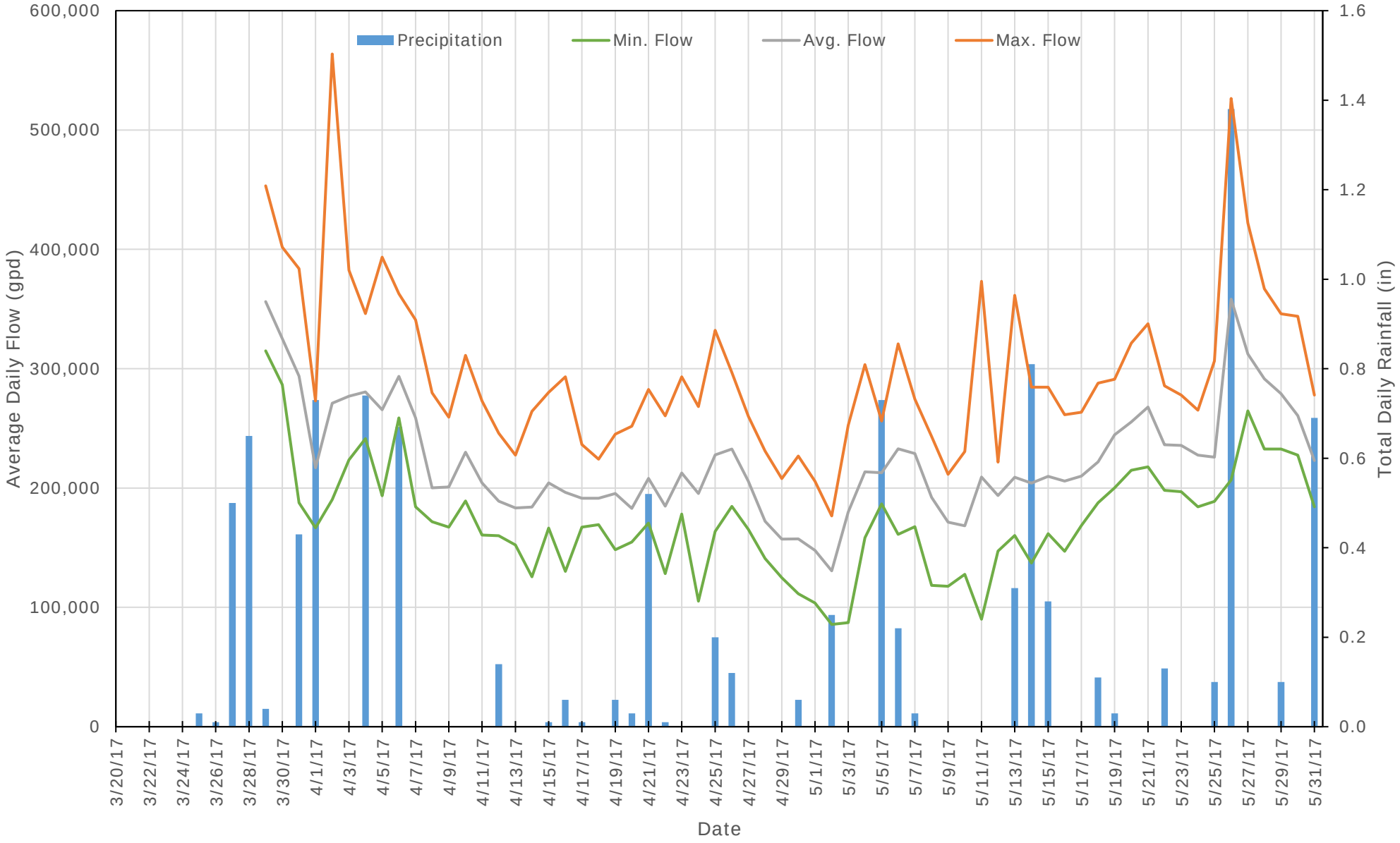
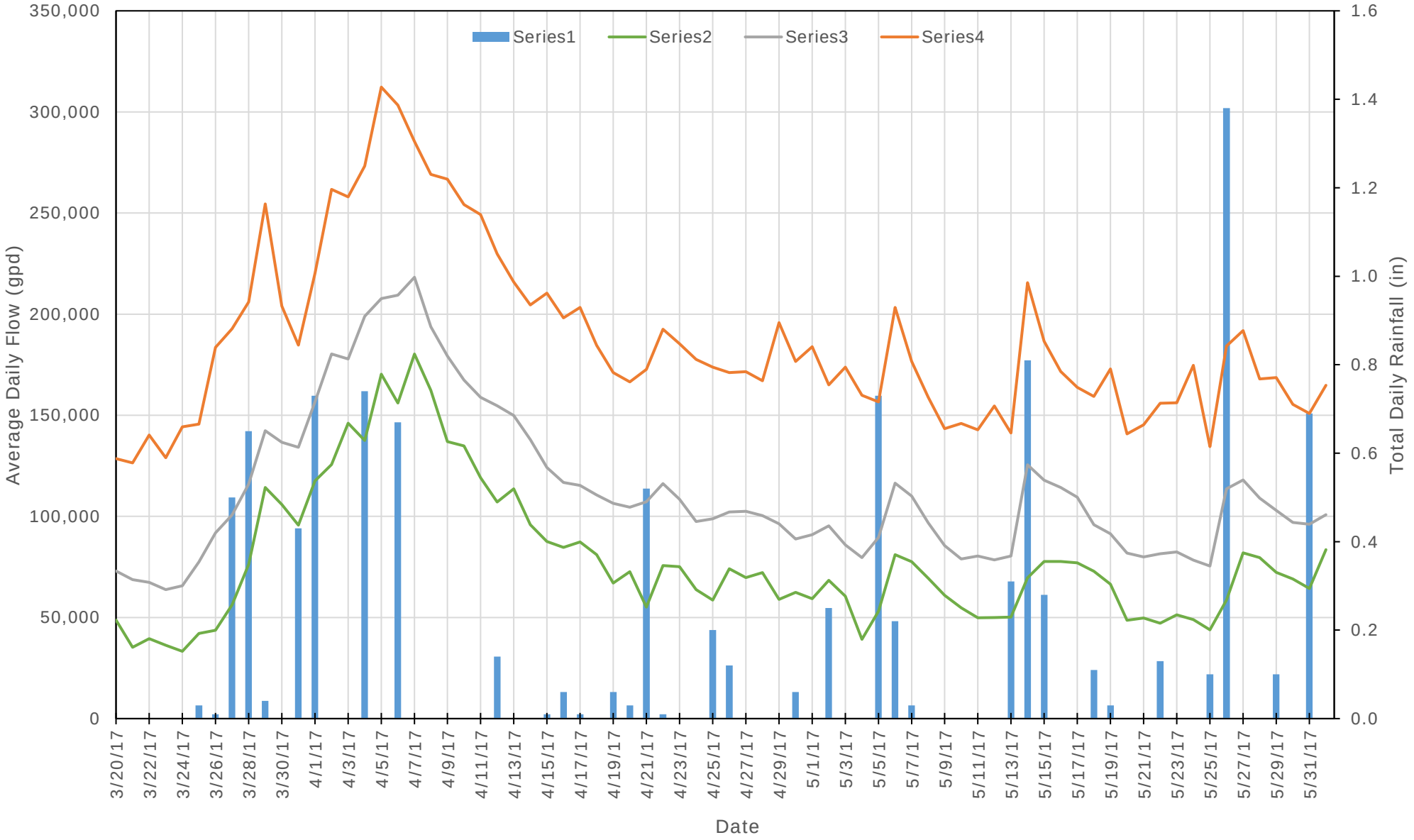


FIGURE D-4
Meter 4 Continuous Flow Monitoring Summary



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FIGURE D-5

Meter 5 Continuous Flow Monitoring Summary

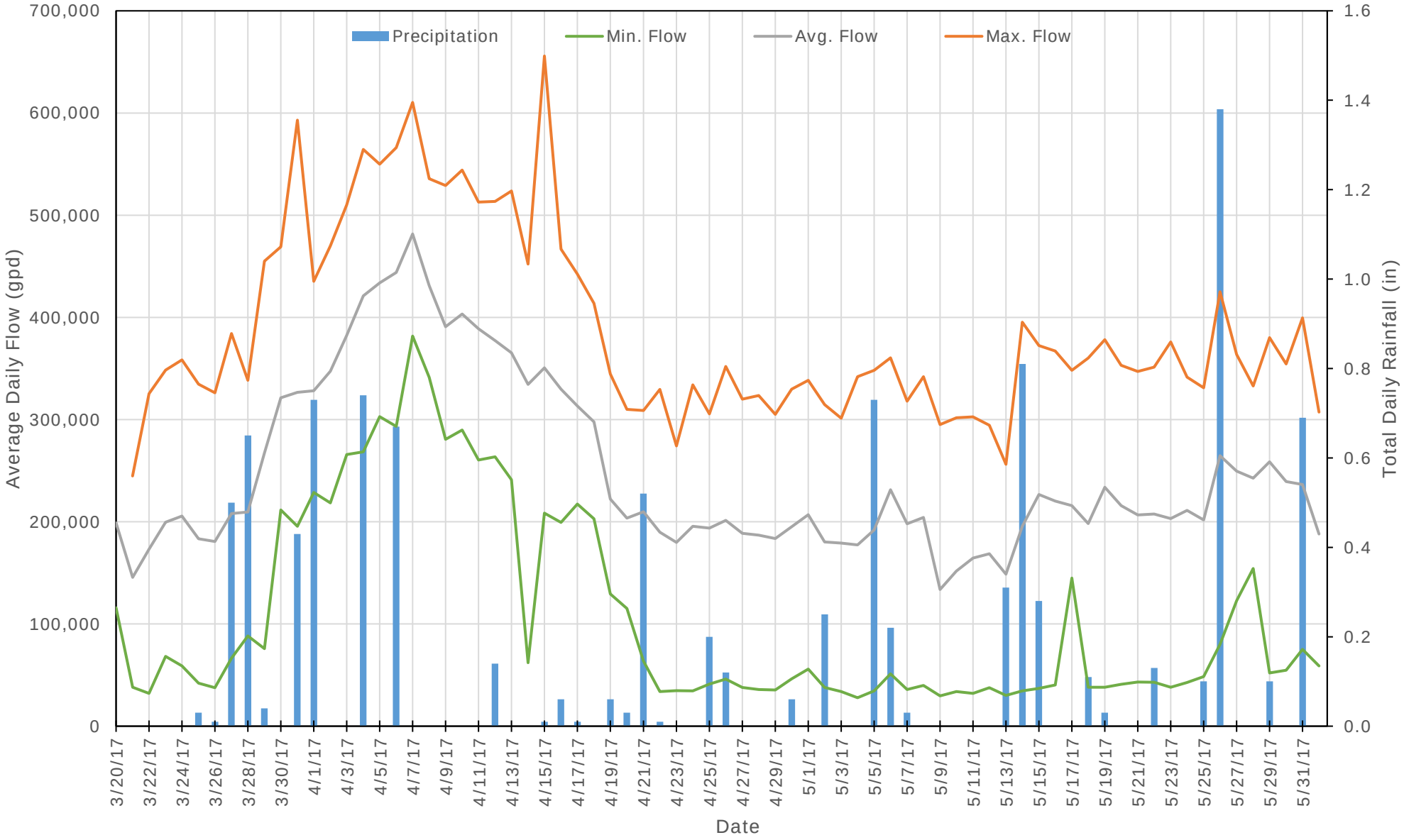


FIGURE D-6

Meter 6 Continuous Flow Monitoring Summary

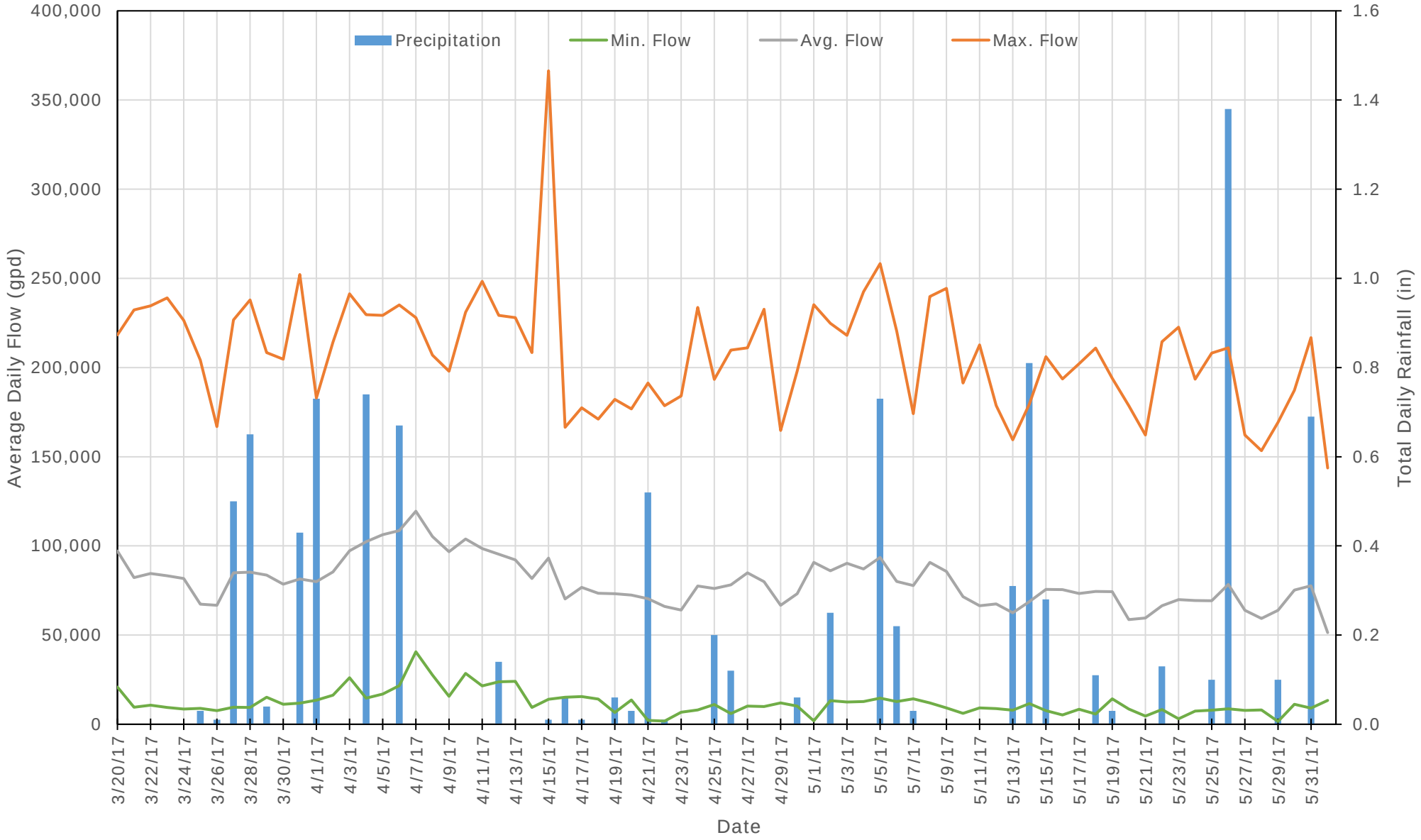


FIGURE D-7
Meter 7 Continuous Flow Monitoring Summary

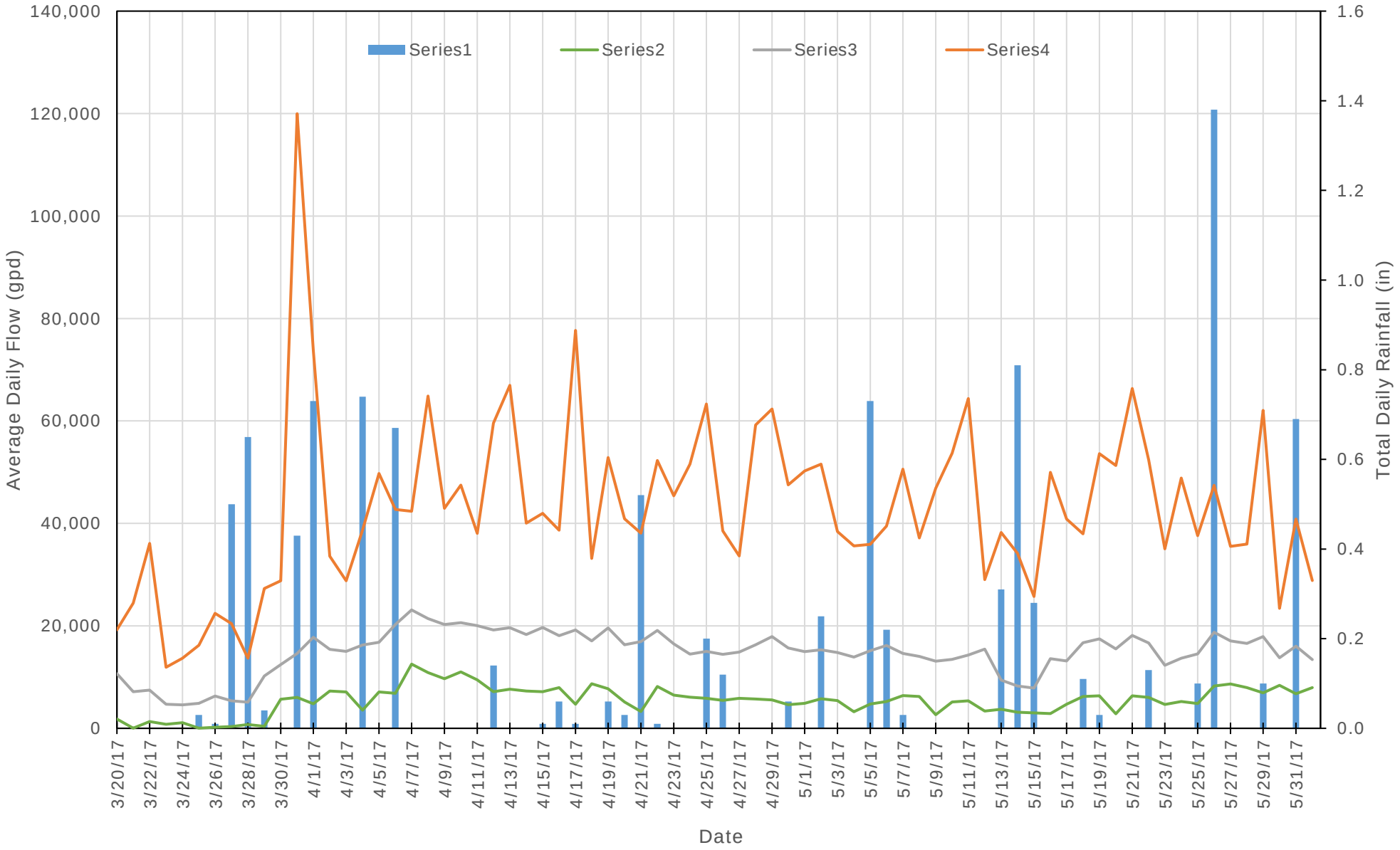
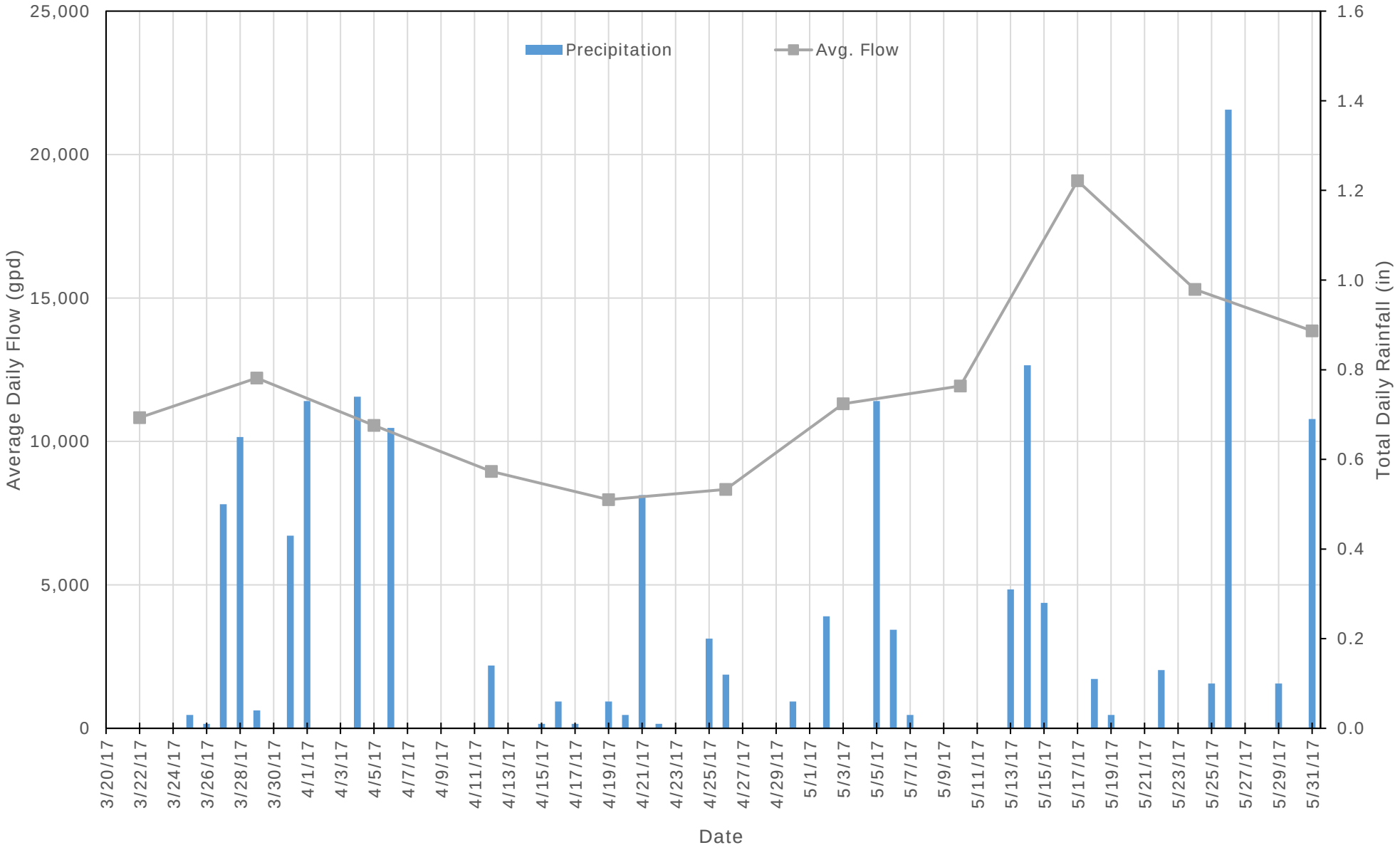


FIGURE D-8

Meter 8 Weekly Flow Monitoring Summary



Appendix E
Instantaneous Flow Monitoring Map

Wastewater Collection System Map
Belchertown, Massachusetts

Channel Drive Odor Control Building

Town Beach Road Odor Control Building

Metacomet Street Pump Station

36" Steel Sleeve for Gravity & Force Main

Bay Road Pump Station

Belchertown Water Reclamation Facility

Twin 10" Siphons (PVC)

Instantaneous Flow Monitoring Location A

See Detail B

Bay Road Pump Station

Stadler Street Pump Station

Instantaneous Flow Monitoring Location C

Instantaneous Flow Monitoring Location D

Pine Valley Plantation Pump Station

Instantaneous Flow Monitoring Location E

Instantaneous Flow Monitoring Location F

River Street Pump Station

Instantaneous Flow Monitoring Location G

Instantaneous Flow Monitoring Location B

Lake Holland

Arcadia Lake

Metacomet Lake

Swift River

1

2

3

4

5

6

7

8

Detail A
1"=100'

BERKSHIRE AVENUE

WHITLOCK WAY

Detail B
1"=50'

HOWARD STREET

South End Sewer District
1"=150'

Franklin St

Depot St

Keys Ave

River St

Location Indicator

HADLEY
AMHERST
NEW SALEM
PETERSHAM
HARDWICK
SOUTH HADLEY
GRANBY
Map Extent
WARE
South End Sewer District
CHICOPEE
LUDLOW
PALMER
WARREN
BRIMFIELD

Legend

- Gravity Main
- Force Main
- Low Pressure
- Siphon
- Flow Monitoring Locations
- Air Release Vault
- Clean-Out Vault
- Sewer Manhole
- Parcel Boundary
- Building Footprints
- Upstream Flow Monitoring Pipes
- Pump Station
- Odor Control Building
- Belchertown Water Reclamation Facility (WRF)
- Wetlands
- Waterbodies
- Open Space
- Railroads
- Sewershed Boundary
- # Sewershed Number

Pipe Materials

ASB = Asbestos Cement DI = Ductile Iron
PVC = Polyvinyl Chloride VC = Vitrified Clay
TRUSS = Armco Truss Pipe (PVC)

N

0 1,200 2,400 Feet

Notes: Wetland, Parcels, Waterbodies and Open Space data provided by MassGIS.
Parcels: 2012, Building Footprints: 2016, Wetlands: 2009, Waterbodies: 2010,
Open Space from "Protected and Recreational Open Space" layer, updated 2015.

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Engineers | Environmental Specialists

V:\Projects\B\B0341\Mapping\2016_Sewer_Digitizing\FinalSewerMap_Sewersheds_InstantaneousLocations.mxd

Appendix F
Inflow Figures

FIGURE F1-1
Inflow Evaluation for Meter 1
Wet Weather Period: 5/5/17-5/8/17 Dry Weather Day: 5/4/17

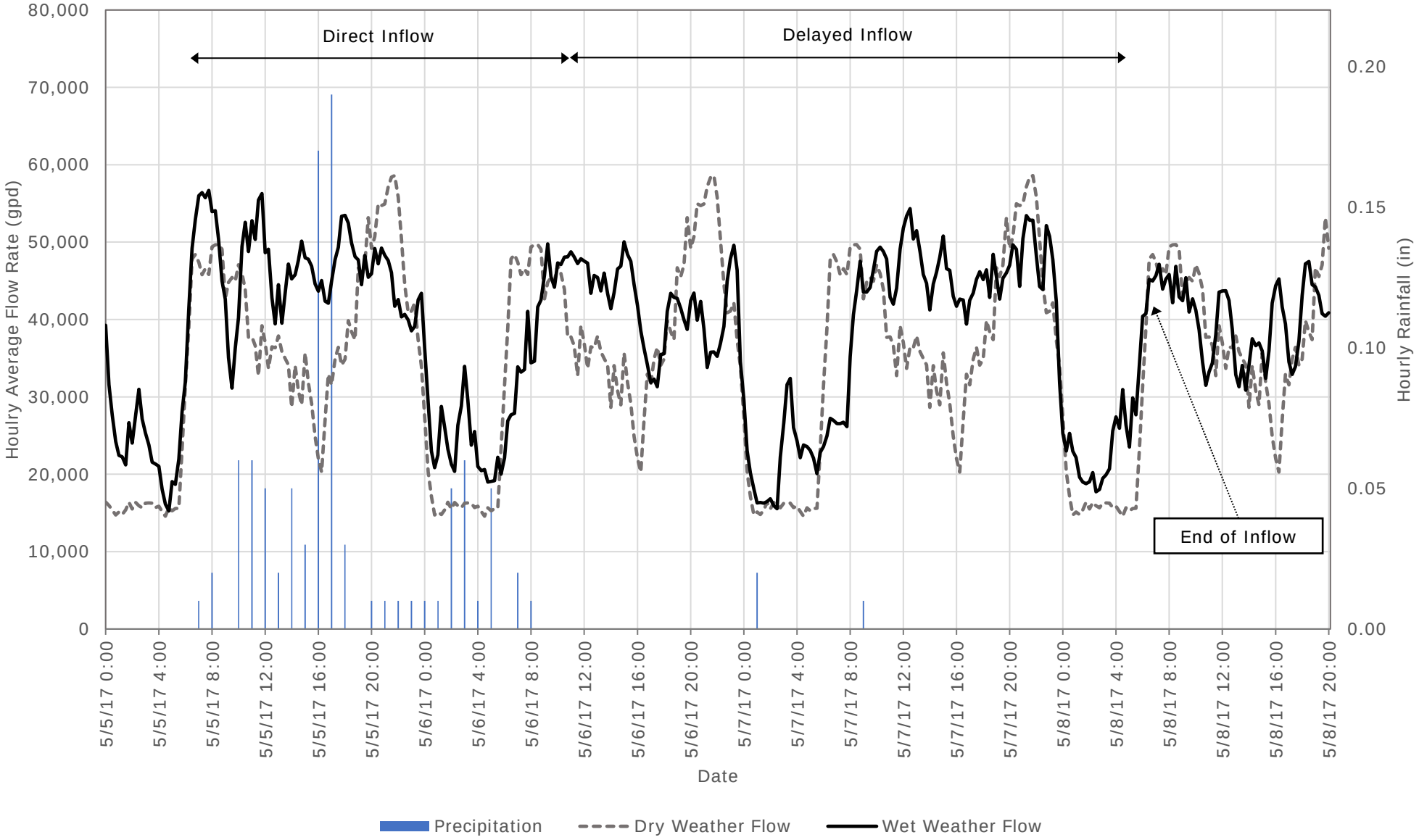


FIGURE F1-2
Inflow Evaluation for Meter 2
Wet Weather Period: 5/5/17-5/7/17 Dry Weather Day: 5/4/17

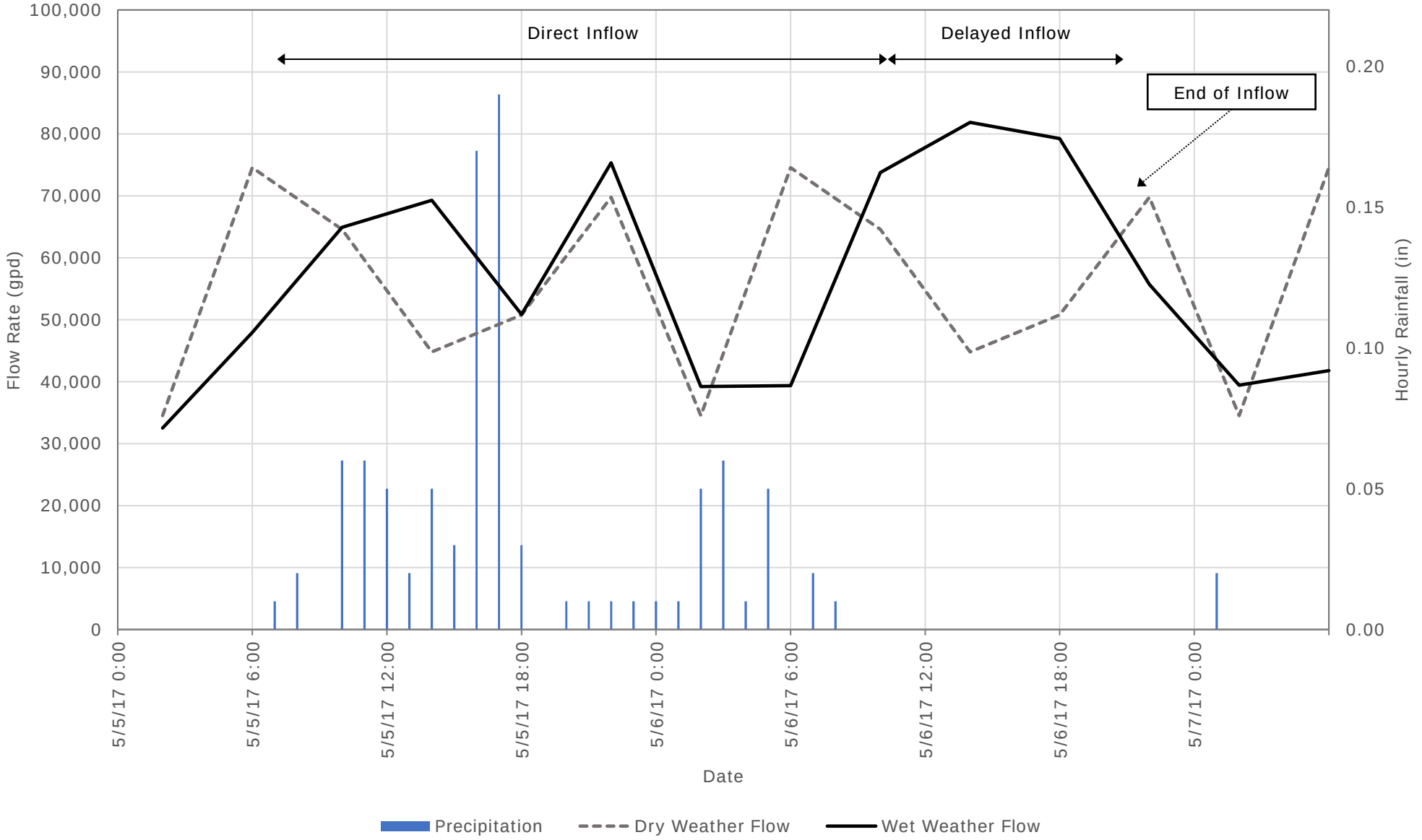


FIGURE F1-3
Inflow Evaluation for Meter 3
Wet Weather Period: 5/5/17-5/8/17 Dry Weather Day: 5/4/17

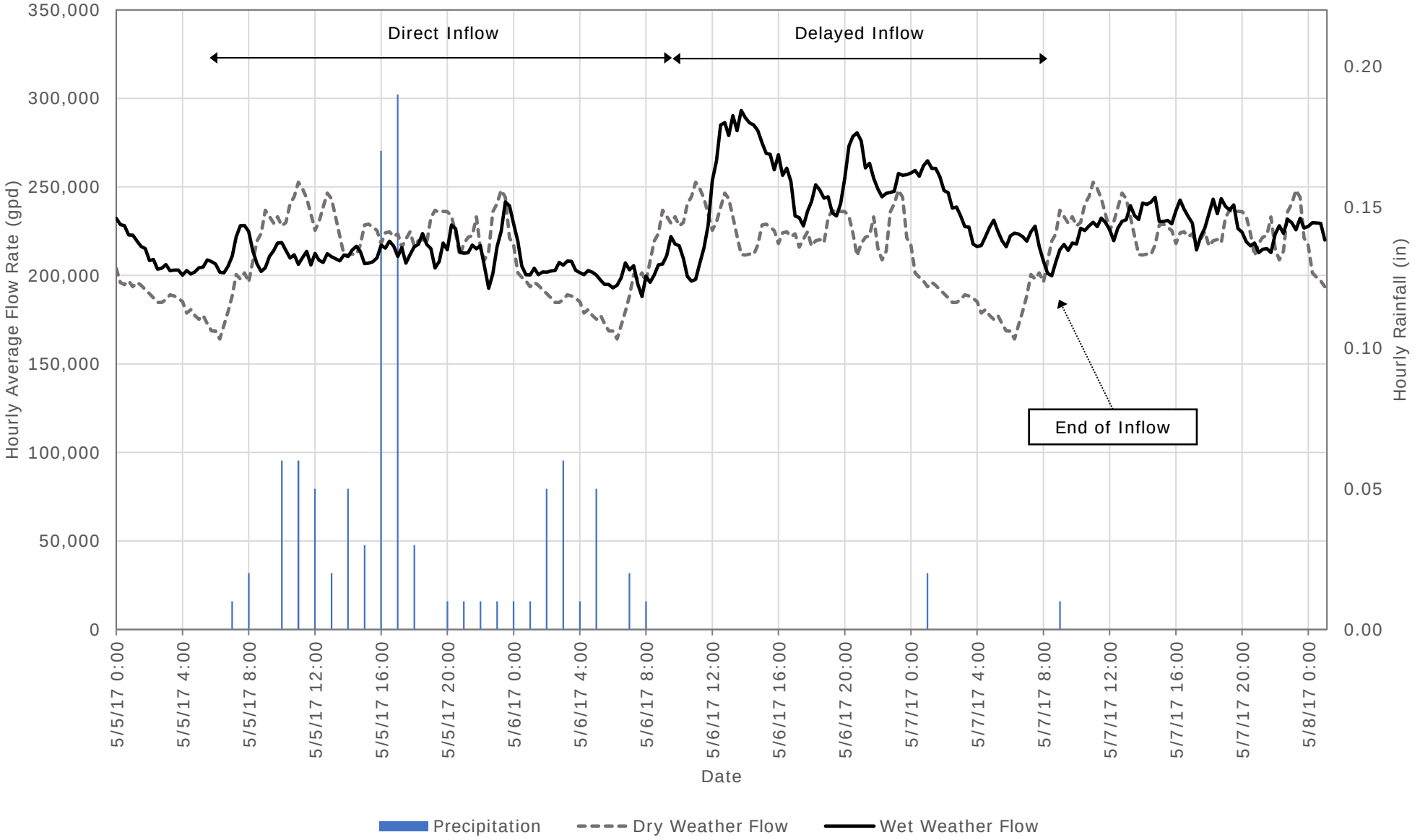


FIGURE F1-4
Inflow Evaluation for Meter 4
Wet Weather Period: 5/5/17-5/10/17 Dry Weather Day: 5/4/17

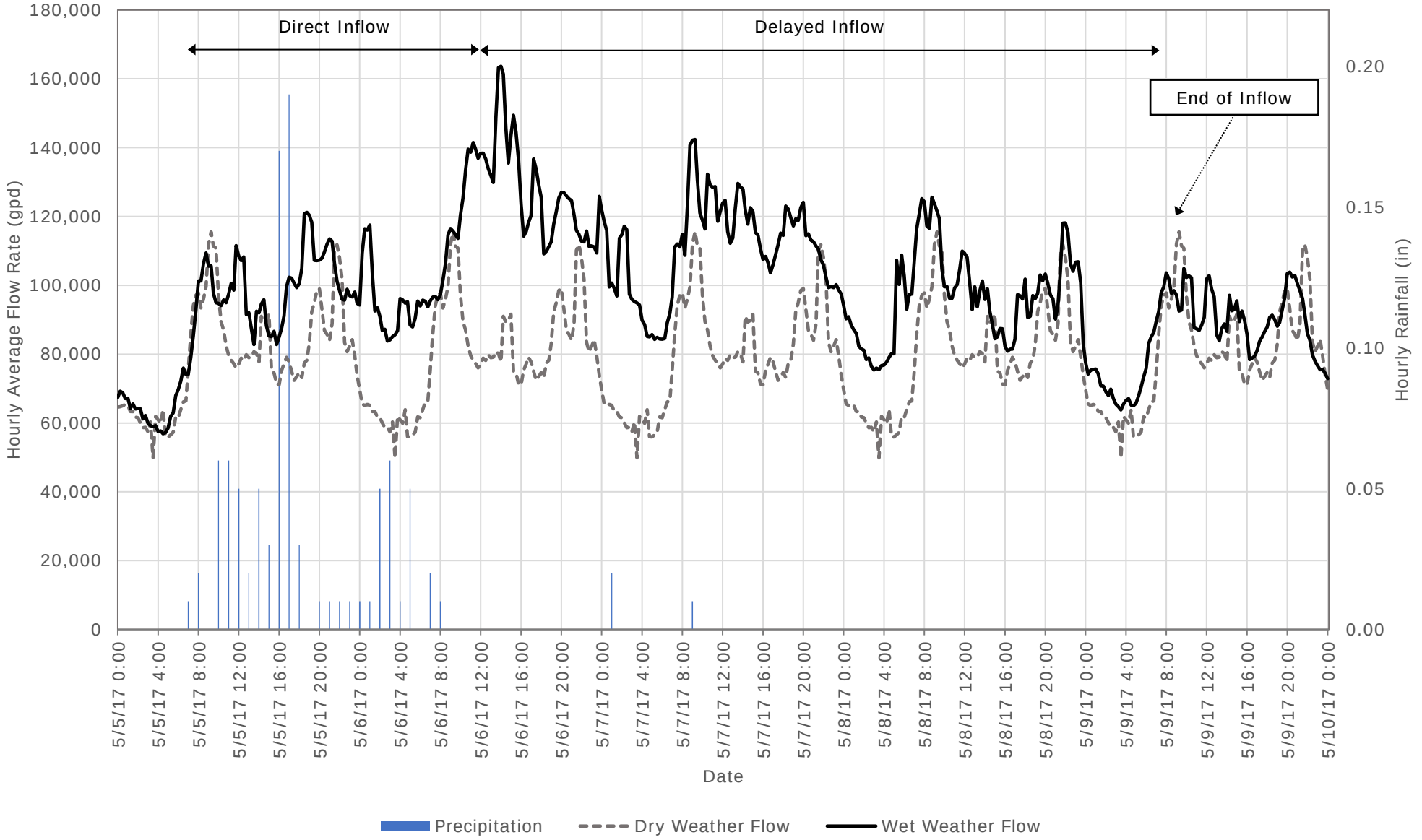


FIGURE F1-5
Inflow Evaluation for Meter 5
Wet Weather Period: 5/5/17-5/8/17 Dry Weather Day: 5/4/17

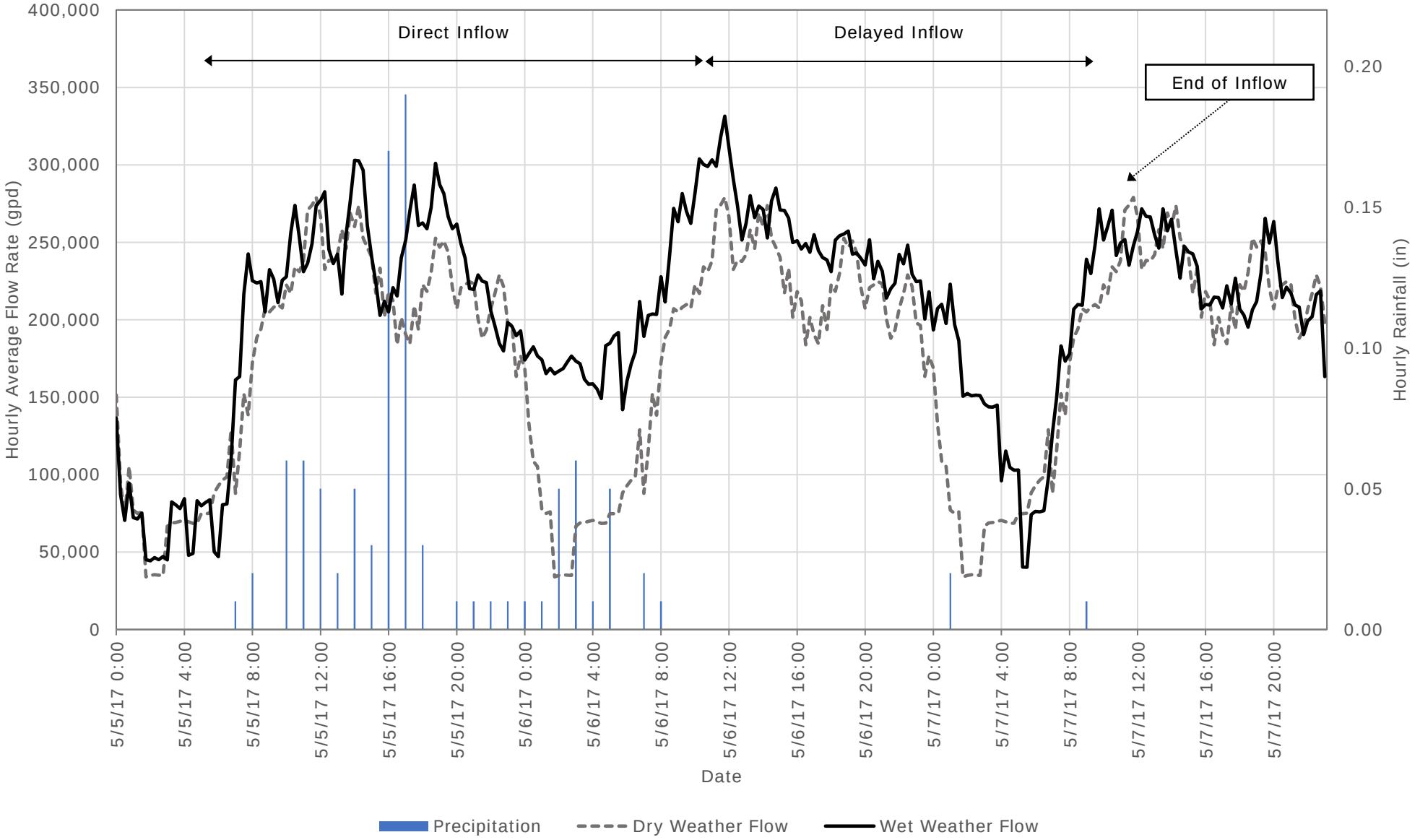


FIGURE F1-6
Inflow Evaluation for Meter 6
Wet Weather Period: 5/5/17-5/7/17 Dry Weather Day: 5/4/17

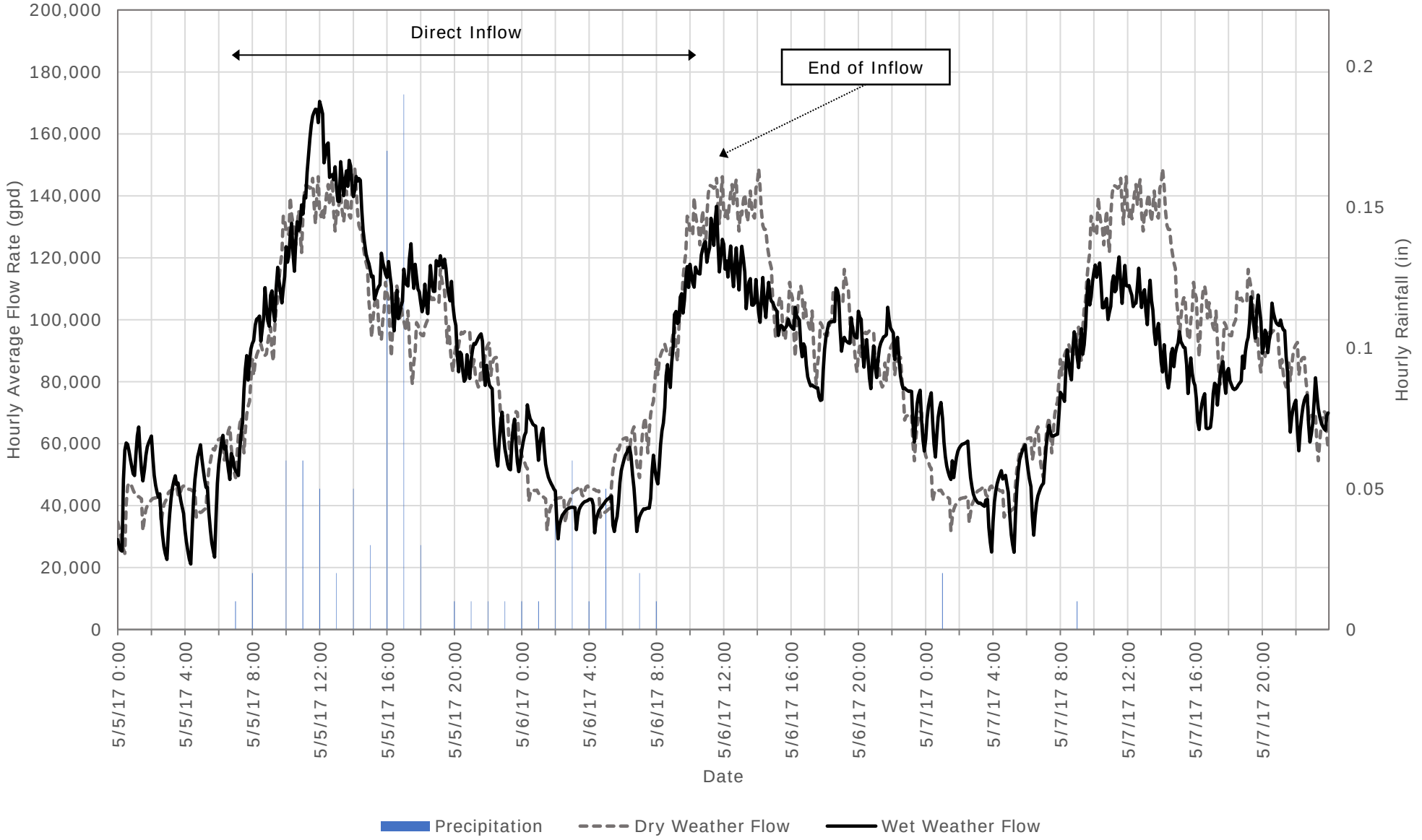


FIGURE F1-7
Inflow Evaluation for Meter 7
Wet Weather Period: 5/5/17-5/8/17 Dry Weather Day: 5/4/17

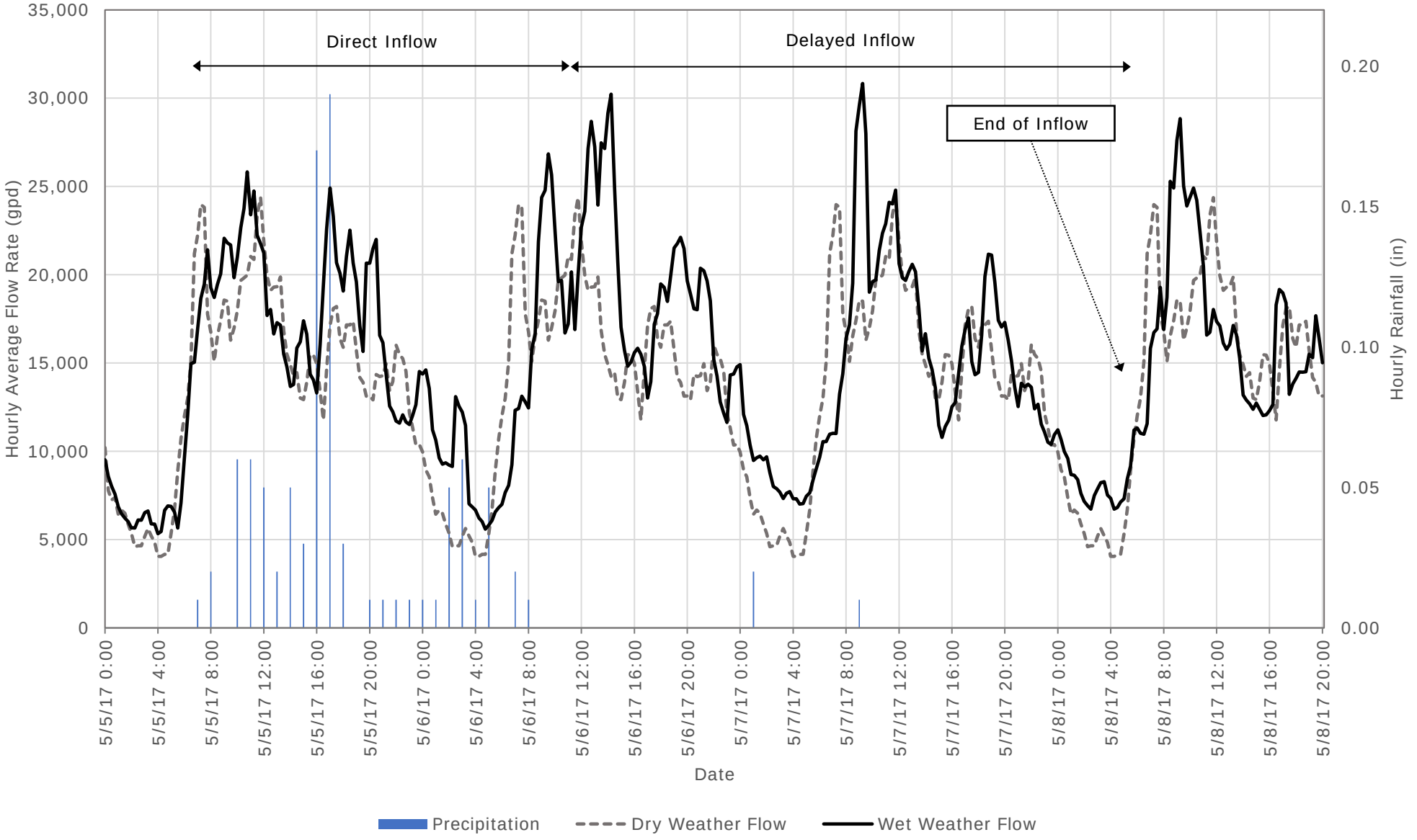


FIGURE F2-1
Inflow Evaluation for Meter 1
Wet Weather Period: 5/13/17-5/16/17 Dry Weather Day: 5/12/17

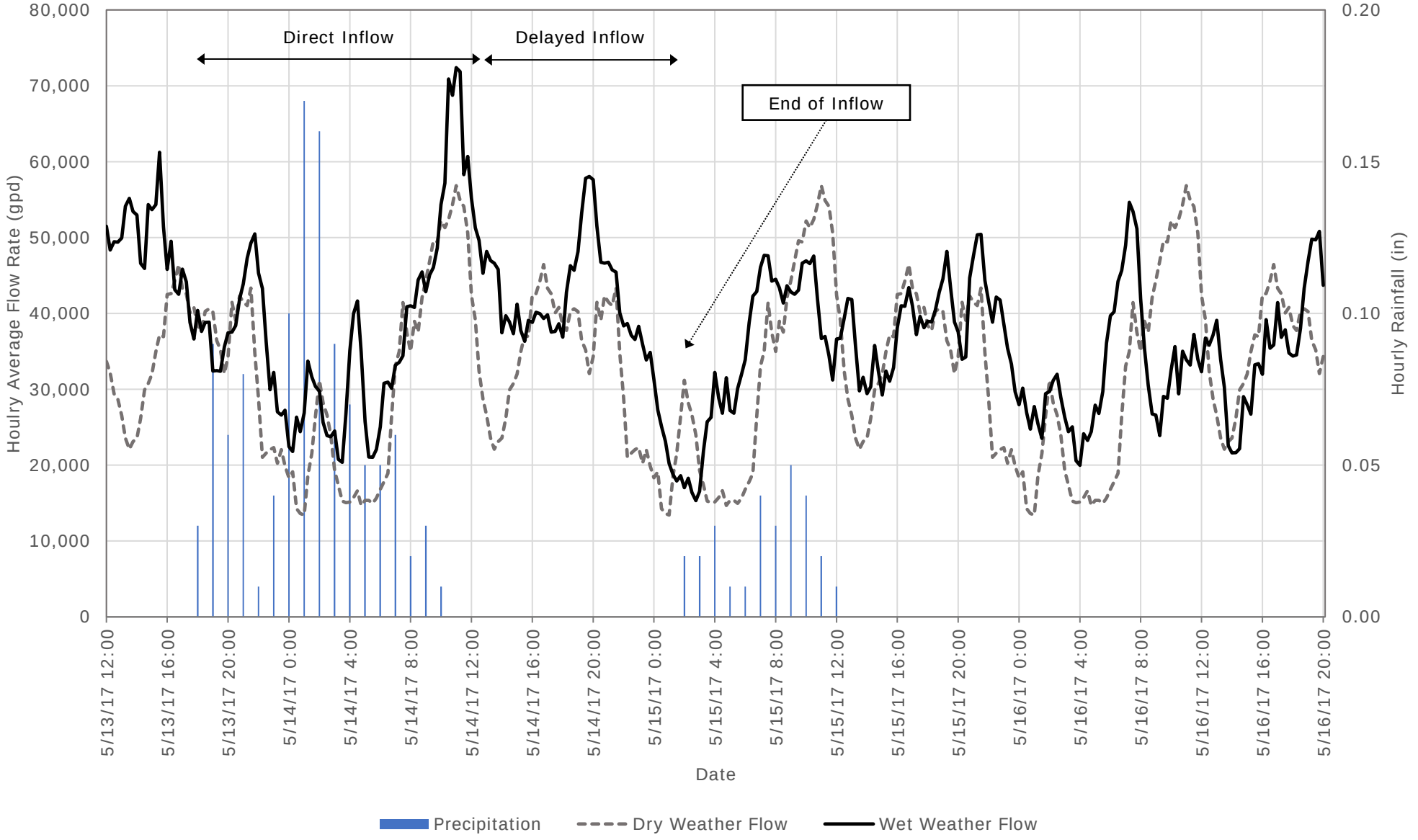


FIGURE F2-2
Inflow Evaluation for Meter 2
Wet Weather Period: 5/13/17-5/16/17 Dry Weather Day: 5/12/17

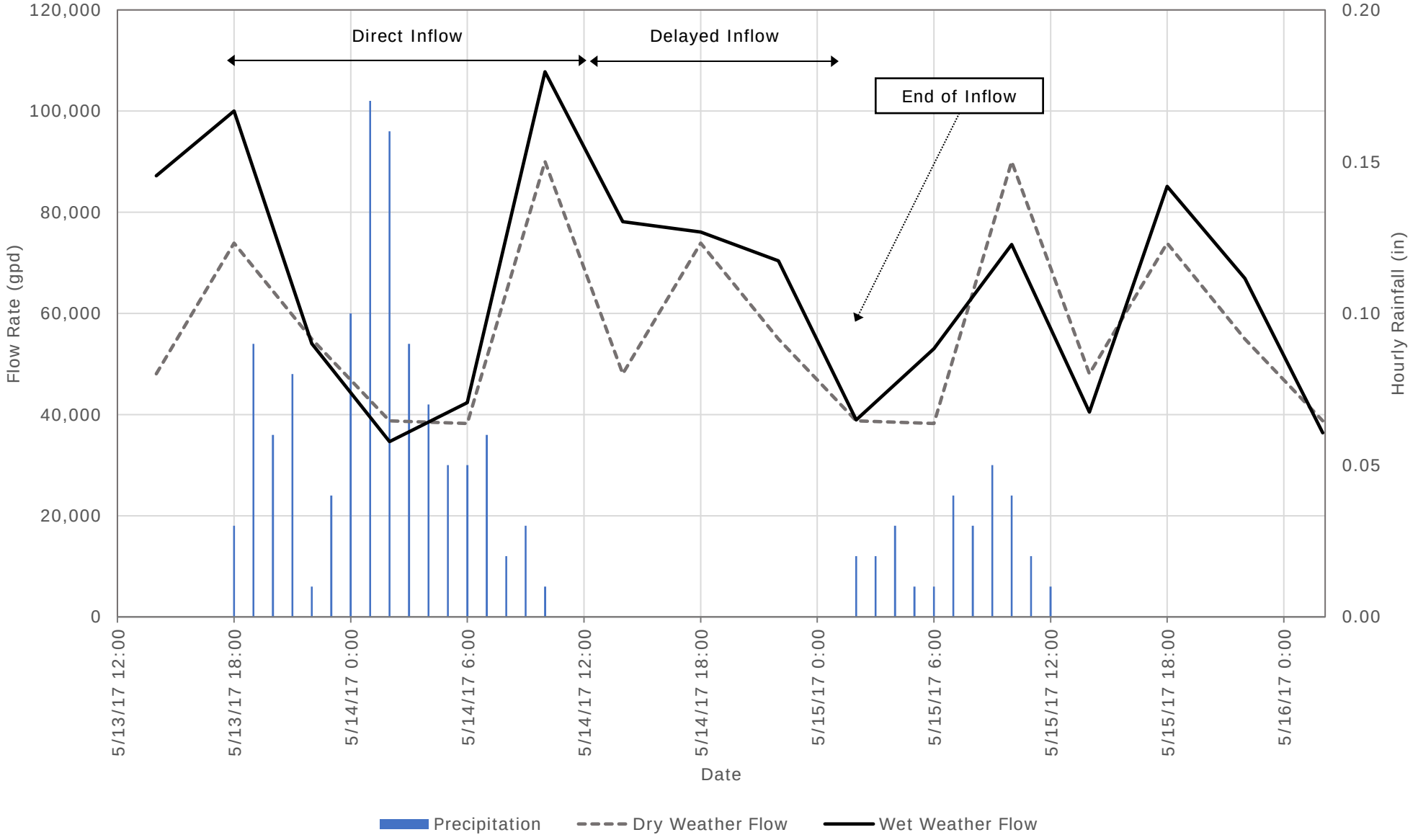


FIGURE F2-3
Inflow Evaluation for Meter 3
Wet Weather Period: 5/13/17-5/16/17 Dry Weather Day: 5/12/17

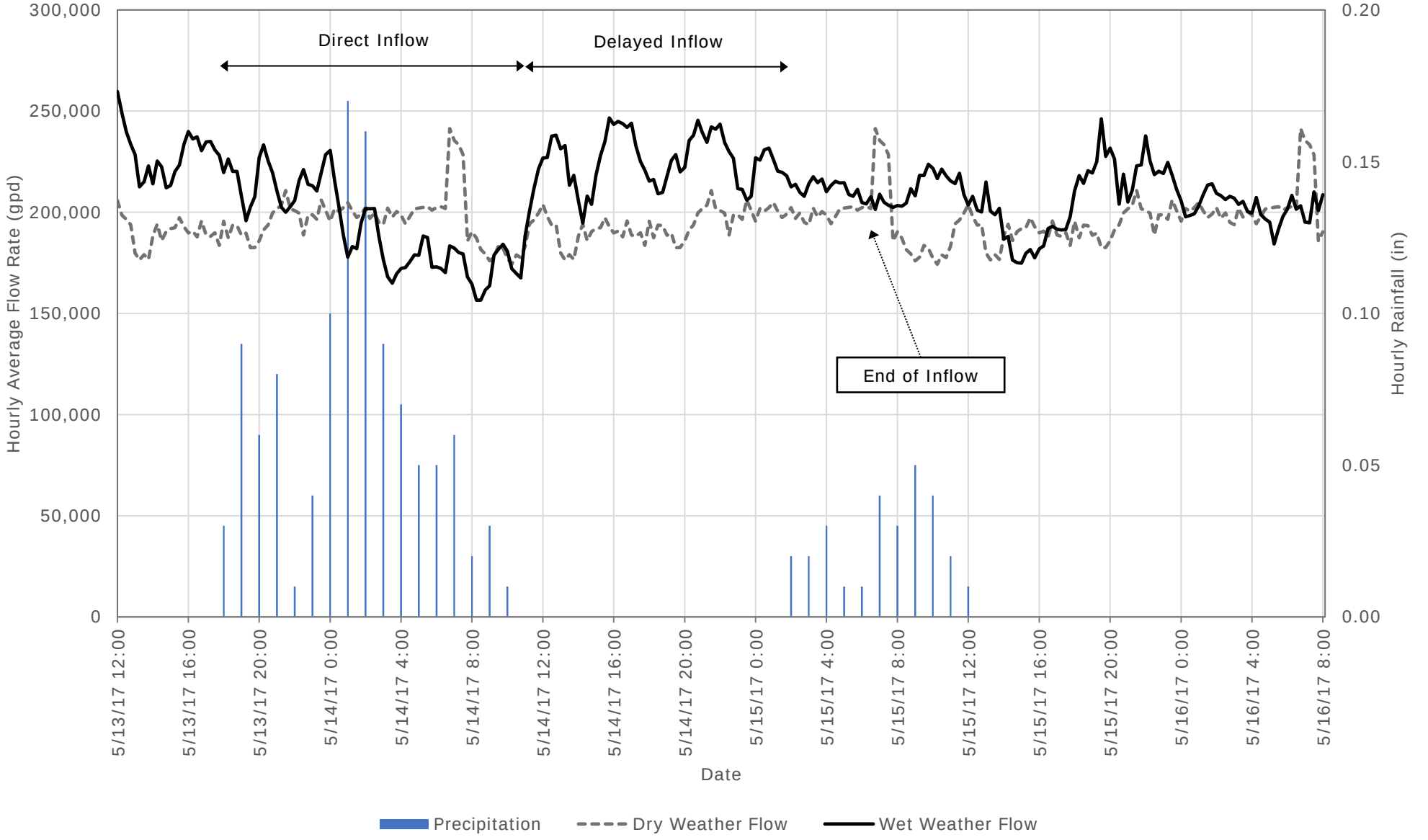


FIGURE F2-4
Inflow Evaluation for Meter 4
Wet Weather Period: 5/13/17-5/18/17 Dry Weather Day: 5/12/17

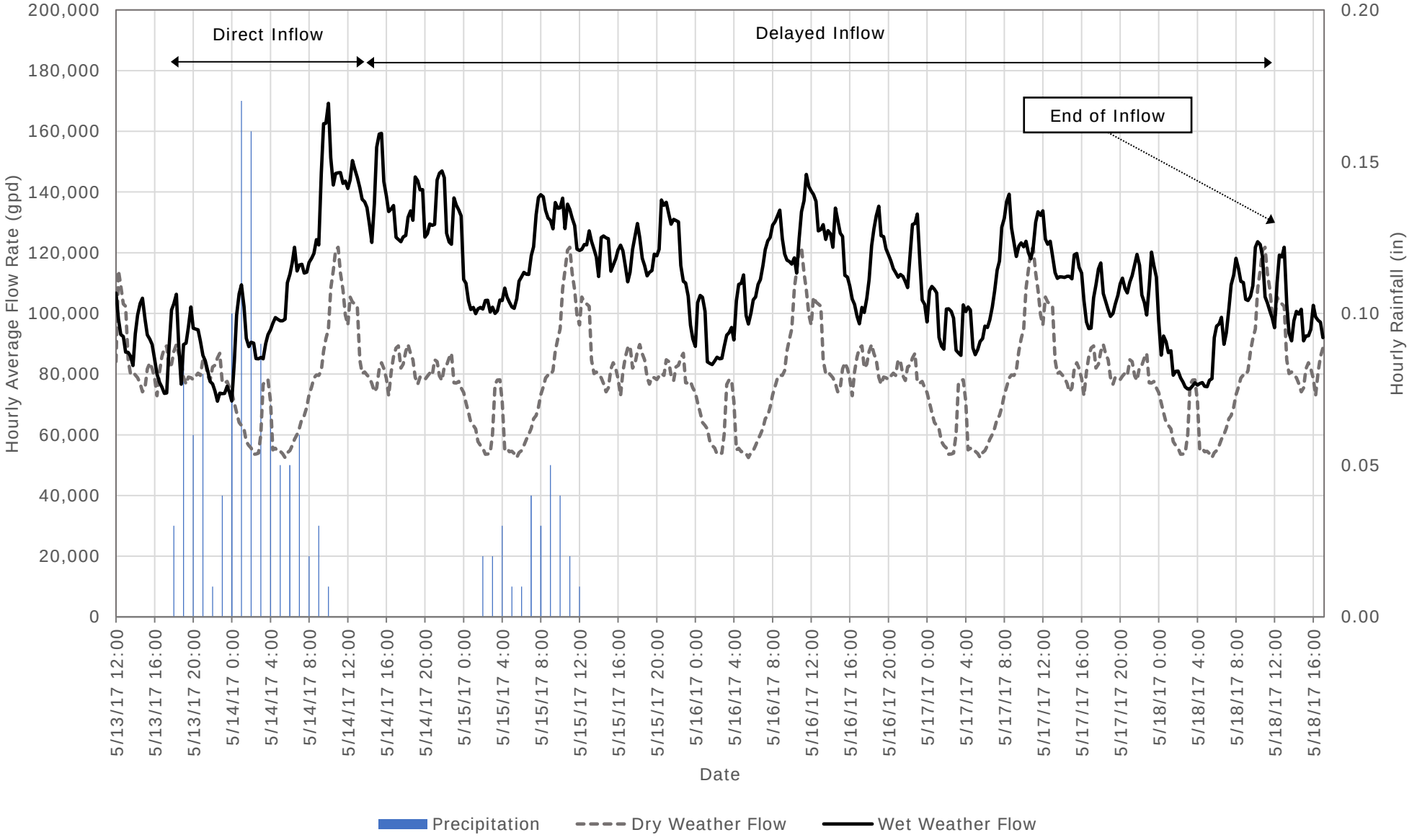


FIGURE F2-5
Inflow Evaluation for Meter 5
Wet Weather Period: 5/13/17-5/18/17 Dry Weather Day: 5/12/17

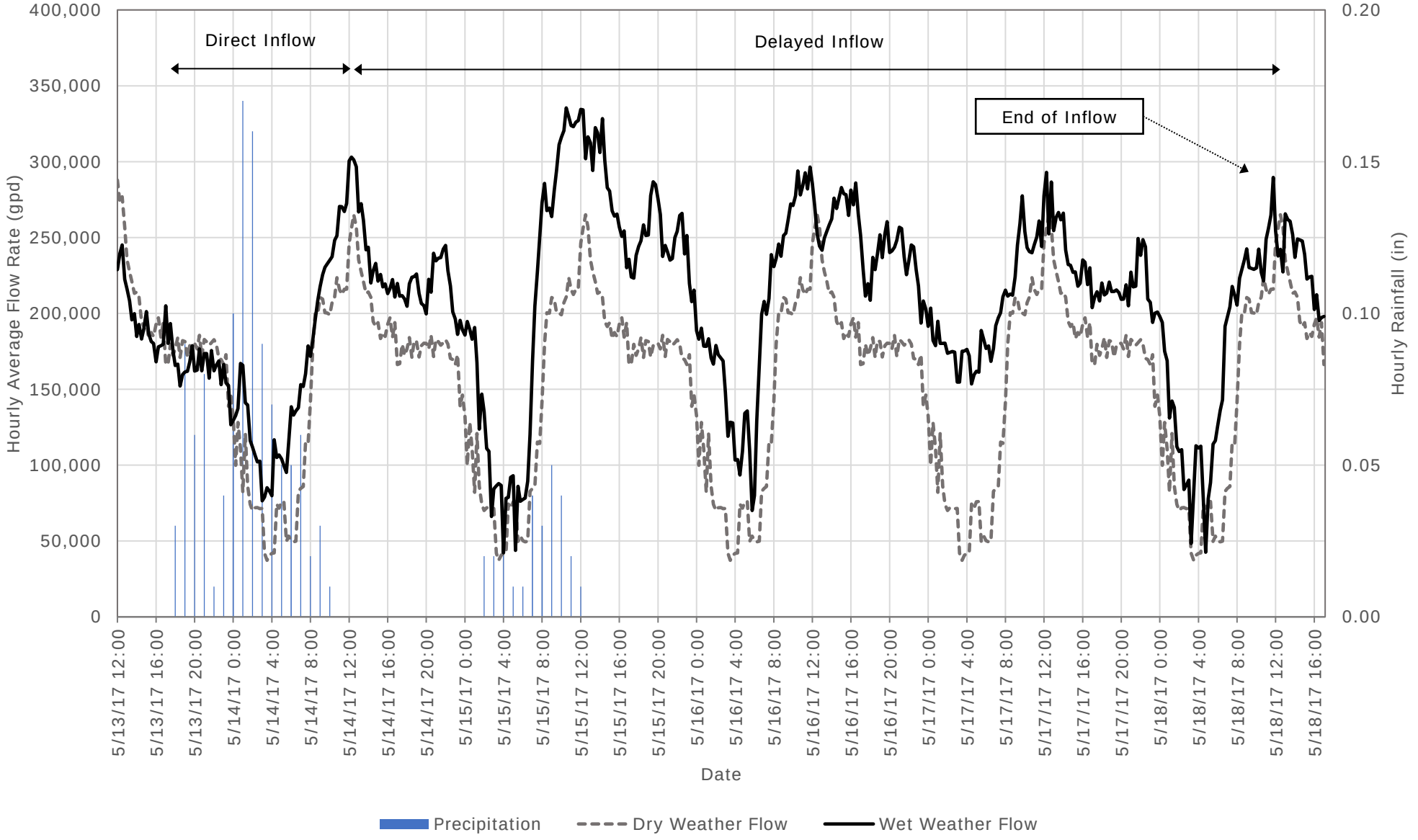


FIGURE F2-6
Inflow Evaluation for Meter 6
Wet Weather Period: 5/13/17-5/16/17 Dry Weather Day: 5/12/17

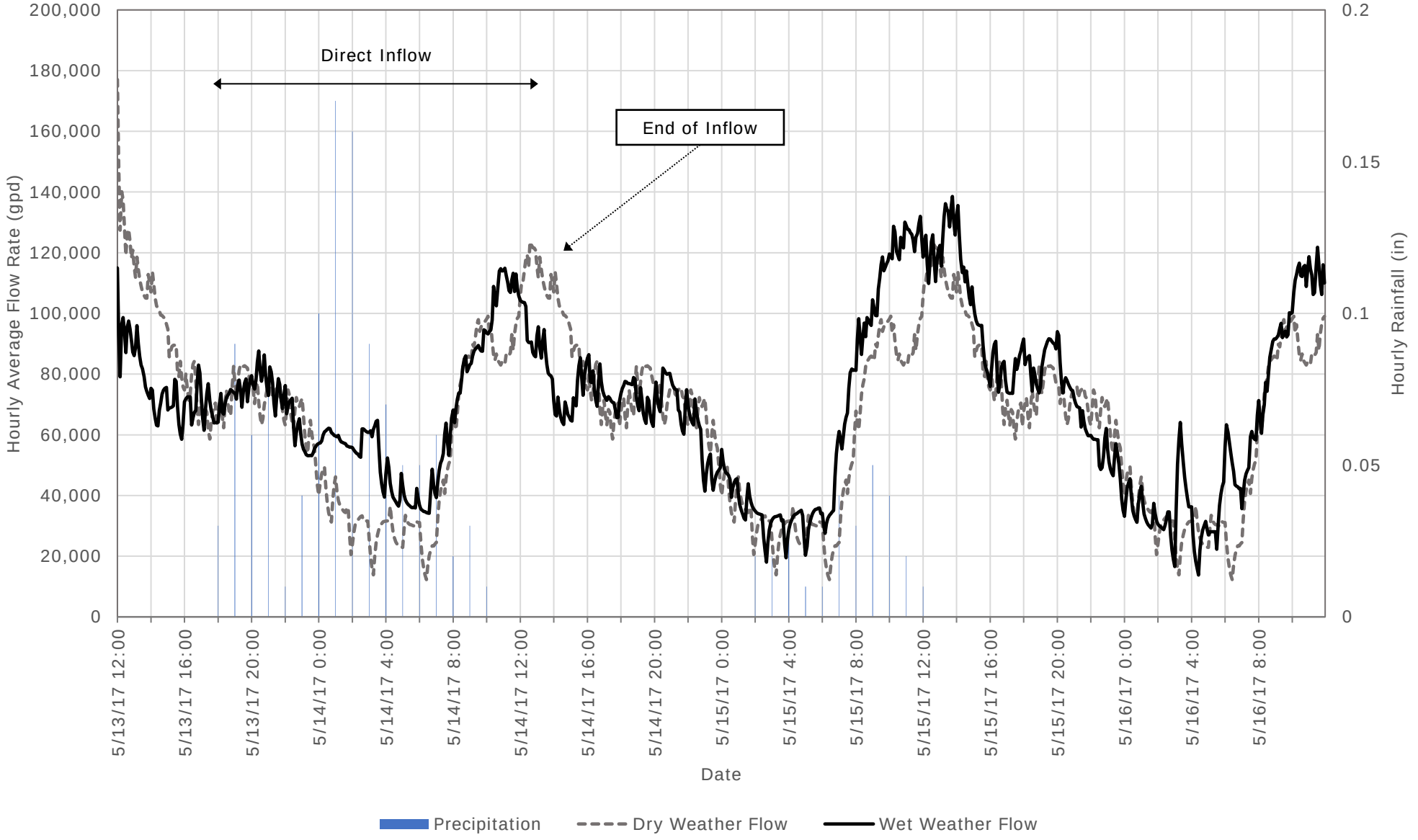


FIGURE F2-7
Inflow Evaluation for Meter 7
Wet Weather Period: 5/13/17-5/16/17 Dry Weather Day: 5/12/17

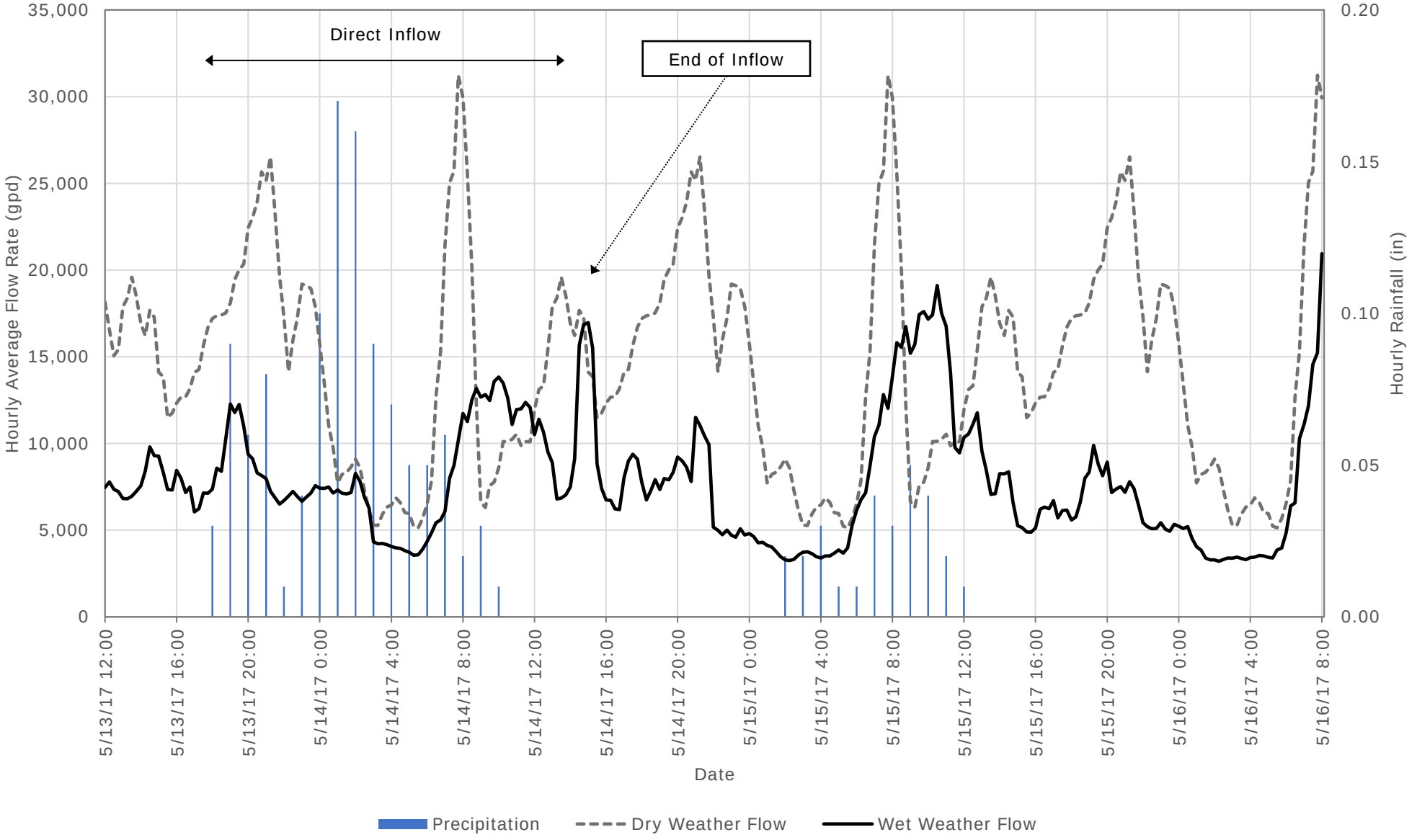


FIGURE F3-1
Inflow Evaluation for Meter 1
Wet Weather Period: 5/25/17-5/27/17 Dry Weather Day: 5/24/17

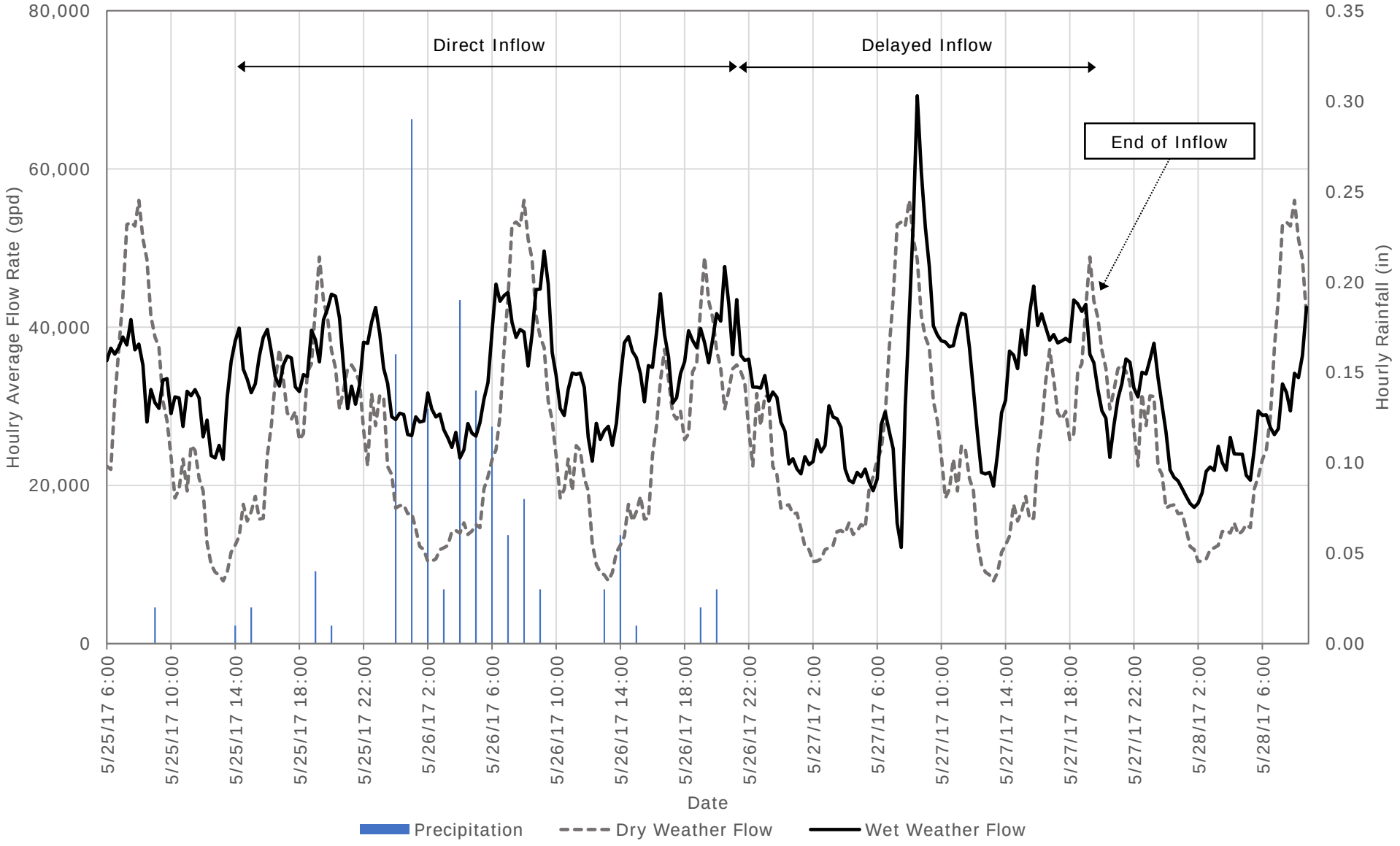


FIGURE F3-2
Inflow Evaluation for Meter 2
Wet Weather Period: 5/25/17-5/27/17 Dry Weather Day: 5/24/17

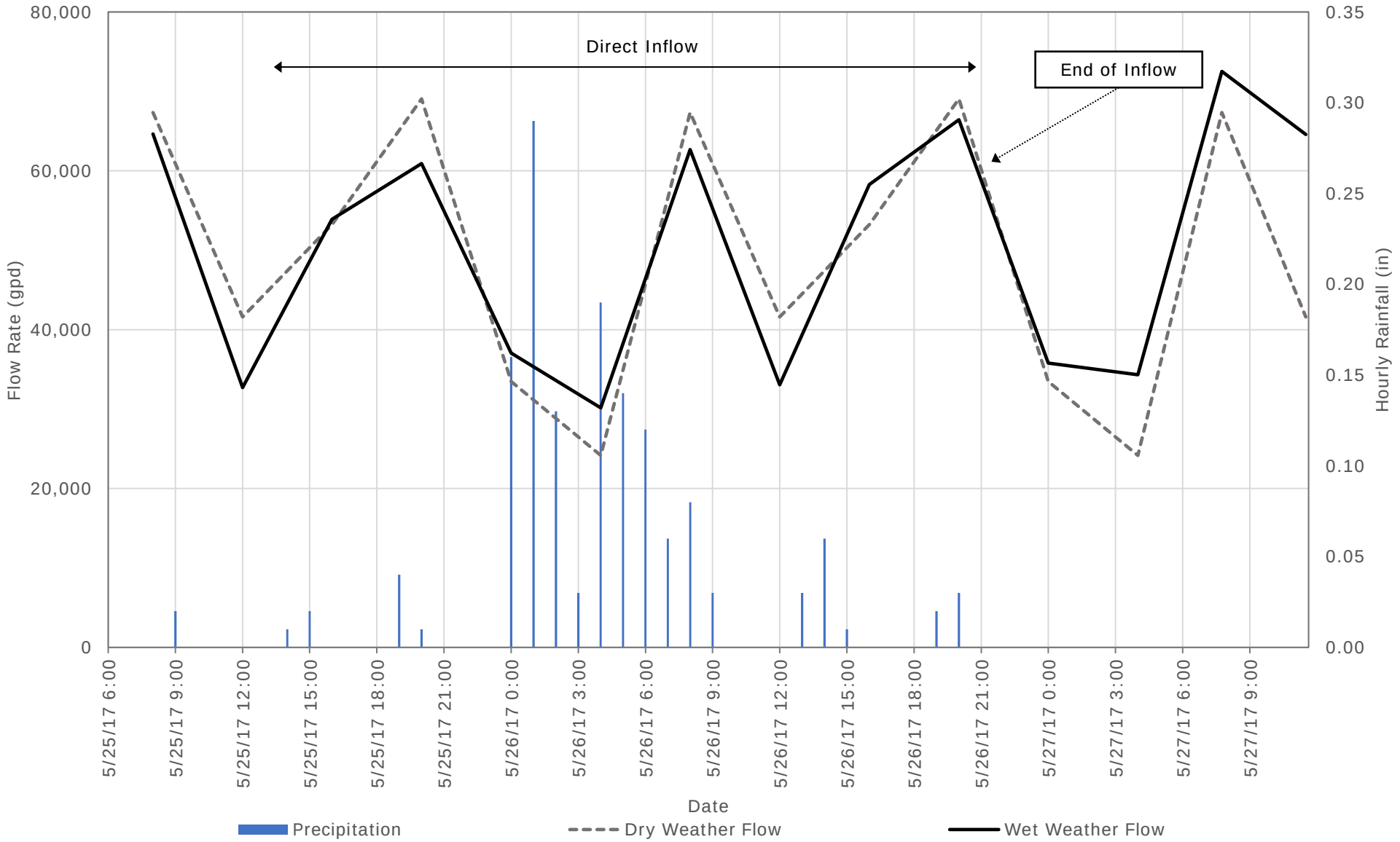


FIGURE F3-3
Inflow Evaluation for Meter 3
Wet Weather Period: 5/25/17-5/31/17 Dry Weather Day: 5/24/17

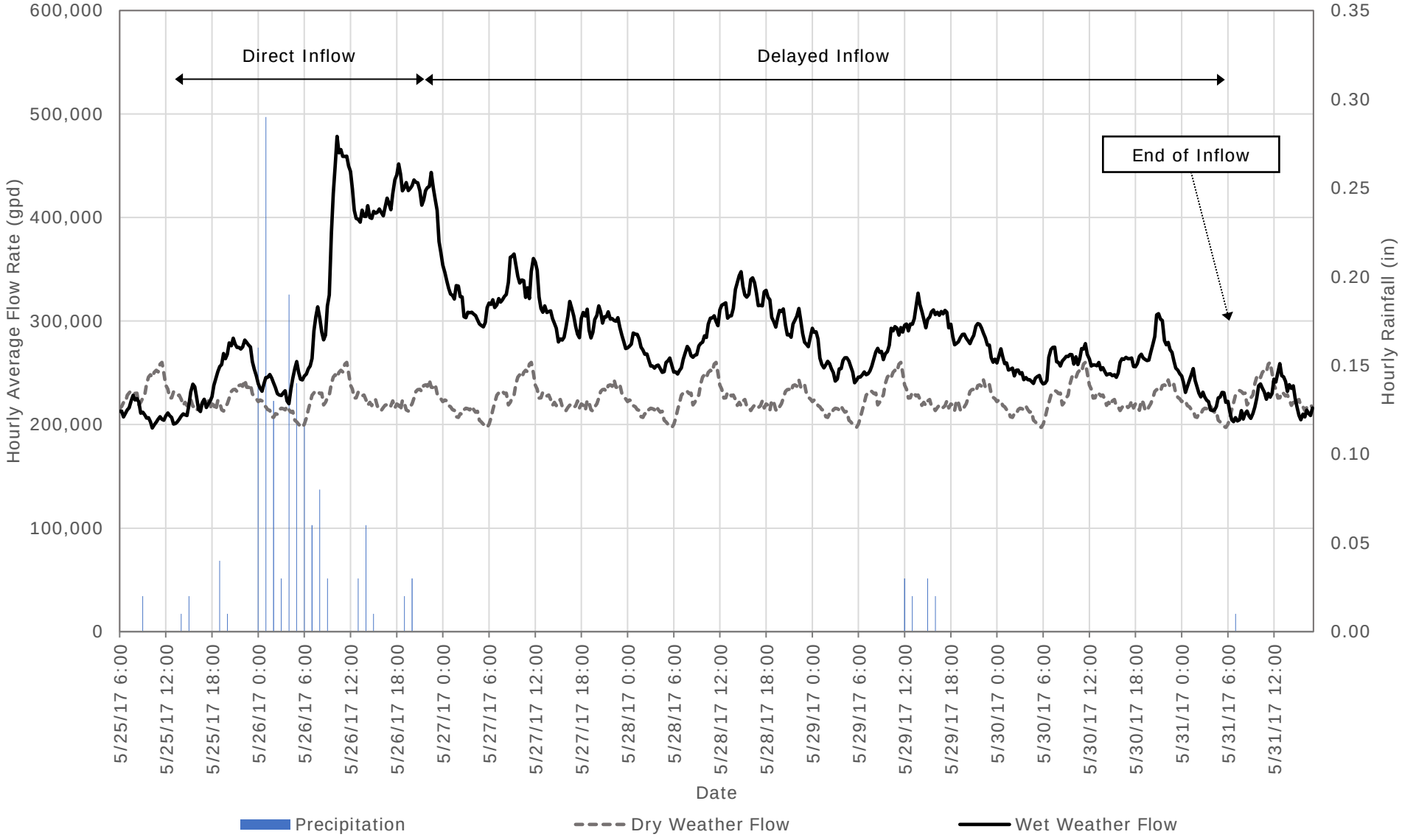


FIGURE F3-4
Inflow Evaluation for Meter 4
Wet Weather Period: 5/25/17-5/31/17 Dry Weather Day: 5/24/17

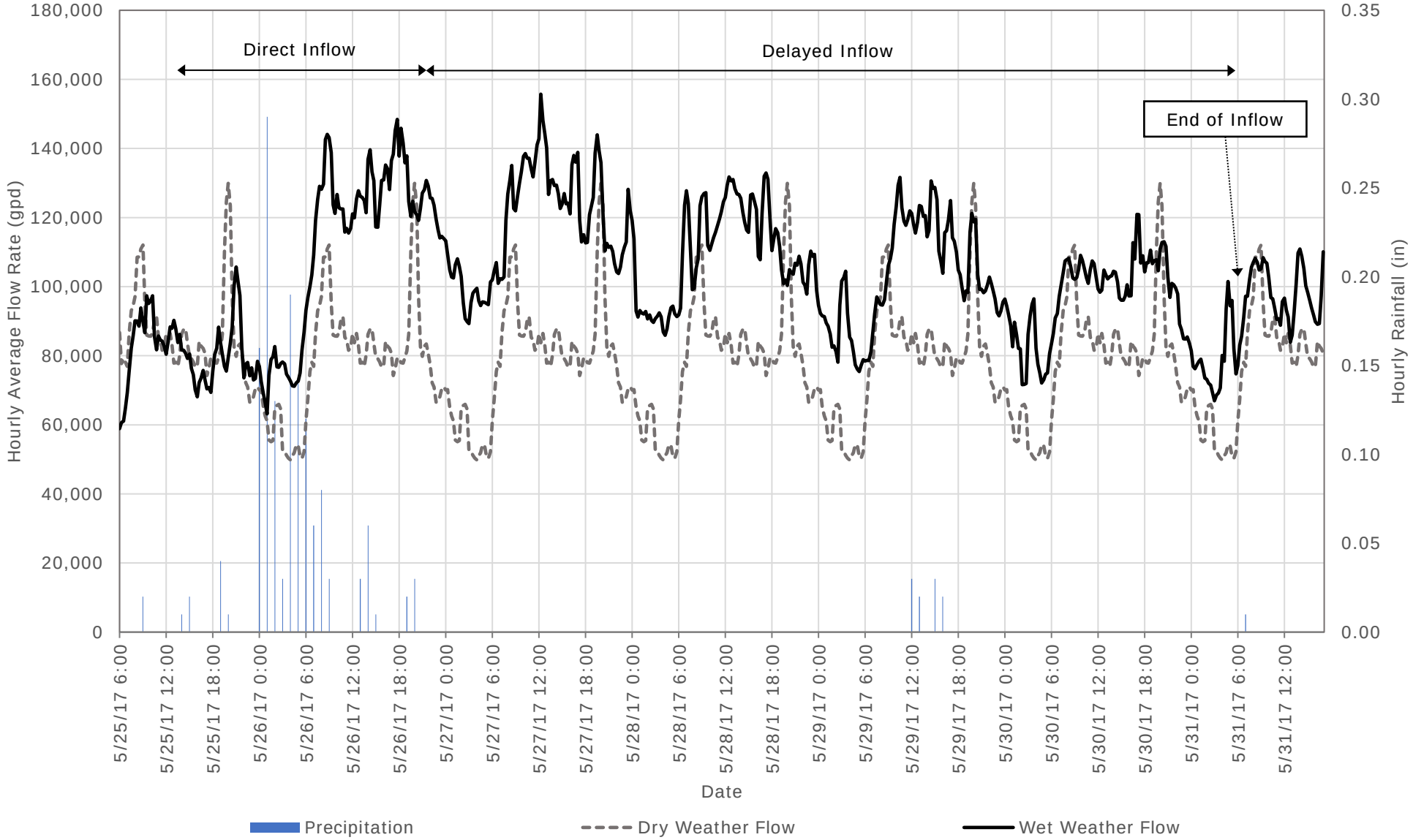


FIGURE F3-5
Inflow Evaluation for Meter 5
Wet Weather Period: 5/25/17-5/31/17 Dry Weather Day: 5/24/17

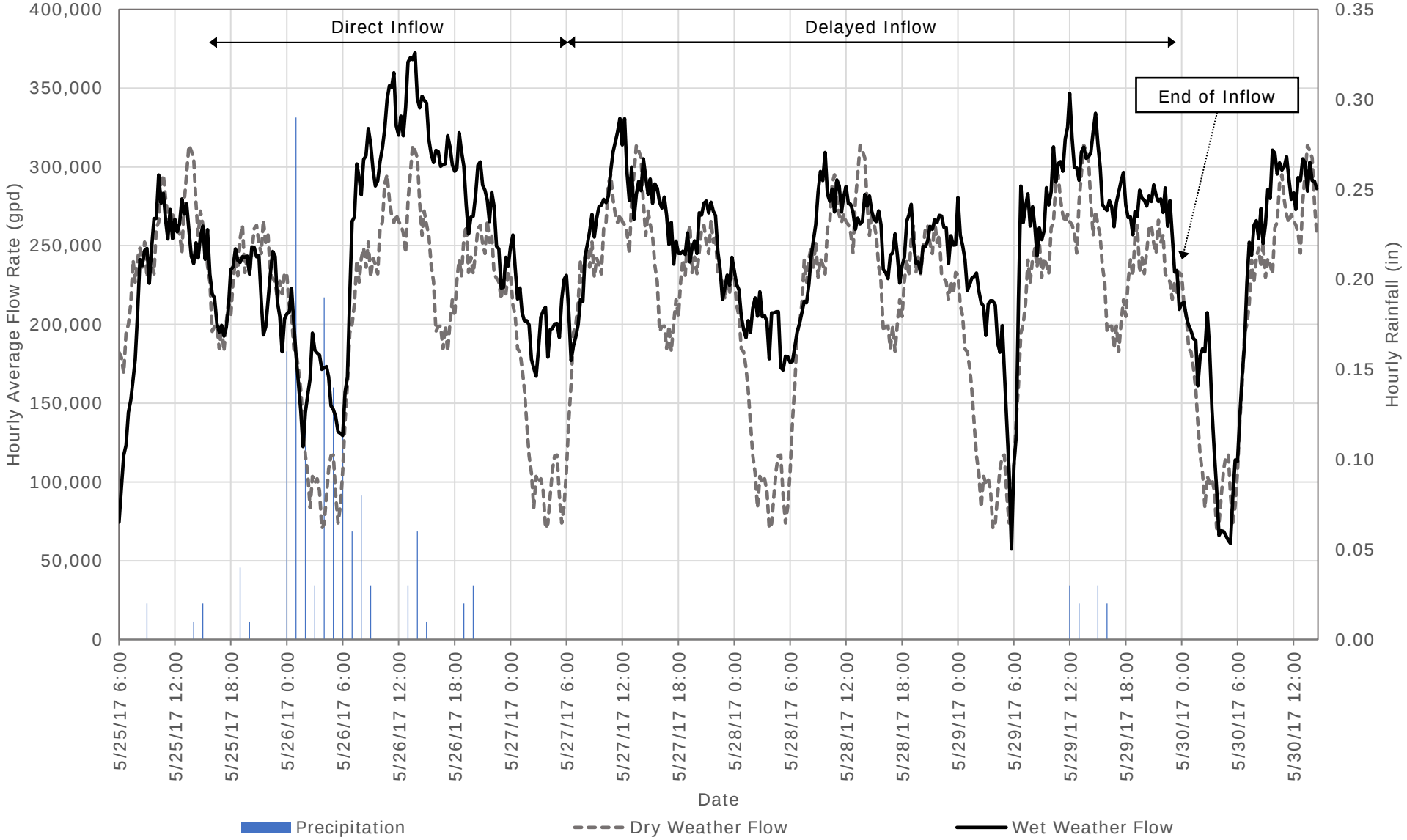


FIGURE F3-6
Inflow Evaluation for Meter 6
Wet Weather Period: 5/25/17-5/27/17 Dry Weather Day: 5/24/17

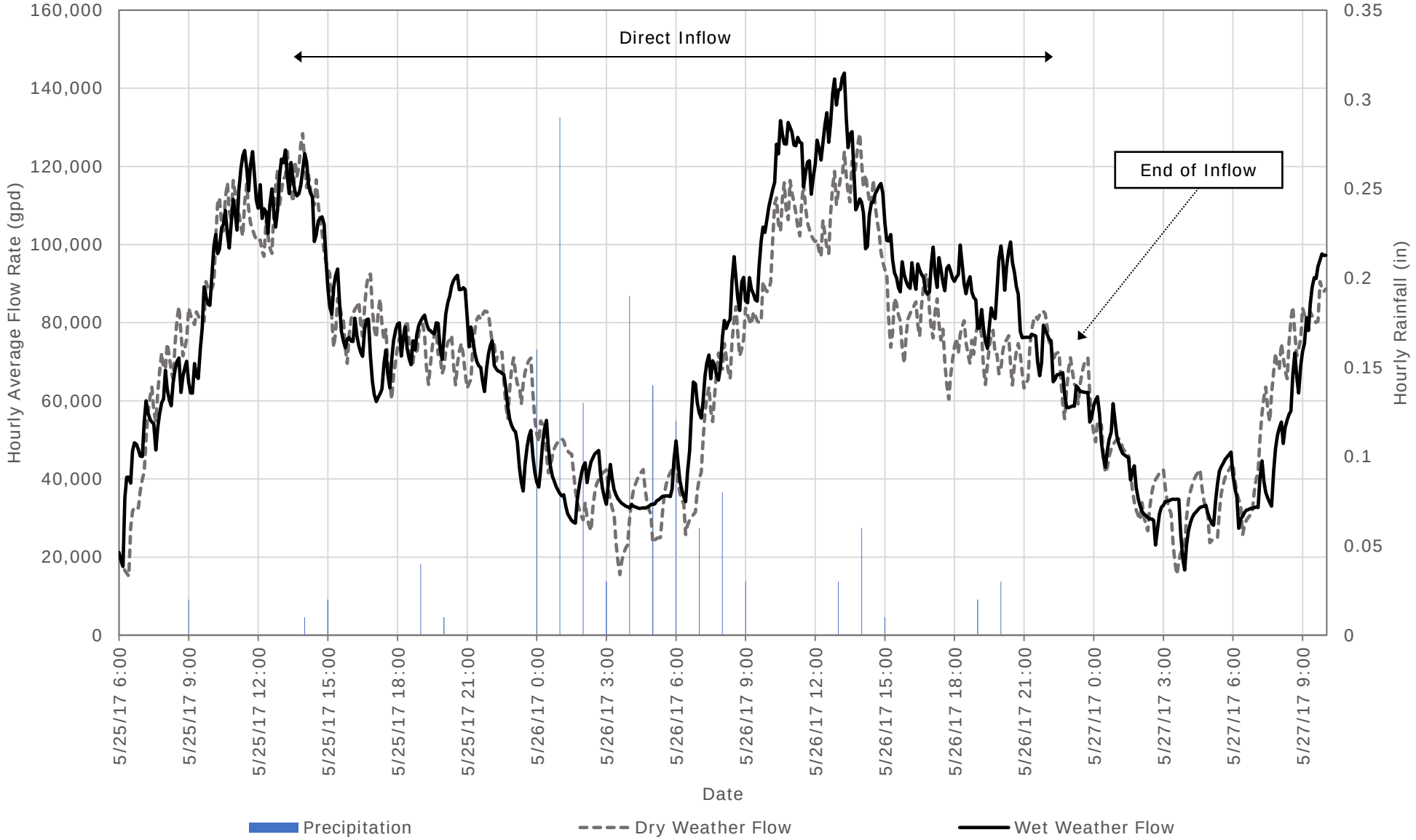


FIGURE F3-7
Inflow Evaluation for Meter 7
Wet Weather Period: 5/25/17-5/27/17 Dry Weather Day: 5/24/17

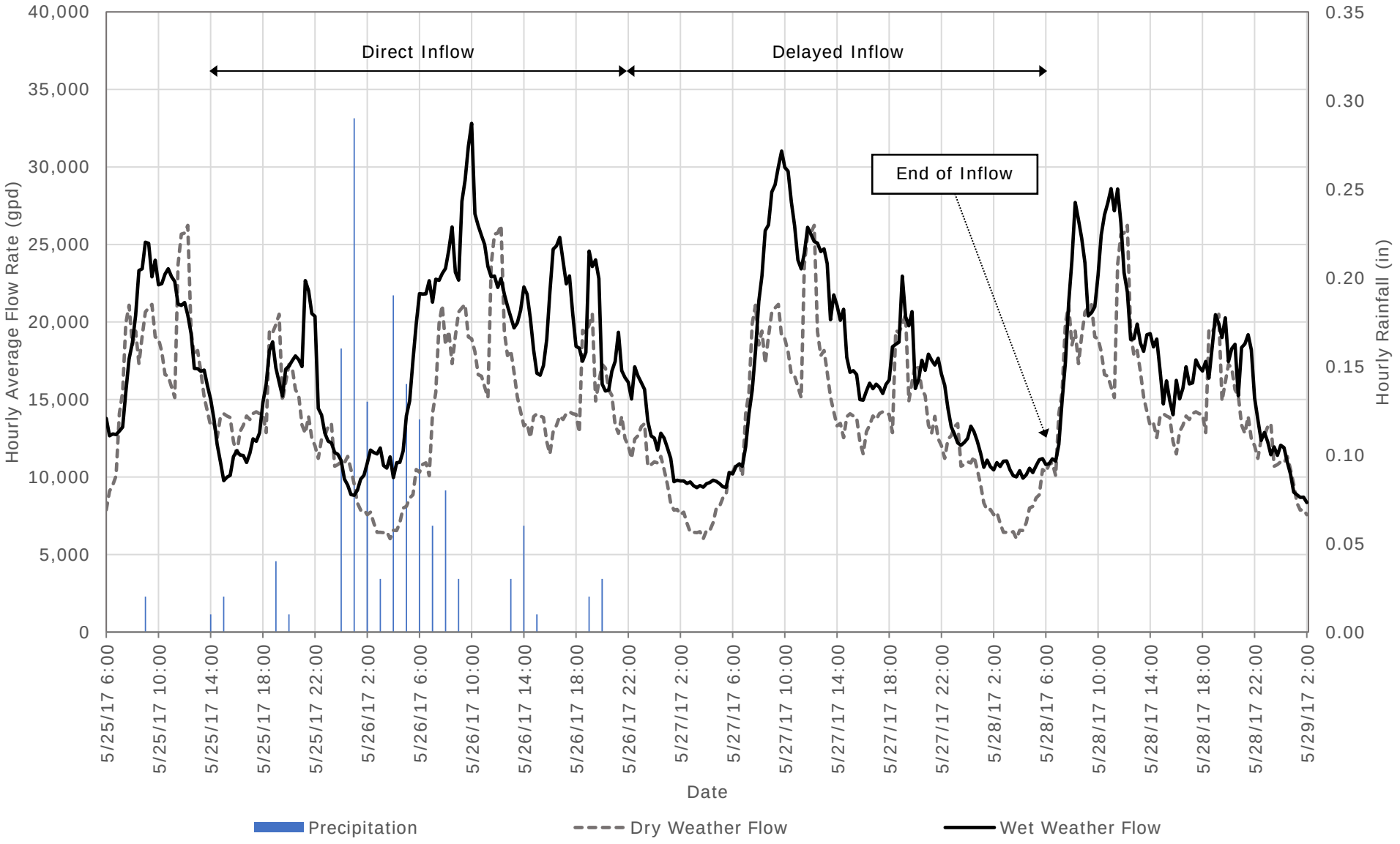


FIGURE F4-1
Meter 1 Direct Inflow Volume vs. Total Rainfall
Comparison for Design Storm Inflow Analysis (Before Upstream Drainage Area Subtractions)

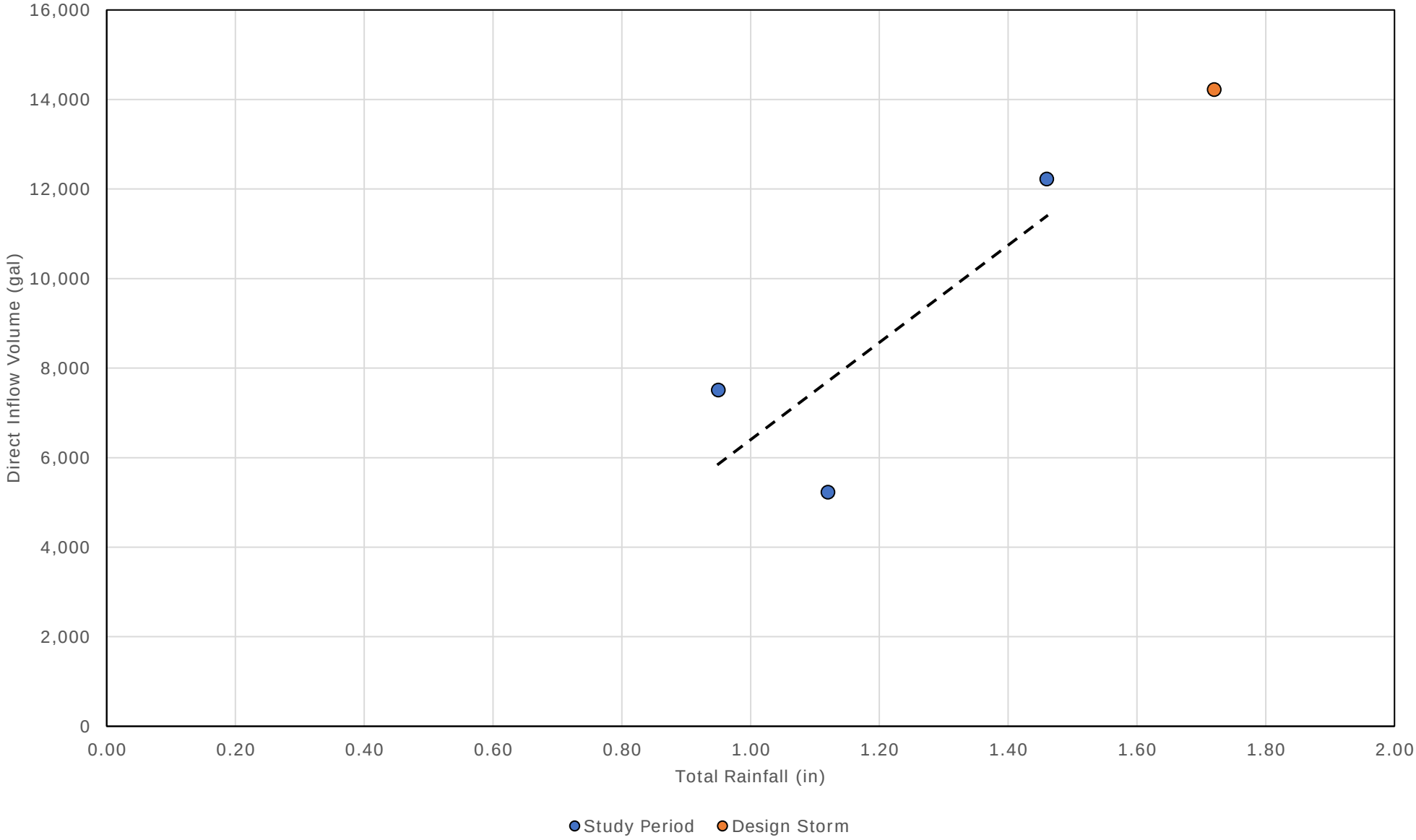


FIGURE F4-2
Meter 2 Direct Inflow Volume vs. Total Rainfall
Comparison for Design Storm Inflow Analysis (Before Upstream Drainage Area Subtractions)

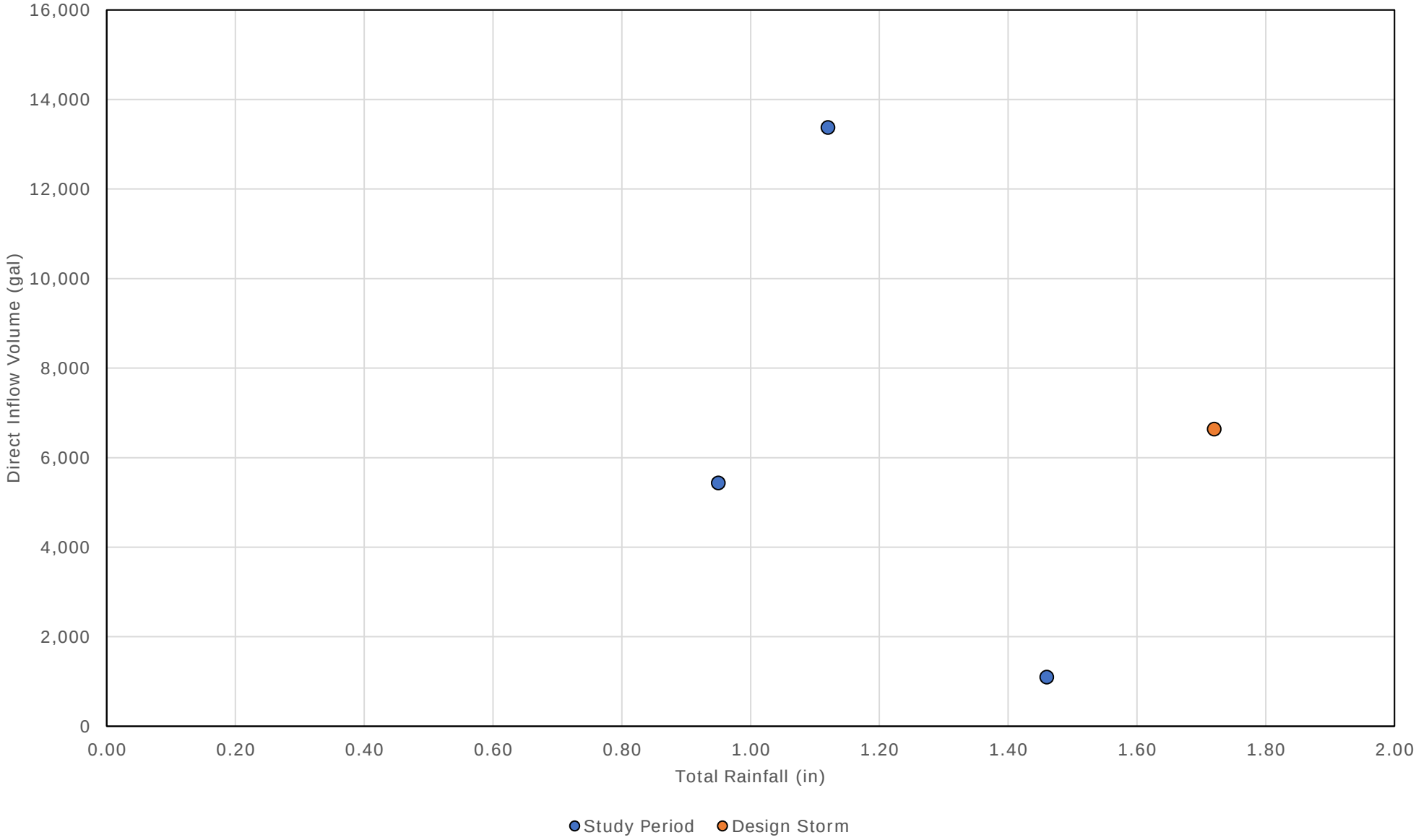


FIGURE F4-3
Meter 3 Direct Inflow Volume vs. Total Rainfall
Comparison for Design Storm Inflow Analysis (Before Upstream Drainage Area Subtractions)

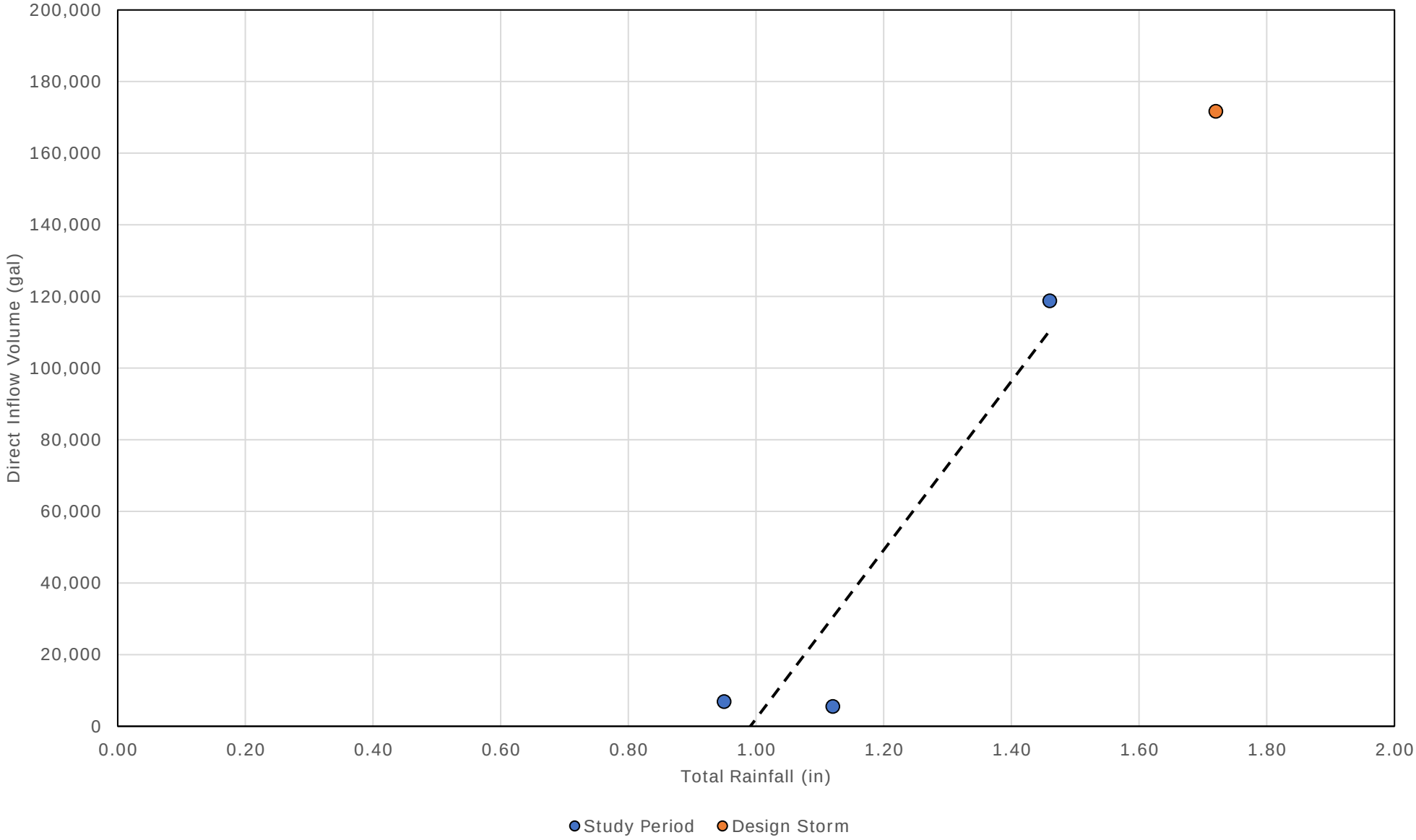


FIGURE F4-4

Meter 4 Direct Inflow Volume vs. Total Rainfall
Comparison for Design Storm Inflow Analysis (Before Upstream Drainage Area Subtractions)

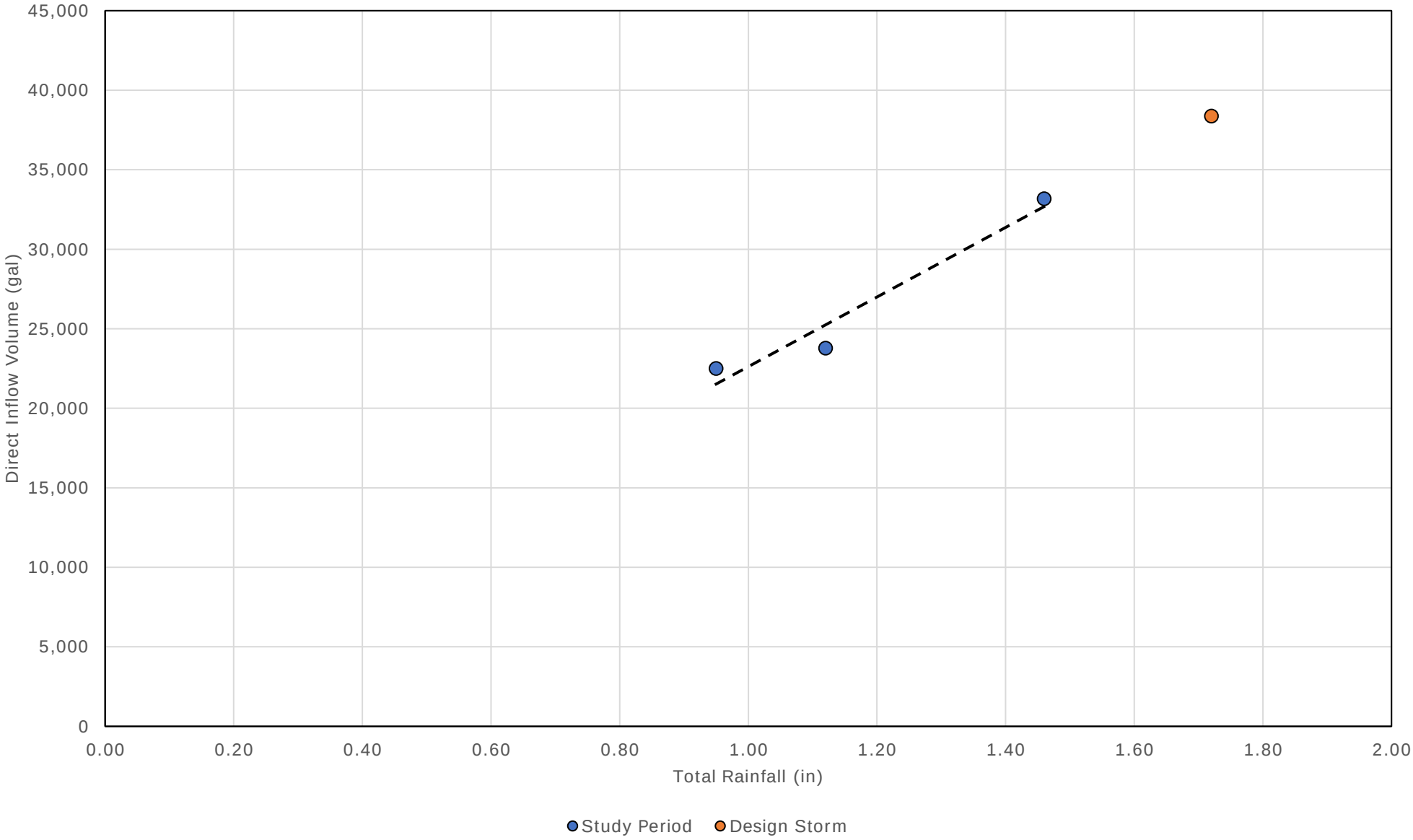


FIGURE F4-5
Meter 5 Direct Inflow Volume vs. Total Rainfall
Comparison for Design Storm Inflow Analysis (Before Upstream Drainage Area Subtractions)

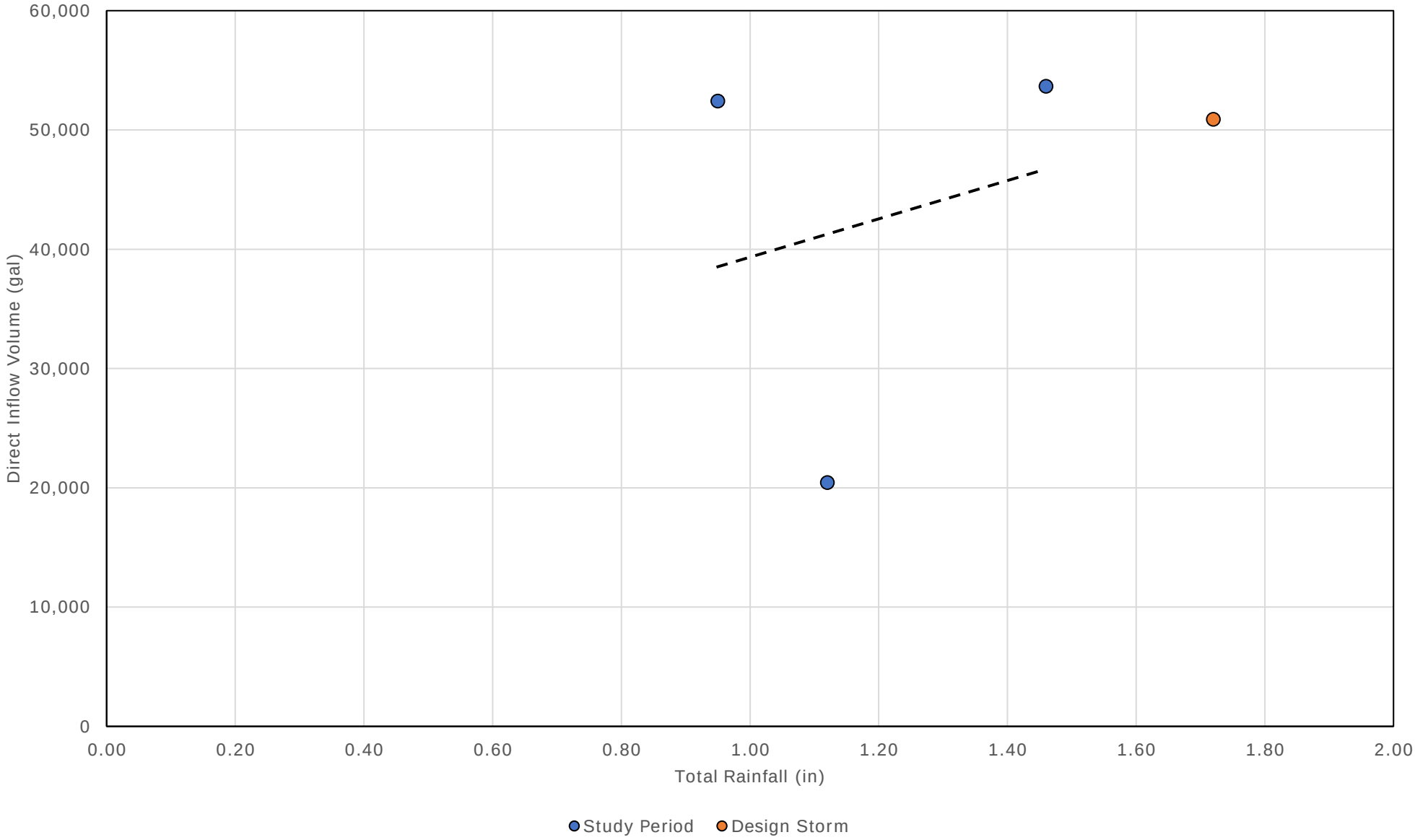


FIGURE F4-6
Meter 6 Direct Inflow Volume vs. Total Rainfall
Comparison for Design Storm Inflow Analysis (Before Upstream Drainage Area Subtractions)

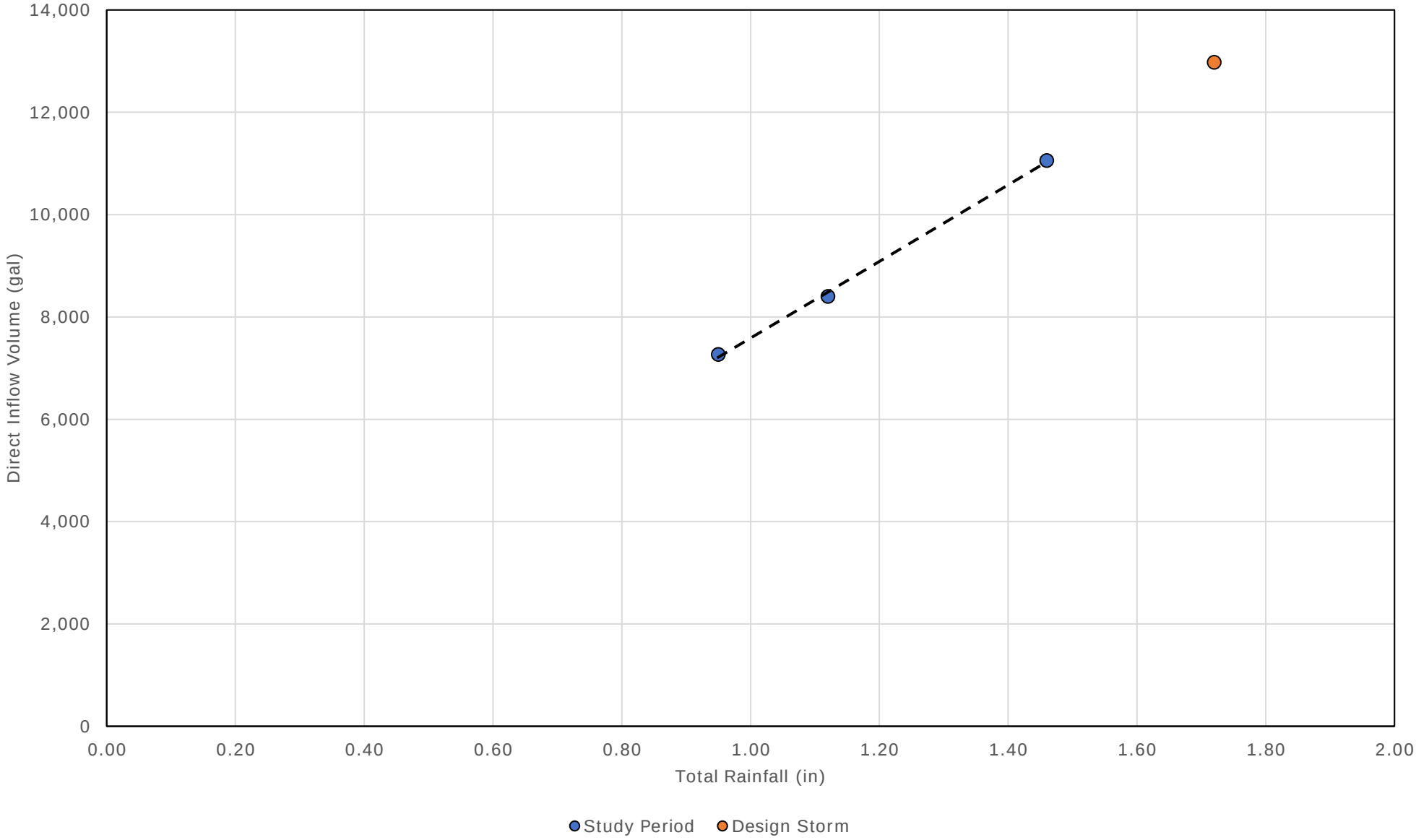
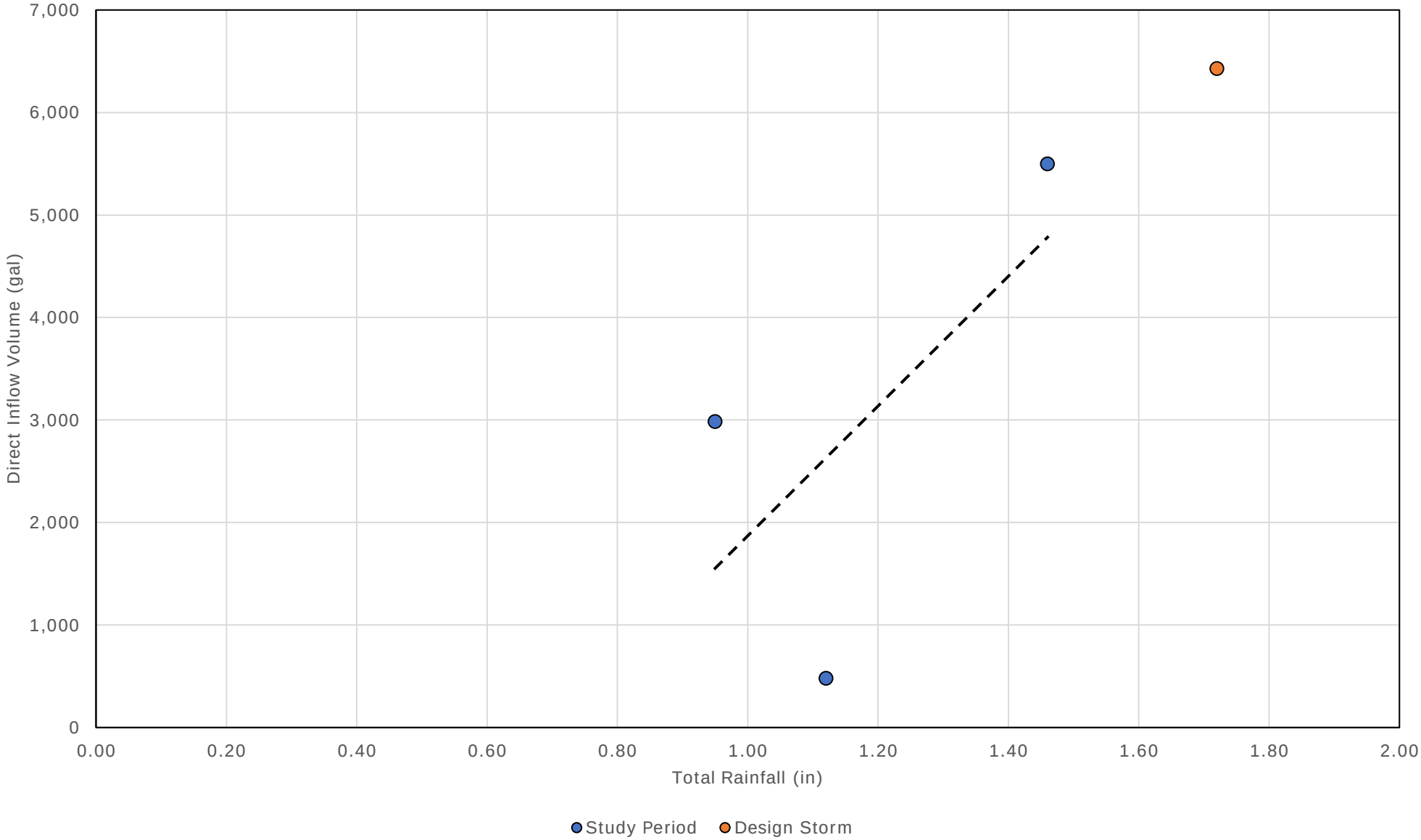


FIGURE F4-7
Meter 7 Direct Inflow Volume vs. Total Rainfall
Comparison for Design Storm Inflow Analysis (Before Upstream Drainage Area Subtractions)



Appendix G
List of Manholes to Inspect during SSES

List of Manholes to Inspect during the SSES

Area 3

Reinspect
SMH-102
SMH-132
SMH-134
SMH-135
SMH-136
SMH-220
SMH-284
SMH-350
SMH-354
SMH-356
SMH-358
SMH-362
SMH-365
SMH-366
SMH-368
SMH-372
SMH-374
SMH-704
SMH-705
SMH-706
SMH-710
SMH-712
SMH-714
SMH-718
SMH-721
SMH-722
SMH-724

New
SMH-133
SMH-229
SMH-256
SMH-276
SMH-322
SMH-378
SMH-720
SMH-767
SMH-98

Area 4

Reinspect
SMH-142
SMH-144
SMH-146
SMH-148
SMH-150
SMH-152
SMH-154
SMH-155
SMH-157
SMH-158
SMH-160
SMH-163
SMH-164
SMH-168
SMH-170
SMH-172
SMH-174
SMH-176
SMH-180
SMH-182
SMH-184
SMH-186
SMH-188
SMH-190
SMH-192
SMH-194
SMH-196
SMH-198
SMH-200
SMH-382
SMH-384
SMH-387
SMH-396
SMH-398
SMH-400
SMH-402
SMH-404
SMH-406
SMH-408
SMH-500
SMH-502
SMH-504
SMH-506
SMH-508
SMH-509
SMH-510
SMH-512
SMH-518
SMH-520
SMH-522
SMH-524
SMH-525
SMH-526
SMH-527
SMH-528
SMH-530
SMH-532
SMH-540
SMH-542
SMH-544
SMH-546
SMH-548
SMH-550
SMH-686
SMH-756

New
SMH-390
SMH-392
SMH-394
SMH-534
SMH-388
SMH-386
SMH-178
SMH-536
SMH-156

Area 5

Reinspect
SMH-603
SMH-654
SMH-656
SMH-658
SMH-660
SMH-662
SMH-664
SMH-666
SMH-668
SMH-670
SMH-672
SMH-674
SMH-676
SMH-678
SMH-680
SMH-682
SMH-684
SMH-692
SMH-694
SMH-696
SMH-698
SMH-700
SMH-702
SMH-703
SMH-750
SMH-752
SMH-754
SMH-770
SMH-772
SMH-780
SMH-782

New
SMH-635
SMH-35
SMH-819
SMH-1
SMH-778
SMH-8
SMH-9
SMH-10
SMH-11
SMH-736
SMH-742
SMH-740
SMH-738
SMH-735
SMH-734
SMH-748
SMH-731
SMH-727
SMH-746
SMH-732
SMH-730
SMH-7
SMH-6
SMH-629
SMH-2
SMH-5
SMH-4
SMH-3
SMH-729
SMH-33
SMH-34
SMH-653
SMH-903
SMH-647
SMH-649
SMH-651

Appendix K

Transfer Station and Hazardous Waste Collection Materials

HOUSEHOLD HAZARDOUS WASTE COLLECTION DAY

September 16, 2017

Belchertown, Department of Public Works

290 Jackson Street

PRE-REGISTRATION REQUIRED

WHAT TO BRING

Any substance labeled:
Caustic, Toxic, Corrosive,
Poison, Flammable, Warning, Danger, Caution

Yard	Garage	Workshop	Home
Pesticides	Engine degreaser	Roofing tar	Oven cleaners
Insect Sprays/ pest strips	Gas treatments	Spray paint	Furniture Polish
Fungicides	Gasoline	Varnish	Upholstery cleaners
Cesspool cleaners	Kerosene	Sealants	Metal Polish
Root killers	Solvents	Wood preservatives/stains	Mothballs
Rodent killers	Brake Fluid	Rust inhibitors	Spot removers/solvents
Muriatic acid	Carburetor cleaner	Paint thinners	Drain cleaners
No-Pest strips	Creosote sealer	Degreasers	Toilet cleaners
Pool chemicals	Asphalt sealer	Adhesives, Glues, Resins	Chemistry kits
Fertilizers	Refrigerants	Photographic Supplies	Arts & Crafts supplies
DDT	Radiator flusher	Lead & Oil-Based paint (NO LATEX PAINT)	Flea powders
Herbicides	Lighter fluid		Disinfectants
Swimming Pool Chemicals	Dry gas		A/C refrigerants
	Automotive Fluids		Antifreeze
			Thermometers/thermostats

What *NOT* To Bring

Latex Paint, Asbestos, Gas Cylinders, Radioactive Material, Empty Containers from Hazardous Products, Explosives including Ammunition and Fireworks, Motor Oil



The Town of Belchertown's
HOUSEHOLD HAZARDOUS WASTE COLLECTION
Saturday, September 16, 2017
Pre-registration is REQUIRED!

Pre-registration enables us to guarantee that your hazardous waste will be taken at this collection…

FEES:

Town Resident -without a Transfer Station Permit Sticker:

Carload	$25.00	(25lbs/25gal)
Half-Car	$15.00	(10lbs/10gal)
Small load	$10.00	(3lbs/3gals)

Town Resident –with a Transfer Station Permit Sticker:

Carload	$15.00	(25lbs/25gal)
Half-Car	$5.00	(10lbs/10gal)
Small load	FREE	(3lbs/3gals)

Date: Saturday, September 16, 2017
Location: DPW, 290 Jackson Street, (Highway Garage Location)
Time: 9AM-12PM (Noon). Vehicles arriving after noon will not be accepted.

***PAYMENT IS DUE AT TIME OF EVENT.**
CASH/CHECKS (Payable to Town of Belchertown)

PLEASE REMEMBER:

This is a residential collection event. **NO COMMERCIAL WASTE WILL BE ACCEPTED.**
No more than 25 wet gals/ 25 dry pounds (or equivalent combination) will be accepted per vehicle.
Latex paint will not be accepted at this collection because it's not considered to be a hazardous material. It must be dried up prior to disposal by thoroughly stirring clean kitty litter or "Speedi-Dri" into the paint (the consistency should resemble thick oatmeal) and letting it dry for 2-3 days. After the paint is dry, you can throw it away in your regular trash without the lid.

PRE-REGISTRATION FORM ~
PAYMENT IS DUE AT EVENT.

Please complete this form. Mail it or return it to "HHW Collection, 290 Jackson Street, Belchertown, MA. 01007 or Fax it to 413 323-0470.

Name _____

Mailing Address _____Zip Code _____

Transfer Station Permit # _____

Office of
DEPARTMENT OF PUBLIC WORKS
290 Jackson Street, P.O. Box 306
Belchertown, Massachusetts 01007-0306
Telephone: (413) 323-0415

Steven J. Williams
Director

Donna Lusignan
Administrative Assistant

August 1, 2017

MassDEP Western Regional Office
436 Dwight Street
Springfield, MA 01103

RE: Town of Belchertown, HHWD, Notification

Dear Sir(s),

As per Massachusetts Hazardous Waste Regulation, 310 CMR 30.392(6)(a)2, the Town of Belchertown, Department of Public Works is hereby making notification that we will be holding a Hazardous Waste Day Collection Event on Saturday, September 16, 2017.

We are currently under contract with Clean Harbors Environmental Services, out of Bristol, CT.to conduct on-site services for this event which will be held at the Department of Public Works, Highway Garage location, 290 Jackson Street, Belchertown, MA. and between the hours of 9am – 12pm (noon).

Should you have any questions regarding this information, please feel free to contact me at the Department of Public Works, Office, at (413) 323-0415 or email swilliams@belchertown.org.

Sincerely,

Steven J. Williams, Director
Department of Public Works

SJW/dml

Attachment

cc: Krista Gloden, HHW Specialist/Clean Harbors
Gary Brougham, Town Administrator
Judy Metcalf, Board of Health
Ted Bock, Fire Dept.



New England Disposal Technologies (NEDT)

http://nedt.org/

A Household Hazardous Products Collection Center
now permitted to accept household hazardous products
from ANY municipality in Massachusetts and adjoining
states. The Collection Center operates on a "Pay-as-you-thro" basis.
For more information click on the link provided above.

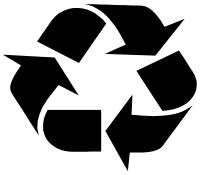
TRANSFER STATION - All aspects of the towns' waste disposal activities are monitored and in adherence to the Transfer Station Rules & Regulations. Violators consisting of non-permitted users and/or failure to use the town's orange recyclable trash bags are identified and promptly notified. The Annual Transfer Station Rules & Regulations can be found on the DPW/Town website by accessing the www.belchertown.org. DPW link/page.

Our residential number of household Transfer Station users totaled 1732 (FY'16). Participation varies slightly from year to year for those who desire to use our disposal/recycling program. The following quantities of solid waste and recyclables were generated during year 2017.

Recyclable	***Per Unit(s)***	***Year 2016***	***Year 2017***
Paper & Cardboard (co-mingled)	Tons	646.23	576.41
Waste Oil (gals)	Single	1900	1750
Tires (single)	Tons	510s/4.39t	438s/3.67t
Solid Waste (tons) Covanta UMM of Holyoke	Tons Tons	728.9 NA	354.71 573.75 Total: 928.46
Electronics (tons)	Tons	18.67	14.55
Scrap Steel (tons)	Tons	72.01	92.1
Textile (tons)	Tons	3.68	3.33
Hazardous Material (NEDT)	Pounds	522lbs.	1106

In addition, the Department was able to maintain pricing since FY' 09 for Transfer Station Permit Stickers currently set at $100.00 annually and discounted for senior citizens age 65+ at $80.00. Bag fees remained steady at $20.00 for large (10 per bundle) and $13.00 for small bags (10 per bundle). Bags may be purchased at a variety of in-town stores, DPW, Finnerty House and at the Transfer Station for resident convenience.

PPD: dml



YEAR 2017

The Town of Belchertown

TRANSFER STATION DAILY HOURS OF OPERATION

Sunday & Monday~ CLOSED

Tuesday	7:30am - 3:15pm
Wednesday	7:30am - 3:15pm
Thursday	7:30am - 5:15pm
Friday	7:30am - 3:15pm
Saturday	7:30am - 3:15pm

Transfer Station Observed Holiday Schedule:

Martin Luther King Day	1.17.2017
Presidents Day	2.21.2017
Patriots Day	4.18.2017
Memorial Day	5.30.2017
Fourth of July	7.4.2017
Labor Day	9.5.2017
Columbus Day	10.10.2017
Veterans Day	11.11.2017
Thanksgiving Day	11.23.2017
Day after Thanksgiving	11.24.2017
Christmas Eve –1/2 day closing at 11AM	12.23.2017
Christmas	12.26.2017
New Year's Eve-1/2 day closing at 11AM	12.30.2017
New Year's Day	1.2.2018

Transfer Station will be closed on the above dates

TRANSFER STATION PERMIT STICKERS NOW AVAILABLE

Annual Transfer Station Permit Stickers are now available for purchase at a cost of $100.00; Senior Citizens age 65+ are $80.00

Stickers are valid from **February 28, 2018 to February 28, 2019** and can be purchased Tuesday thru Friday at the Transfer Station and Monday thru Friday at the Finnerty House and Dept. of Public Works during normal

business hours.

Annual Permit Stickers may be purchased at the Transfer Station located at 135 Jackson Street on the following *Saturdays:*

February 17 ~ February24

March 3 ~ March 10 ~ March 17

Purchase of a sticker must be accompanied by a valid registration, current drivers' license or proof of residency.

TOWN OF BELCHERTOWN

Solid Waste Transfer Station & Recycling Center

Rules and Regulations

Approved by the Board of Selectmen: 01/1989-Rev. Annually
Year 2017

AUTHORITY & PURPOSE

The Board of Selectmen, as operators of the Solid Waste Transfer Station and Recycling Center hereby adopts and orders to be posted in accordance with 310 CMR/19.00 Section 19.10 the following Rules and Regulations. The Board of Selectmen reserves the right to modify these Rules & Regulations at any time. These Rules and Regulations are intended to facilitate the orderly use and management of the Belchertown Solid Waste Transfer Station and Recycling Center.

ENFORCEMENT/ PENALTIES/FINES

The Director of Public Works and/or designee shall be responsible, as agents for the Board of Selectmen, for enforcing these Rules and Regulations. Failure to comply with these Rules and Regulations shall result in a fine of $25.00 per violation. Subsequent offenses may result in revocation of the Transfer Station Permit(s) and/or subject to court action at the violator's expense.

VIOLATIONS

VIOLATIONS: Permit stickers must be attached to the backside of the inside rear view mirror or in a manner which is clearly visible for the station attendants viewing. For verification of accessing the station and with video surveillance the attendant may ask to see permit sticker if not displayed in clear view. Those not in compliance or cannot produce a permit stickers will be asked to leave the station and not return until proof of sticker has been obtained.

Violation letters will be sent to the owners' address listed on file that correlates with the permit sticker purchase. Letters will be sent out for the following reasons and to ensure operating procedures remain fair and equitable to all transfer station users: 1.Non-use of recyclable orange trash bags 2.No Permit Sticker 3.Any misuse or non-adherence to any of the Transfer Station Rules & Regulations as set forth in this By-Law and in accordance with the Belchertown Code § 109-5, A.B.C, § 109-6

OPERATION AND MAINTENANCE

Operation and maintenance of the Solid Waste Transfer Station and Recycling Center shall at all times comply with the Department of Environmental Protection Regulation 310 CMR/19.00 and any other regulation or order that the Board of Health from time to time adopts or issues under MGL Chapter 111, Section 150A.

SECTION 1 - OPERATING HOURS AND LOCATION

- **LOCATION:** 135 Hamilton Street, Belchertown, MA. Telephone #: 323-0416
- **OPEN:** Tuesday, Wednesday, Friday, Saturday - 7:30am to 3:15pm, Thursdays – 7:30am to 5:15pm
- **CLOSED:** Sunday and Monday, and the following days and holidays: half-day before Christmas, Christmas, Thanksgiving, the day after Thanksgiving, New Year's Day, Fourth of July and Veteran's Day, Closed Tuesdays following: Martin-Luther King Day, Presidents Day, Patriots Day, Memorial Day, Labor Day & Columbus Day. (Holidays that occur on a Sunday or Monday will be observed on Tuesday and the station will be closed.)

SECTION 2 – ACCESS

Belchertown residents only and those licensed by the Board of Health under MGL, Chapter 111, Sec. 31A are allowed access to the Transfer Station in accordance with the following provisions:

Resident Household Permit;

1. Upon presentation of a valid motor vehicle registration and/or proof of residency and payment of fee as required in Section 3 a permit shall be issued at the following locations and hours:
   - Board of Selectmen's Office, Finnerty House, One South Main Street, between 8AM-5PM
   - Department of Public Works, 290 Jackson Street, between 8AM-5PM
   - Transfer Station/Recycling Center, 135 Hamilton Street, Tues., Wed., Fri. 7:30AM-3:15PM, Thursdays from 7:30AM-5:15PM.

2. Permits are valid from March 1st, 2017 thru expiration date of February 28th/29th, 2018.

3. Permit must be displayed to the backside of the inside rear view mirror. This will be enforced and those not complying will not be allowed to enter the Transfer Station. Failure to comply with these Rules and Regulations shall result in a fine of $25.00 per violation.

SECTION 3 - USER FEES

1. **Town Trash Bags**:

   All unrecyclable trash is to be disposed of in "Town of Belchertown" orange trash bags as defined herein. These bags are available for purchase at the Transfer Station, the Selectmen's Office and the Department of Public Works during regular business hours. Trash bags can only be used once, therefore you are not to empty trash from the bags into the compactor. Failure to comply with these Rules and Regulations shall result in a fine of $25.00 per violation.

   Cost: Large Bags are $2.00 ea. or 10 bags in a bundle for $ 20.00
   Small Bags are $1.30 ea. or 10 bags in a bundle for $ 13.00

Bags are also available for purchase at the following town business locations:
Pine Valley Plantation, Checkers General Store, Stop & Shop

2. **Transfer Station Permit Fees**:

a. Permit for vehicles up to and including 3/4 ton pick-up trucks:

effective March 1st –August 31st	$100.00
effective September 1st – February 28th/29th	$50.00

b. For second vehicles registered at the same address:

effective March 1st – August 31st	$20.00
effective September 1st – February 28th/29th	$10.00

NOTE: Only two (2) motor vehicles stickers shall be issued for each household.

c. For senior citizens 65 years of age and over (proof of age required):

effective March 1st- August 31st	$80.00
effective September 1st - February 28th/29th	$40.00

d. One time access permit (All regulations apply)	$20.00
e. Lost/Replacement Sticker Fee:	$20.00

Special Purpose Permits & Charged Items

Residents can purchase a special permit at the Selectmen's Office, Department of Public Works, or at the Belchertown Transfer Station

Category	*Item*	*Fee (per item)*
Tire Fees	Automobile Tire	$3.00 ea.
	Automobile Tire on Rim	$4.00 ea.
	Light truck tire	$4.00 ea.
	Heavy truck tire	$15.00 ea.
	Tractor tire	$20.00 ea.
White Goods –w/refrigerants	Refrigerator, air-conditioner, freezer, dehumidifier	$50.00 ea.
White Goods- No refrigerants	Stove, dishwasher, hot water heater, washer, dryer	$25.00 ea.
Miscellaneous Items:	Computer Monitor	$15.00 ea.
Televisions	Measured by attendant- size determined by corner to corner/diagonally screen size only.	TV sizing fee: 0-25" $ 10.00 26 - 40" $ 15.00 41 + $ 20.00
	Microwaves	$15.00 ea.
Furniture	**Large** Upholstered Furniture, Rugs Sofa/Loveseat Sleeper Sofa	$20.00 ea. $20.00 ea. $30.00 ea.
	Small Upholstered Furniture	$10.00 ea.
Mattresses	Mattresses Box Springs	$40.00 ea. $15.00 ea.
Materials; Loose	▪ Per Carload up to 20 cu.ft. ▪ Half-Pickup load –uo to 26 cu.ft ▪ Full Pickup load – (level with body.Any material above body will be considered as a second load and will require a second permit. ▪ **NO COMMERCIAL LOADS**	$10.00 ea. $20.00 ea. $40.00 ea.
Roofing materials	Only accepted with laboratory certification stating, "FREE of Asbestos". Roofing materials are considered demolition waste; therefore a special permit is required.	Not Accepted

NO CHARGE ITEMS (Must have a Valid Landfill Permit)

- Used Motor Oil (Disposal on Tuesday thru Friday only, *No Saturdays*. Oil must be in small containers and not contaminated with any other substances. Oil from commercial garages and shops *WILL NOT* be accepted and/or bulk quantities.
- Brush/Yard Waste (Leaves, grass and brush may be brought into the composting area, any day of the week
  Christmas Trees are accepted, stumps are NOT accepted.
- Fluorescent Bulbs
- Mercury bearing devices (thermometers)
- Small scrap metal items, including lawnmowers and bicycles, gas grills(Propane Tanks must be removed) * Propane tanks are not accepted..

NEEDLES:

- Needles/Syringes/Sharps- The disposal of needles, syringes and lancets (sharps) is strictly prohibited at the Transfer Station. Improper disposal of infectious or physically dangerous medical or biological waste may result in penalties pursuant to the state sanitary code. (M.G.L. Chapter 111, Section 127A). Sharps containers for disposal can be obtained at: Medasend -1-800-200-3581 or Stericycle-1-800-355-8773.

SMOKE DETECTORS:

- Smoke Detectors- are prohibited and should be sent back to the manufacturer. The vast majority of smoke detectors are made by First Alert Corporation. Send old detectors to First Alert, Radioactive Waste Disposal, 780 McClure Rd., Aurora, IL 60504-2495,1-800-323-9005. Others are made by a Canadian firm called American Sensors, dial 1-800-387-4219 for information. The companies sell detectors under many different brand names and can dispose of any of them. Send detectors by surface mail or UPS Ground so they don't end up in an airplane.

BATTERIES

- Most small batteries are now accepted at the transfer station however, the terminals must be taped over for non-conductivity. Please see the transfer station attendant for further information and a list of disposable batteries that are accepted.

SECTION 4 - GENERAL REGULATIONS

1. All refuse is to be placed at the Transfer Station as directed by the attendant.
2. Smoking is prohibited within the Transfer Station area.
3. Scavenging or salvaging is prohibited.
4. No refuse generated from outside Belchertown shall be disposed of by residents or haulers at the Transfer Station.
5. No large mechanical equipment such as a motor vehicle may be disposed of at the Transfer Station.

SECTION 5 – RECYCLING

A Special Town Meeting vote on May 14, 1990 made recycling mandatory in Belchertown.

DEFINITION: Recyclables are hereby defined as clean discarded materials which may be reclaimed and which are considered potentially salable and recyclable by the Town of Belchertown. For the purpose of these Rules and Regulations, they are defined as follows:

SEPARATION AND PREPARATION OF RECYCLABLES:

- All material when brought to the Transfer Station must be correctly placed in the properly marked container.
- Glass and Tin Items are to be placed in the same container at the Transfer Station.
- Milk, juice and drink box cartons are recyclable and are to be placed with the glass and tin items.
- All metal and plastic containers should be rinsed, and flattened (if possible) to conserve space in the hauling container.
- Glass bottles must be placed in the hauling container whole. Breakage which occurs during placement in the hauling container is acceptable, but residents must not pre-break or crush the glass beforehand.
- All paper and cardboard must be flat when placed in the proper container.
- All users of the Belchertown Transfer Station must separate and prepare their recyclables in the fashion prescribed above.

THE "YES AND NO" OF WHAT CAN GO IN THE RECYCLING BOXES

YES	NO
Aluminum *Empty and rinse.* ➢ cans ➢ aluminum foil ➢ pie pans, aluminum trays	siding scrap metal foil-wrapped beverage pouches (Capri Sun) pots & pans utensils tools
Steel (tin) cans *Empty and rinse. Labels do not need to be removed.* ➢ food and beverage cans (metal lids OK) ➢ pet food, soup cans (metal lids OK) ➢ EMPTY aerosol spray cans (food, laundry, beauty)	hangers scrap metal paint cans pots & pans utensils tools toys appliances pipes fuel tanks car parts aerosol spray cans that contained hazardous products: spray paint, insecticides, etc.
Glass *Empty and rinse. Discard lids in trash.* *Labels do not need to be removed.* ➢ food and beverage bottles and jars	ceramics baking dishes dishware drinking glasses broken glass cookware (Pyrex) coffee mugs medicine bottles plate glass mirrors light bulbs fluorescent lights eye glasses vases holiday lights windows glass art wine corks canning jars
Plastics *Empty and rinse. Caps and lids OK if left on.* *ONLY containers smaller than 2.5 gallons are recyclable.* ➢ food containers: margarine, yogurt, cooking oil, condiments, peanut butter ➢ beverage bottles and jugs: soda, water, juice, milk ➢ detergent bottles, dish soap bottles ➢ personal care bottles: shampoo, soap, etc. ➢ clear plastic clamshells (no black or Styrofoam)	plastic bags plastic wrap/ cling wrap Styrofoam (polystyrene) cups/ take-out containers cups, plates, utensils, straws cookie trays black plastic liners from food packaging compostable plastics cellophane food bags (e.g., candy bars, cookies, pasta) frozen food bags/pouches meat trays egg cartons medicine & pill bottles "packing" peanuts foam packing packaging of any kind laundry baskets toys flower pots 5-gallon pails; buckets VCR tapes, CDs, cases tarps containers that contained motor oil, anti-freeze, pesticides, pool chemicals or other hazardous substances curbside/other plastic bins dry cleaner/garment bags indoor/outdoor/patio furniture swimming pools hoses; PVC piping or tubing containers bigger than 2.5 gallons Nalgene water bottles holiday lights
Cartons *Empty, rinse, & flatten. Throw away caps & straws.* ***Recycle with containers, not with paper.*** ➢ milk and juice cartons (plastic spout OK) ➢ soymilk, soup and drink boxes (remove straws)	foil-wrapped pouches (Capri Sun) frozen juice cartons frozen food packaging plastic straws
Paper *Clean paper only. Flatten boxes.* *"Windows" in envelopes, staples, paper clips, tape all OK* ➢ newspaper, inserts, magazines, junk mail ➢ white, colored, glossy, and construction paper ➢ shredded paper—put in paper bag ➢ corrugated cardboard, **clean** pizza boxes *(no grease or food)* ➢ boxboard (for example, cereal boxes) ➢ gift wrap, gift bags, cards, gift tissue paper (no metallic inks, foil, wire, glitter) ➢ paperback books and phonebooks	soda, beer cartons paper cups paper plates egg cartons frozen juice cartons take-out containers butter, margarine boxes paper towels, napkins tissues Tyvek or padded envelopes hardcover books stickers & sticker sheeting glossy boxes that show white strands when torn (frozen food boxes) blueprints dirtied paper (pet waste, paint) copy paper packaging



SECTION 6 - HAZARDOUS MATERIALS

COMMERCIAL AND HAZARDOUS WASTES ARE PROHIBITED FROM THE TRANSFER STATION. These wastes should be saved for Household Hazardous Waste Collections. Commercial quantities are regulated by State Law. This includes, but is not limited to the following:

Any substance labeled:
Caustic, Toxic, Corrosive, Poison, Flammable, Warning, Danger, Caution

From Your Yard	From Your Garage	From Your Workshop	From Your Home
Pesticides	Engine degreaser	Roofing tar	Oven cleaners
Insect Sprays	Gas treatments	Solvents	Furniture Polish
Fungicides	Gasoline	Varnishes/oils	Upholstery cleaners
Cesspool cleaners	Kerosene	Sealants	Metal Polish
Root killers	Solvents	Wood strippers	Mothballs
Rodent killers	Brake Fluid	Rust inhibitors	Spot removers
Muriatic acid	Carburetor cleaner	Paint thinners	Drain cleaners
No-Pest strips	Creosote sealer	Degreasers	Toilet cleaners
Pool chemicals	Asphalt sealer	Wood preservatives	Chemistry kits
Fertilizers	Car wax	Wood strippers	Arts & Crafts supplies, dyes, glazes, ink, glue
DDT	Turpentine	Wood Stains/putty	Flea powder
Silvex	Radiator flusher	Lead & Oil-Based paint (NO LATEX PAINT)	Disinfectants
Chlordane	Lighter fluid	Photo chemicals	Nail polish removers
Mirex	Dry gas	Adhesives, Glues, Resins	Spot removers
Aldrin	Alcohols	Spray paint	Floor cleaners, floor polish
Mothballs/Flakes	Anti-freeze	Water proofers	Furniture polish
Flea powders/ collars	Rust proofing	Chemistry sets	Upholstery cleaners
Shampoos	Antifreeze		Mercury Items- Thermometers & Thermostats.

Latex Paint: Non-Hazardous

Latex paint must be dried up prior to disposal. This can be accomplished by thoroughly stirring clean kitty litter or "Speedi-Dri" into the paint (the consistency should resemble thick oatmeal) and letting it dry for 2-3 days. After the paint is dry, you can throw it away in your regular trash without the lid.

The Town has the right to refuse unidentified materials and large amounts of hazardous waste.