Winnetka Village Council
REGULAR MEETING
Village Hall
510 Green Bay Road
Tuesday, August 21, 2012
7:30 p.m.

Emails regarding any agenda item are welcomed. Please email contactcouncil@winnetka.org, and your email will be relayed to the Council. Emails for the Tuesday Council meeting must be received by Monday at 4 p.m. Any email may be subject to disclosure under the Freedom of Information Act.

AGENDA

1) Call to Order
2) Pledge of Allegiance to the Flag
3) Quorum
   a) September 6, 2012, Regular Meeting
   b) September 11, 2012, Study Session
   c) September 18, 2012, Regular Meeting
4) Approval of Agenda
5) Consent Agenda
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10) New Business
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11) Reports

12) Executive Session

13) Adjournment

NOTICE

All agenda materials are available at villageofwinnetka.org *(Council > Current Agenda)*, the Reference Desk at the Winnetka Library, or in the Manager's Office at Village Hall (2nd floor)**.**

Videos of the Village Council meetings are televised on Channel 10 every night at 7 PM and on Channel 18 M-F-Su at 7AM or 7 PM. Videos of the meeting may also be viewed on the Internet via a link on the Village's web site: villageofwinnetka.org

The Village of Winnetka, in compliance with the Americans with Disabilities Act, requests that all persons with disabilities who require certain accommodations to allow them to observe and/or participate in this meeting or have questions about the accessibility of the meeting or facilities, contact the Village ADA Coordinator – Kathie Scanlan, at 510 Green Bay Road, Winnetka, Illinois 60093, 847.716.3540; T.D.D. 847.501.6041.

MINUTES
WINNETKA VILLAGE COUNCIL
SPECIAL MEETING
July 10, 2012

(Approved: xx)

A record of a legally convened meeting of the Council of the Village of Winnetka, which was held in Village Hall on Tuesday, July 10, 2012, at 7:30 p.m.

1) Call to Order. President pro tem Spinney called the meeting to order at 7:31 p.m. Present: Trustees Arthur Braun, Jack Buck, Patrick Corrigan, Stuart McCrary and Richard Kates. Absent: Village President Jessica Tucker. Also present: Village Manager Robert Bahan, Village Attorney Katherine Janega, Community Development Director Mike D'Onofrio, Director of Water & Electric Brian Keys, Assistant Director of Water & Electric Rich Ciesla, Fire Chief Alan Berkowsky, Deputy Fire Chief John Ripka, Finance Director Ed McKee and approximately four persons in the audience.

2) Pledge of Allegiance. President pro tem Spinney led the group in the Pledge of Allegiance.

3) Quorum.

   a) July 17, 2012, Regular Meeting. All of the Council members present indicated that they expected to attend.

   b) August 7, 2012, Regular Meeting. All of the Council members present, with the exception of Trustee Braun, indicated that they expected to attend.

   c) August 14, 2012, Study Session. (Cancelled)

4) Approval of the Agenda. Trustee Braun, seconded by Trustee McCrary, moved to approve the Agenda. By roll call vote the motion carried. Ayes: Trustees Braun, Buck, Corrigan, Kates, McCrary, and Spinney. Nays: None. Absent: None.

5) Consent Agenda.

   a) Village Council Minutes.

      i) May 15, 2012, Regular Meeting.

      ii) June 5, 2012, Regular Meeting.

      iii) June 19, 2012, Regular Meeting.

   b) Warrant Lists Nos. 1755 and 1756. Approving Warrant List No. 1755 in the amount of $294,537.17, and Warrant List No. 1756 in the amount of $758,572.77.

   c) Resolution R-29-2012: IAFF Contract Approval – Adoption. Approving an agreement between the Village and the Local 2077 of the International Association of Firefighters for the period April 1, 2011 through December 31, 2014.

   Trustee Braun, seconded by Trustee McCrary, moved to approve the foregoing items on the Consent Agenda by omnibus vote. By roll call vote, the motion carried. Ayes: Trustees Braun, Buck, Corrigan, Kates, McCrary and Spinney. Nays: None. Absent: None.

6) Stormwater Update. None.

7) Ordinances and Resolutions. None.

8) Public Comment and Questions. None.

9) Old Business.

   a) Ordinance MC-4-2012: Updated Building Codes (Amend). Attorney Janega reviewed the revisions to the subject Ordinance, which included substantive amendments to the sections dealing with outdoor fires, the International Fire Code, single family home address display signs, and elevator installations for multifamily dwellings.

      The Council thoroughly discussed the new provisions and had their questions answered by Attorney Janega, Mr. D'Onofrio and Fire Chief Berkowsky, after which Attorney Janega asked the Council for its approval of the amendments in the draft ordinance.

      Trustee Kates, seconded by Trustee Corrigan, moved to amend the ordinance as presented by the Village Attorney. By voice vote, the motion passed.

10) New Business. None.

11) Reports.

   a) Village President. President pro tem Spinney reported on the last Chamber of Commerce meeting, encouraged residents to attend the upcoming Sidewalk Sale, and thanked Village and Park District staff and for their work on the July 4th festivities.

   b) Trustees.

      i) Trustee Braun reported on the last EFC meeting, and suggested that the Council consider their request to have a staffperson get LEED certification training.

      ii) Trustee McCrary asked if the Village should have an outright ban on lawn sprinking, as other communities have done. Manager Bahan explained that the sprinkling ban was instituted by Highland Park because their plant was reaching pumping capacity limits, and that the Village is not at that point. Director Keys said the water plant is currently keeping up with Winnetka/Northfield's water requirements, but that the Village Code has a mechanism in place for a ban to be issued if capacity becomes a problem.

   c) Attorney. Attorney Janega reported that she had made a presentation at the Municipal League's June ethics conference for municipal lawyers. She also noted an article in the current issue of *Quintessential New Trie*r about Tuskegee Airman David James, a long-time Winnetka resident.

   d) Manager. None.

12) Appointments. None.

13) Executive Session. None.

14) Adjournment. Trustee Braun, seconded by Trustee Corrigan, moved to adjourn the meeting. By voice vote, the motion carried. The meeting adjourned at 8:19 p.m.

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Recording Secretary

MINUTES
WINNETKA VILLAGE COUNCIL STUDY SESSION

July 10, 2012

(Approved: xx)

A record of a legally convened meeting of the Council of the Village of Winnetka, which was held in the Village Hall Council Chambers on Tuesday, July 10, 2012, at 7:30 p.m.

1) Call to Order. President pro tem Jennifer Spinney called the meeting to order at 8:23 p.m. Present: Trustees Arthur Braun, Jack Buck, Patrick Corrigan, Stuart McCrary and Richard Kates. Absent: Village President Jessica Tucker. Also in attendance: Village Manager Robert Bahan, Village Attorney Katherine Janega, Finance Director Ed McKee, Director of Water & Electric Brian Keys, Assistant Director of Water & Electric Rich Ciesla, and two persons in the audience.

2) Discussion: Northfield Substation Transformer. Manager Bahan explained for the benefit of the new Trustees that this issue was introduced at the last budget cycle, and has also been discussed by several prior councils. He noted that the plan could be amended by the current Council if it so desires.

   Mr. Keys explained that the Village's electrical system, has three main components: underground tie lines with ComEd; a Village-owned substation; and generation equipment at the Electric Plant. He also explained how the Electric Department plans for peak loads both in normal weather and in the event of a contingency, and explained the need for an additional transformer.

   The Council asked questions and discussed the electrical infrastructure with Mr. Keys. Mr. Keys then asked the Council for direction to move forward with development of specifications for the switchgear and to notify ComEd that the Village would like a second interconnection for future transformer installation. He explained that the switchgear specifications would be brought before the Council for review, after which it can make the decision to move forward with the project or not.

   After further discussion and questions from the Council, there was agreement to direct Mr. Keys to prepare the bids for the switchgear.

3) Adjournment. Trustee Braun, seconded by Trustee Kates, moved to adjourn the meeting. By voice vote, the motion carried. The meeting adjourned at 9:17 p.m.

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Recording Secretary

MINUTES
WINNETKA VILLAGE COUNCIL
REGULAR MEETING
July 17, 2012

(Approved: xx)

A record of a legally convened meeting of the Council of the Village of Winnetka, which was held in Village Hall on Tuesday, July 17, 2012, at 7:30 p.m.

1) Call to Order. President pro tem Spinney called the meeting to order at 7:30 p.m. Present: Trustees Arthur Braun, Jack Buck, Patrick Corrigan, Richard Kates, and Stuart McCrary. Absent: Village President Jessica Tucker. Also present: Village Manager Robert Bahan, Village Attorney Katherine Janega, Public Works Director Steve Saunders, Director of Water and Electric Brian Keys, Community Development Director Mike D'Onofrio, Fire Chief Alan Berkowsky, Deputy Fire Chief John Ripka, and approximately 11 persons in the audience.

2) Pledge of Allegiance. President pro tem Spinney led the group in the Pledge of Allegiance.

3) Quorum.

   a) August 7, 2012 Regular Meeting. All of the Council members present except Trustee Braun indicated that they expected to attend.

   b) August 14, 2012 Study Session. Cancelled.

   c) August 21, 2012 Regular Meeting. All of the Council members present indicated that they expected to attend.

4) Approval of the Agenda. Trustee Braun, seconded by Trustee McCrary, moved to approve the Agenda. By roll call vote the motion carried. Ayes: Trustees Braun, Buck, Corrigan, Kates, McCrary and Spinney. Nays: None. Absent: None.

5) Consent Agenda

   a) Village Council Minutes. None.

   b) Warrant Lists Nos. 1757 and 1758. Approving Warrant List No. 1757 in the amount of $827,767.11, and Warrant List No. 1758 in the amount of $612,404.81.

   c) Equipment Purchase: Snow Blower Replacement. Awarding a purchase order to Lindco Equipment Sales, Inc., in the amount of $83,953 for the purchase of a Sno-Go model WK800 snow blower, including options as specified, pursuant to their bid pricing.

   d) Bid #12-008: State of Illinois Emergency Repair Program Funds – 2012 Street Rehab – Hibbard Rd. / Winnetka Ave. Awarding a contract to Curran Contracting Company for the State of Illinois Emergency Repair Funds 2012 Street Rehabilitation for Hibbard Road and Winnetka Avenue in the amount of $646,995.70.

   e) Ordinance MC-4-2012: Updating Building and Fire Codes – Adoption. Amending the Village's building and fire codes by adopting and amending updated model codes incorporated into the Village Code by reference, in the form approved by the Council at its July 10th Special Meeting.

Trustee Braun, seconded by Trustee McCrary, moved to approve the foregoing items on the Consent Agenda by omnibus vote. By roll call vote, the motion carried. Ayes: Trustees Braun, Buck, Corrigan, Kates, McCrary and Spinney. Nays: None. Absent: None.

6) Stormwater Update.

a) One Year After the July 2011 Flood. Village Engineer Steve Saunders reviewed the events of July 22 and 23, 2011, which led to what he described as the most intense flood damage he had seen in his more than 25 years with the Village. He explained that the Council was already considering stormwater management at that time, and that Christopher B. Burke Engineering, Ltd. (CBBEL) had been engaged after a severe storm in September of 2008 to study the Village's watersheds and make recommendations.

Mr. Saunders said after the severe flooding last July, higher magnitude events were studied by CBBEL and a presentation was made to the Council in October of 2011. He reviewed the recommendations that came out of this subsequent study, which includes a proposed Willow Road tunnel project and several smaller projects, all of which are estimated to cost an estimated $38 million.

Mr. Saunders reviewed other remedies undertaken in the past year, including: (i) sanitary sewer study and improvements; (ii) website information disseminated to the public; (iii) the fast-track repair permit program; (iv) sanitary sewer anti-backup program enhancements; and (v) property visits and assistance by Village staff. He added that the Village will hold several information and educational flooding seminars in the near future, reviewed the cleanup efforts for Elder Beach and gave a review of the ongoing FEMA Community Rating System, which provides additional flood assistance to participating communities.

A brief question and discussion period with the Council followed; no action was taken.

b) Sanitary Sewer Report – Draft Evaluation Survey. Mr. Saunders reported that the Village undertook the sanitary sewer evaluation to identify areas in the Village that experience inflow or infiltration (I/I) of stormwater into the sanitary sewer system. He explained that the study was undertaken because excessive I/I can lead to backups in unprotected basements, and these backups were a significant component of the July 2011 flooding.

Mr. Saunders said Staff is looking for Council direction on the issue of prioritizing the areas that need further study, and he introduced Mike Waldron from Strand Associates.

Mr. Waldron explained the firm's methodology, reviewed the results of the sewer system study, and said ten sewer basins were identified as areas for further study.

Mr. Saunders said the Strand Associates data highlights the basins that have the highest susceptibility to I/I, but when Staff overlaid the results of the flood survey on that data, the two areas did not exactly match. He explained that this could be due to the backup of MWRD interceptors or manhole infiltration, both of which can be a significant contributor of inflow.

Mr. Saunders recommended that the next level of investigation be done on four clusters on the east and four on the west side of town which were identified in Village's survey, as well as the basins identified in the Strand Associates report. He explained that these

clusters are indicating that perhaps local conditions are causing problems, not necessarily the basin.

Mr. Waldron said once the testing areas are prioritized, his firm would investigate further, using manhole inspections, smoke testing and televising of some parts of the system to see where in the system the inflow is taking place.

The Council then had a lengthy question and discussion period with Messrs. Saunders and Waldron

Mr. John Hershey, 420 Sunset, noted that his basement flooded but his neighborhood is not in the priority area. He suggested flood protection for a 250 year storm and said the tunnel needs to be bigger.

Mr. Saunders said it is important to quantify risk aversion and that FEMA has settled on 100 year storm protection in flood plains, and he added that prioritizing the basins does not mean that the rest of the Village is being abandoned.

Manager Bahan asked if the Council agrees with Mr. Saunders' recommendation for moving forward.

Trustee Kates suggested addressing the MWRD interceptors and overland flooding to ensure that the correct issues are being addressed.

Mr. Saunders said there could be more in-depth study done in three or four key locations where the Village's system connects with the MWRD interceptors, but he cautioned that the MWRD will eventually be requiring all of its communities to address I/I, and that the Village will have to address problem areas at that time.

Manager Bahan said Staff would work with the MWRD for further study around the interceptors.

7) Ordinances and Resolutions.

a) Ordinance M-15-2012: 260 Fairview Zoning Variation – Introduction. Mr. D'Onofrio reviewed this request for a rear yard setback variation in order to replace the existing nonconforming one-car detached garage with an attached two-car garage on this irregularly-shaped lot.

Trustee Buck suggested waiving introduction so the applicant could begin construction immediately.

There being no comments or questions from the Council, Trustee Braun, seconded by Trustee Buck, moved to waive introduction. By voice vote, the motion passed unanimously.

Trustee Braun, seconded by Trustee Buck, moved to adopt Ordinance M-15-2012. By roll call vote, the motion carried. Ayes: Trustees Braun, Buck, Corrigan, Kates, McCrary and Spinney. Nays: None. Absent: None.

b) Ordinance MC-5-2012: Revision to Lead Service Replacement Policy - Introduction. Mr. Keys briefly reviewed the current provisions for replacement of leaking leas service pipes and Attorney Janega reviewed the proposed revisions to that policy.

After Trustee Kates asked several questions, Trustee Braun, seconded by Trustee Buck, moved to introduce Ordinance MC-5-2012. By voice vote, the motion carried.

8) Public Comment and Questions.

9) Old Business. None.

10) New Business.

a) Fire Department Ambulance. Chief Berkowsky explained that the Fire Department currently maintains two ambulances, one unit for front-line use and the older vehicle for backup use when the front-line vehicle is unavailable due to routine maintenance or mechanical breakdown. He noted that the reserve ambulance is also used as extra protection during special events, such as the Fourth of July celebrations with large crowds. He explained that although both ambulances are very well maintained, stop and go driving conditions, seasonal changes and constant use place stress on the vehicles.

Chief Berkowsky recommended purchasing a new ambulance to replace the reserve ambulance, at a cost of $217,427, and he explained that the new unit will take approximately seven months to build, and that the reserve ambulance will either be placed in a municipal auction or sold directly.

Responding to a question from Trustee Kates, Chief Berkowsky said the backup ambulance needs to be replaced - as repairs are becoming more frequent, the patient ride is deteriorating, and the cost of refurbishments is becoming too great.

In further discussions, Trustees Buck and Corrigan said they favored delaying the purchase for another year.

Trustee Braun, seconded by Trustee McCrary, moved to approve the purchase of a new MedTec ambulance from Foster Coach Sales in accordance with the price quote and detailed specification. By roll call vote, the motion carried. Ayes: Trustees Braun, Buck, Kates, McCrary and Spinney. Nays: Trustee Corrigan. Absent: President Tucker.

b) New Website Development. Manager Bahan reported that the Village's website was designed in 2003, and has not had a change in format or aesthetics since. He said the website serves as a core resource and makes a first impression on new residents, business owners and potential employees, and is in need of a new design to make it easier to navigate.

Manager Bahan said he created a committee of representatives from each operating department, plus administrative and technical support staff, to research website design alternatives and identify desirable functions and graphics to be incorporated into the new web design. He said the vendor that was ultimately selected is a local firm that has done a number of public sector websites in the vicinity, has received good reviews from customers and was also the least expensive of the firms who responded to the RFP.

Manager Bahan answered questions from the Council and introduced Tony Savanassini of American Eagle, the proposed website designer.

Trustee Braun, seconded by Trustee Buck, moved to authorize the Village Manager to enter into a contract substantially in the form attached, subject to final approval of the

Village Attorney, with American Eagle for the redevelopment of the Village website at a cost of $35,750, and annual maintenance charges after website development of $4,500. By roll call vote, the motion carried. Ayes: Trustees Braun, Buck, Corrigan, Kates, McCrary and Spinney. Nays: None. Absent: None.

11) Reports

a) Village President. President pro tem Spinney encouraged residents to support Village businesses in the upcoming Sidewalk Sale on Friday and Saturday.

b) Trustees.

i) Trustee McCrary complimented Village staff on their quick response to the many water main breaks of past weeks.

ii) Trustee Braun reported on the last EFC meeting and encouraged the BCDC to work hard for retailers in Village.

iii) Trustee Kates reported on the last BCDC meeting, saying commissioners are completing suggestions for further consideration, and have great enthusiasm for their tasks.

c) Attorney. No report.

d) Manager. Manager Bahan reported that the Police Department and Village Administration will have tents at the Sidewalk Sale to greet residents and sign them up for E-Winnetka.

12) Adjournment. Trustee Braun, seconded by Trustee Buck, moved to adjourn the meeting. By voice vote, the motion carried. The meeting adjourned at 10:04 p.m.

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Recording Secretary

AGENDA REPORT

TO: Village Council

FROM: Robert M. Bahan, Village Manager

DATE: August 15, 2012

SUBJECT: **Warrant Lists Nos. 1761 and 1762**

Warrants Lists Nos. 1761 and 1762 are enclosed in each Council member's packet.

Recommendation: Consider approving Warrants Lists Nos. 1761 and 1762.

AGENDA REPORT

SUBJECT: **MC-6-2012 – Amending Section 2.04.010 of the Village Code to Fix the Date for the Inauguration of the Village President and Village Trustees**

PREPARED BY: Katherine S. Janega, Village Attorney

REFERENCE: August 7, 2012 Council agenda, pp. 13 - 17

DATE: August 15, 2012

Ordinance MC-6-2012, which was introduced at the August 7, 2012, Council meeting, would amend Section 2.04.010 of the Village Code by adding a provision that sets the date for newly elected Council members to take the oath of office as the first Council meeting in May after the certified election results are received from the Cook County Clerk's office.

The Village Code does not currently establish the date for the administration of the oath of office, so the date is determined pursuant to Section 3.1-10-15 of the Illinois Municipal Code, which sets the commencement of the terms of elected municipal officers as "the first regular or special meeting of the corporate authorities after receipt of the official election results from the county clerk . . . except as otherwise provided by ordinance fixing the date for inauguration of newly elected officers of a municipality." 65 ILCS 5/3.1-10-15.

Because of the Village's two-year terms, the Village participates in an election every spring, with the Village President and three Trustees being elected in the consolidated election held in April of odd-numbered years, and the other three Trustees being elected in the general primary election held on the third Tuesday in March in even-numbered years.

Statutory amendments to the canvassing process have stretched the time for obtaining results from seven to 21 days. In addition, the date of the primary has fluctuated in recent years, with the general primary being held as early as the first week in February (2008). As a result of these changes, the Village has lost the predictability that once existed and that assured that all Council members would be sworn in during the month of April. Under the current election schedules, most election results would not be received in time to allow for inauguration in April.

Amending Section 2.04.010 of the Village Code as provided in Ordinance MC-6-2012 would avoid the fluctuations that can be triggered when the date of an election is moved and restore predictability to the transition in officeholders that follows every election.

Recommendation:

Consider passing Ordinance MC-6-2012, amending Section 2.040.010 of the Village Code to fix the date for the inauguration of the Village President and Village Trustees.

ORDINANCE NO. MC-6-2012

AN ORDINANCE
AMENDING CHAPTER 2.04 OF THE WINNETKA VILLAGE CODE
TO FIX THE DATE FOR THE INAUGURATION OF
THE VILLAGE PRESIDENT AND VILLAGE TRUSTEES

WHEREAS, the corporate authority of the Village of Winnetka ("Village") is the Winnetka Village Council ("Village Council"), which consists of the Village President and six Village Trustees, all of whom are elected; and

WHEREAS, Section 2.04.010(A) of the Winnetka Village Code ("Village Code") provides that the terms of office of the Village President and the Village Trustees shall be two years, and until their successors are elected and qualified; and

WHEREAS, the Village Code does not establish the date on which the oath of office is to be administered to the members of the Village Council; and

WHEREAS, Section 3.1-10-15 of the Illinois Municipal Code, 65 ILCS 5/3.1-10-15, provides that the elected Village officers shall be inaugurated at the first regular or special meeting of the corporate authorities after the certified results of the election have been received, unless the date of inauguration is set by ordinance; and

WHEREAS, the Village President and three Village Trustees are elected at the consolidated election held in April in odd-numbered years, while three Village Trustees are elected at the general primary election held in March of even-numbered years; and

WHEREAS, because the consolidated election and the general primary election are held in different months, and because the State legislature has, from time to time, changed the month in which the general primary is held, the Village Council find and determine that it is in the best interests of the Village that the date of the inauguration of the members of the Village Council be set by Village Code to provide consistency and predictability in their respective terms of office; and

WHEREAS, the Village of Winnetka is a home rule municipality in accordance with Article VII, Section 6 of the Constitution of the State of Illinois of 1970, pursuant to which the Village has the authority, except as limited by said Section 6 of Article VII, to exercise any power and perform any function pertaining to the government and affairs of the Village; and

WHEREAS, the Village Council find and determine that fixing the date for the administration of the oath of office to the Village President and Village Trustees is a matter pertaining to the government and affairs of the Village.

NOW, THEREFORE, the Council of the Village of Winnetka do ordain as follows:

SECTION 1: That the foregoing recitals are hereby incorporated as the findings of the Council of the Village of Winnetka, as if fully set forth herein.

SECTION 2: That Section 2.04.010, "Village Council," of Chapter 2.04 of the Winnetka Village Code, "Village Council," of Title 2 of the Winnetka Village Code, "Administration and Personnel," is hereby amended to provide as follows:

Section 2.04.010 Village Council.

A. Membership; Election; Term. The Village Council shall consist of the Village President and six Trustees. The terms of office of the Village President and the Trustees shall be two years and until their successors are elected and have qualified. The Village President and three Trustees shall be elected at the consolidated election held in each odd-numbered year, as provided in the Illinois Election Code. The other three Trustees shall be elected at the general primary election held in each even-numbered year, as provided in the Illinois Election Code.

B. Powers and Duties. The Village Council shall be the legislative body of the Village and shall have such powers and duties as provided in the Charter, statutes, this code, and other ordinances of the Village.

C. Oath of Office~~; Compensation~~. The Village President and Trustees shall take the oath of office prescribed by statute before entering upon the duties of their respective offices. The oath of office shall be administered at the first regular meeting of the Village Council in May, provided the official election results have been received from the County Clerk on or before the date of that meeting. In the event the official election results have not been received on or before the date of the first regular meeting in May, then the oath of office shall be administered at the first regular or special meeting after said official election results have been received.

D. Compensation. The Village President and Trustees shall serve without compensation

SECTION 3: This Ordinance is passed by the Council of the Village of Winnetka in the exercise of its home rule powers pursuant to Section 6 of Article VII of the Illinois Constitution of 1970.

[Remainder of this page intentionally left blank.]

SECTION 4: This Ordinance shall take effect immediately upon its passage, approval and posting as provided by law.

PASSED this 21st day of August, 2012, pursuant to the following roll call vote:

AYES: _____

NAYS: _____

ABSENT: _____

APPROVED this 21st day of August, 2012.

Signed:

_____
Village President

Countersigned:

_____
Village Clerk

Introduced: August 7, 2012
Posted: August 9, 2012
Passed and Approved: August 21, 2012
Posted:

AGENDA REPORT

TO:	Village Council
PREPARED BY:	Megan Pierce
DATE:	August 15, 2012
SUBJECT:	**Request to Place Flags on Village Green**
REFERENCE:	August 16, 2011 Agenda Packet, pp. 132-133 August 17, 2010 Agenda Packet, pp. 53-54 August 18, 2009 Agenda Packet, pp. 55 August 5, 2008 Agenda Packet, pp. 21-22

The attached request was received for consideration at the August 21st Council meeting. The Village has previously granted the same request.

Recommendation: Consider request.

August 14, 2012

Taylor Tucker
Winnetka, Illinois 60093

Via email

Mr. Rob Bahan,
Village Manager
Village of Winnetka
510 Green Bay Road
Winnetka, Illinois 60093

Re: Request to place flags on the Village Green for Patriot Day,
September 11, 2012.

Dear Mr. Bahan:

Hi. My name is Taylor and I am going into 12th grade at New Trier. I would like permission to plant approximately 3,000 flags on the Village Green, at the base of the Cenotaph, to remember those who lost their lives during the September 11th, 2001 terrorist attacks. The flags would be planted during the afternoon of September 10th, and would be removed after sunset on September 11th.

This has become an annual tradition that Genevieve Nielsen started several years ago and passed on to me. The community is welcome to come help plant flags (in the past, we have had a strong turn-out for this memorial).

Thank you for your consideration.

Sincerely,

Taylor Tucker

Agenda Report

Subject: **Sanitary Sewer Evaluation Survey – Report and Next Steps**

Prepared By: Steven M. Saunders, Director of Public Works/Village Engineer

Ref: February 21, 2012 Council Meeting
July 17, 2012 Council Meeting

Date: August 15, 2012

Background and Prior Discussions

On February 21, 2012, the Village Council awarded a contract to Strand Associates to complete a flow monitoring analysis of the Village's sanitary sewer system to identify areas of the Village subject to inflow and infiltration (I/I). I/I is stormwater or groundwater that enters the Village's separate sanitary sewer system, which is designed and intended to handle solely wastewater. Excessive I/I in the sanitary sewer system can lead to basement backups.

Strand Associates installed 30 flow meters to record flow information for the majority of the Village's sanitary sewer system. Flow monitoring took place for the period April 9 to June 8, 2012. Following completion of the flow monitoring work, Strand Associates compiled and analyzed the data and provided some preliminary recommendations on prioritizing basins for detailed study and analysis. Strand's data analysis consisted of identifying average dry-weather flow as a baseline, and calculating the observed increases between wet-weather flow and dry-weather flow during and immediately after a measured rain event. Inflow and infiltration data were evaluated, quantified and tabulated for each of the 30 metering basins.

Inflow was characterized by two methods. In the first method, a ratio of wet-weather flow to dry-weather flow, known as "peaking factor", was calculated for each metering location. The higher the peaking factor, the more susceptible the metering basin is to inflow. In the second method, inflow for the entire system was calculated, and each basin was ranked based on the percentage of inflow it contributed to the entire system. Infiltration for each basin was calculated using the flow volume beginning 30 minutes after the conclusion of each rainfall event and ending when the flow volume returned to the baseline dry weather flow.

Strand provided some preliminary recommendations on how to rank basins for prioritizing future actions, based on a data-driven, empirical evaluation of the system. These preliminary recommendations were discussed by the Village Council on July 17, 2012. At that meeting, the Council directed staff and Strand Associates to finalize their recommendations concerning areas subject to further detailed survey and evaluation. These areas should be selected by focusing on basins most susceptible to I/I (based on flow metering results) and areas shown to be susceptible to basement flooding ("clusters" shown in the 2011 flooding survey).

Immediate Next Steps

Strand Associates has identified immediate next steps for consideration by the Village. This activity consists of performing a pilot SSES study entailing detailed evaluations of the sanitary sewer system in certain high-priority basins and cluster areas discussed at the July 17, 2012 Council Meeting. Strand Associates has recommended that basins 14, 15, and 20 be evaluated, along with a portion of basin 26, previously unmetered areas of Oak Street and Sunview Lane and five clusters of reported flooding east of Green Bay Road. These recommended areas are shown in Figure 5.03-1 of the Strand Report, and represent the highest priority areas based on measured I/I and the results of the September 2011 flood survey. Detailed analysis in these areas would consist of manhole evaluations, smoke testing, and, depending on the results of the smoke testing, television inspection of sewer lines showing potential defects.

In basins 14, 15, and 20, these detailed evaluations would start in the portions of the basins where flooding clusters were observed, however these detailed studies would expand to the remaining areas of these basins as well. This approach is recommended because the cause of basement flooding may not originate in the area where flooding was reported. However, starting in the vicinity of the flooding clusters and working back through the remainder of the basin allows for the possibility of discovering problems early in the process and possibly minimizing the level of effort to be expended. In the limited cluster areas, the detailed investigations will be limited to the vicinity of the flooding clusters, again in order to minimize the level of effort to be expended on the program.

Strand Associates has estimated that this pilot SSES study can be completed for $75,000, including $28,100 for potentially televising up to 50% of the evaluated portions of the sewer system. The amount and location of sewer main to be televised will depend on the conditions uncovered during the detailed evaluation. The Village does have the capability of video-inspecting sewers in-house and depending on the amount of television inspection needed, may complete this television inspection with Public Works crews.

This initial detailed evaluation approach presents the Village with several advantages when compared to a broader initial approach of evaluating all of the higher priority areas. First, it focuses the Village's resources on initially addressing the highest priority areas, as evidenced both by I/I evaluation and by the Village's flood survey. Second, it allows the Strand Associates to further refine their estimated costs for future detailed investigations based on direct field inspections in Winnetka. Finally, it will provide the Village with some hard data on the amount and type of defects or needed repairs in the public and portions of private systems in the pilot study areas that can be extrapolated across the remainder of the Village's system to predict the level of capital expenditures needed to address I/I and basement flooding in the remainder of the Village.

Future Actions

Strand Associates has also identified a program of future actions for consideration by the Village, to provide a complete evaluation to identify future improvements to the Sanitary

Sewer System. This program includes performing detailed evaluations of all of the remaining metering basins over a two year period at an estimated cost of $340,500.

Strand Associates also recommends for consideration a program that would examine the Village's sanitary sewer system for susceptibility to backups associated with the MWRDGC's intercepting sewer system. This program would consist of the Village purchasing three flow meters (and associated software and staff training) that could be installed in proximity to key points where the Village's system connects to the MWRDGC's system. These meters could be monitored on a long-term basis by Village staff to identify if and when back-up conditions exist in the MWRDGC's system. These meters would also be useful on a long-term basis to evaluate the effectiveness of any future I/I elimination activities by way of before-and-after flow metering. The estimated cost to purchase three flow meters, the evaluation software, and to receive operational training is approximately $24,500. Strand has also suggested undertaking a hydraulic analysis of the Village's sewer system in the vicinity of its connections to the MWRDGC's interceptor system to identify areas where the Village's system might be hydraulically susceptible to backflow from the MWRDGC system. This hydraulic investigation is estimated to cost approximately $30,000, but is not recommended by staff at this time. It is less expensive and more reliable for the Village to monitor its system in the vicinity of the MWRDGC connections to obtain hard evidence of potential backflows into the Village system than to expend a significant sum to determine if the MWRDGC's system can theoretically surcharge into the Village's system.

Summary and Recommendations

Strand Associates has proposed a program of actions that, if implemented in its entirety, would complete a detailed evaluation of most of the Village's sanitary sewer system, and a determination of the susceptibility of the Village's system to backup from the MWRDGC intercepting system, by the end of 2014, at a cost of approximately $470,000. What is missing from this estimate, however, is the timeline and cost of making identified repairs. It is impossible at this time to provide anything more than a guess as to the nature and cost of potential repairs. Staff is recommending that the Council consider an alternate, more deliberate approach that would immediately address three pressing issues. This approach consists of immediately proceeding with detailed investigations of very targeted areas, consisting of three basins that exhibit significant I/I and basement flooding, plus clusters of identified basement flooding in 8 other limited areas. This approach also includes budgeting for and obtaining three flow meters (and staff training) to be used by staff to identify whether the MWRDGC interceptor system does contribute backup to areas of the Village's sanitary sewer system.

This approach will provide an initial estimate of the nature, scope, and cost of necessary repairs in the most critical areas of the Village's sanitary sewer system, which could be extrapolated to provide an idea of what might be encountered in other areas of the Village. This approach will also indicate if the MWRDGC system backs up to the Village, and could be accomplished for a total estimated cost of approximately $100,000, or less depending on the amount of television inspection required. This approach is detailed below.

Recommended Actions	Estimated Timeframe	Estimated Cost
Detailed Investigation of First Priority Areas (including possible television inspection)	Fall 2012	$75,000
Budget for Improvements identified during Detailed Investigation of First Priority Areas	Winter 2012-13	N/A
Flow Meter Purchase	Spring 2013	$24,500
Engineering and Construction of improvements – first priority areas	Spring – Summer 2013	Unknown
Possible Additional Actions for Future Consideration	**Estimated Timeframe**	**Estimated Cost**
Detailed Investigation of Remaining Priority Areas (including possible television inspection)	2013	$105,500
Engineering and Construction of improvements – remaining priority areas	2014	Unknown
Detailed Investigation of Lower Priority Areas (including possible television inspection)	2014	$235,000
Engineering and Construction of improvements – lower priority areas	2015	Unknown

Budget Evaluation:

The FY 2012-13 Capital Budget contains $350,000 in the sewer fund for three line items – Sanitary Sewer Evaluation Studies, Trenchless Lining, and System I/I Repairs. The current status of capital items in this fund is as follows:

Item	Budget	Estimate	Variance
Sanitary Sewer Evaluation Studies	$100,000	$108,000 (Strand flow metering contract)	$8,000
Trenchless Lining	$150,000	$166,000 (contract awarded to Michels construction May 2012)	$16,000
System I/I Repairs	$100,000	$75,000 (proposed detailed investigation of priority areas and clusters)	($25,000)
Total	***$350,000***	***$349,237***	***($1,000)***

As a result, funding is available to implement the first portions of this approach in the current budget.

Recommendation:

Consider the next steps recommended by Strand Associates and presented in their August 2012 report to the Village of Winnetka:

1. Consider directing staff to obtain contractual pricing for Strand Associates to perform detailed investigations of metering basins 14, 15, and 20, and the flooding cluster areas identified in figure 5.03-1 of Strand Associates' report dated August, 2012, and;

2. Consider directing staff to obtain budgetary pricing for purchase of 3 flow meters, associated software, and operational training, for use in evaluating possible backflow from the MWRDGC's intercepting sewer system.

Attachments:

1. Strand Associates August 2012 Report

Sanitary Sewer Evaluation Survey–Flow Monitoring Study

Report

Village of

Winnetka, IL

August 2012

Report

Village of

Winnetka, IL

August 2012

Report for

Village of Winnetka, Illinois

Sanitary Sewer Evaluation Survey
Flow Monitoring Study

Prepared by:

STRAND ASSOCIATES, INC.®
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August 2012

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EXECUTIVE SUMMARY

The Village of Winnetka, Illinois (Village) owns and operates its own separate sanitary sewer system. Sanitary flow generated within the Village is collected in local sewers that discharge to a network of interceptor sewers owned and operated by the Metropolitan Water Reclamation District of Greater Chicago (MWRDGC) before being treated at an MWRDGC wastewater treatment plant (WWTP).

As the Village's separate sanitary sewer system ages, there is potential for wet weather flows to enter into the sewer system. These wet weather flows are known as infiltration and inflow (I/I). The affect of I/I is to increase flow in the sewer much higher than the average dry weather flow, potentially causing sanitary sewer surcharging and basement backups.

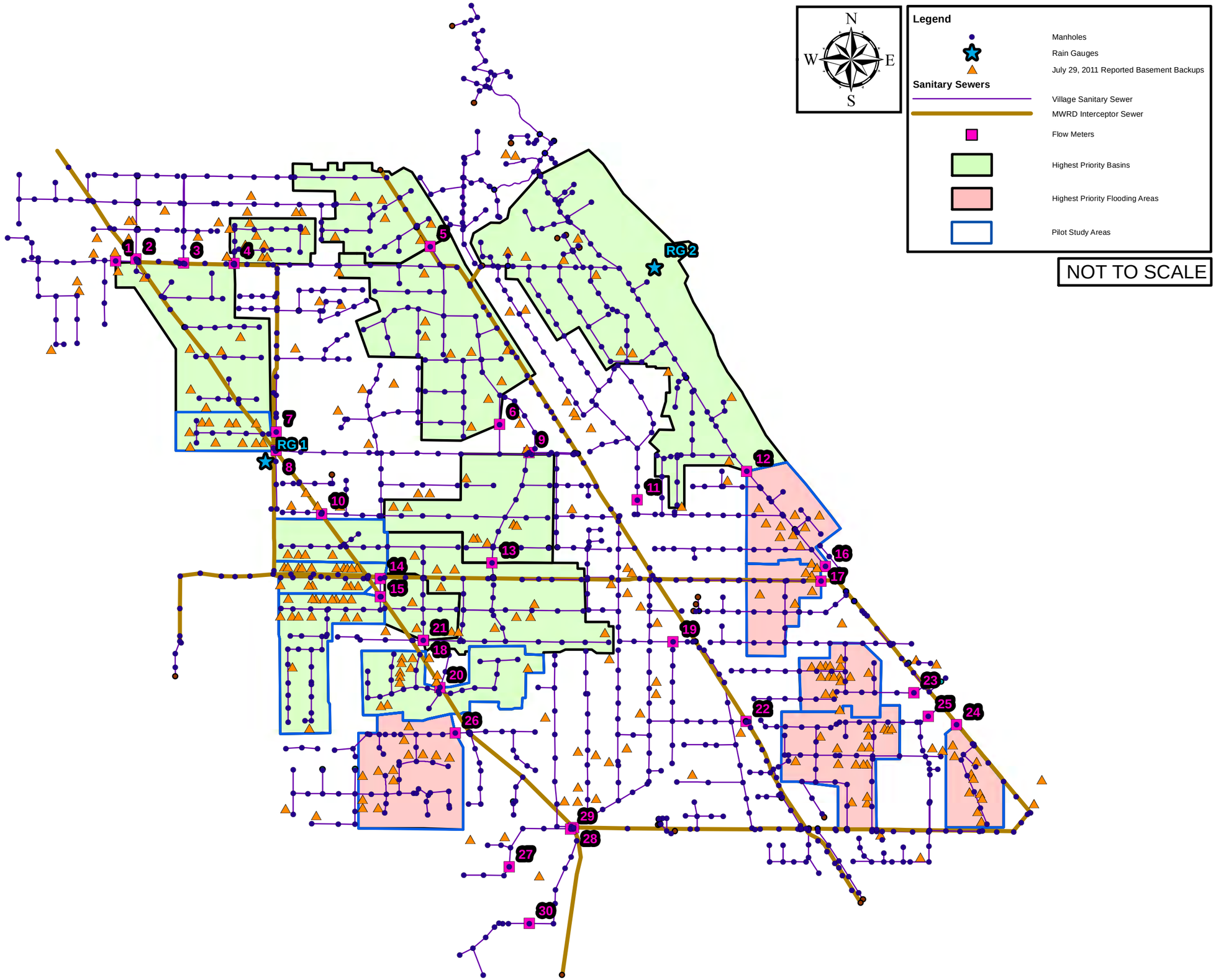
On July 23, 2011, a significant wet weather event subjected the Village to over six inches of rain in less than three hours causing severe street flooding and basement backups. In response to this event, the Village conducted a survey of all residents to determine the extent of the flooding. Of the responses received, 276 residents indicated they experienced a basement backup. The results of this survey prompted the Village to undertake a sanitary sewer evaluation survey (SSES).

Section 1 of this study describes the purpose and scope of the SSES. A flow monitoring program was developed to identify and prioritize areas within the system that experience high levels of I/I. The system was divided into 30 basins with data collected at 30 flow monitoring locations. An existing Illinois State Water Survey (ISWS) rain gauge and an additional installed rain gauge were used to collect simultaneous rainfall data during the flow monitoring period from April 13, 2012, through June 8, 2012. Section 2 describes the flow monitoring program. Figure ES-1 shows the 30 flow metering locations along with the rain gauge locations.

Flow meter and rain gauge data were used to conduct a number of analyses in order to identify which basins were most susceptible to I/I. These analyses are described in Section 3. Several areas within the Village were prioritized for future SSES investigations based on the flow metering analyses and results of the Village flood survey. Figure ES-1 shows the priority areas and the results of the flood survey by the Village.

Section 4 describes a series of investigations intended to identify potential defects in the sewer system and potential sources of I/I. These investigations include traditional SSES investigations such as manhole inspections, smoke testing, televising, and dye testing.

While I/I appears to be an issue throughout the Village's sanitary sewer system, some areas that reported flooding in July 2011 were not identified by the flow metering data as susceptible to excessive I/I. The reported flooding could be a result of other influences, and Section 4 also identifies additional investigations aimed at determining if influence from the MWRDGC interceptor system impacts the Village's sewer system. These investigations include a hydraulic analysis of the MWRDGC interceptor system relative to the Village's system and an extended flow monitoring program at key locations where the two systems interact to capture a large enough event to evaluate the influence from the MWRDGC interceptors.



HIGHEST PRIORITY BASINS

SANITARY SEWER EVALUATION SURVEY
VILLAGE OF WINNETKA
WINNETKA, IL

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FIGURE ES-1

Section 5 presents a recommended plan moving forward including costs and a schedule for implementing the plan. The plan starts with a pilot study implemented in the fall of 2012 to provide the Village with a sampling of defects in the system and perspective on potential rehabilitation efforts needed. This information would be used to project rehabilitation efforts required to be put into the Village's Capital Improvement budget. The rest of the plan entails continuing SSES investigations throughout the entire Village in the years 2013 and 2014 to identify specific rehabilitation needs.

The plan also includes performing a hydraulic analysis of the MWRDGC interceptor system and the extended flow monitoring program in 2013. As an alternative to the Village using a consultant for the extended flow monitoring, Village purchase of its own flow metering equipment is suggested in Section 5 to provide a reduction in cost and added flexibility.

Table ES-1 summarizes the recommended SSES plan, schedule, and opinion of costs.

Year	Investigations	Cost	Total Annual Cost
2012	SSES Pilot Study	$46,900	$75,000
	Pilot Study Televising	$28,100	
2013	SSES Investigations of Remaining Priority Areas	$56,100	$160,000
	Televising of Remaining Priority Areas	$49,400	
	Hydraulic Analysis	$30,000	
	Purchase Flow Meters and Training	$24,500	
2014	SSES Investigations of Remaining Basins	$135,000	$235,000
	Televising of Remaining Basins	$100,000	

Table ES-1 Recommended Plan and Schedule

SECTION 1
INTRODUCTION

1.01 PURPOSE

The Village of Winnetka, Illinois (Village), owns and maintains its own sanitary sewer system. Sewerage from the Village's sanitary sewer system flows into an interceptor sewer system owned and maintained by the Metropolitan Water Reclamation District of Great Chicago (MWRDGC) and is transported to the North Side Wastewater Treatment Plant (WWTP).

Over the years the Village has experienced a number of large rainfall events resulting in significant surface flooding and backup of the sanitary sewer system into basements. One particular event occurred on July 23, 2011, when over 6 inches of rain fell in less than three hours. In response to the July 23 event, the Village conducted a survey of all residents to determine the extent of flooding and basement backups. Of the responses received, 276 residents indicated they experienced a basement backup. While the July 23 event was an extreme event, the results of the survey suggest the presence of infiltration and inflow (I/I) prompting development of a sanitary sewer evaluation survey (SSES).

The purpose of a SSES study is to identify locations of I/I into the sanitary sewer system and determine means for reducing I/I. Infiltration is groundwater that enters the sanitary sewer system through defective sewer joints, cracked or broken sewers, or manhole walls. Inflow is surface water directly entering the sanitary sewer system because of rainfall or surface runoff through roof drains, yard or area drains, foundation drains, manhole covers, and cross-connections with storm sewers. Excessive I/I into the sewer system can exceed the sewer's capacity and result in system backups.

The purpose of this flow monitoring study was to analyze the dry and wet weather flow characteristics of the Village's sanitary sewer system, isolate the areas within the system where I/I is most prolific, and provide the Village with recommendations on moving forward with further investigations to pinpoint and reduce the sources of I/I.

1.02 SCOPE

The scope of the Flow Monitoring Study includes the following:

1. Division of the Village into 30 flow metering basins and installation of flow meters for a period of approximately seven weeks from April 13 to June 8, 2012.

2. Installation of one rain gauge to supplement the existing Illinois State Water Survey (ISWS) rain gauge within the Village and collect simultaneous rainfall data over the flow metering period.

3. Analysis of the flow monitoring data for sanitary sewer system I/I characteristics in each flow metering basin.

4. Prioritization of the flow metering basins based on I/I characteristics.

5. Recommendations for continued investigations to pinpoint and reduce sources of I/I.

1.03 ABBREVIATIONS

Village	Village of Winnetka
FM	flow meter
GIS	geographical information system
gpm	gallons per minute
I/I	infiltration and inflow
in	inch
MWRDGC	Metropolitan Water Reclamation District of Greater Chicago
RG	rain gauge
WWTP	wastewater treatment plant
ISWS	Illinois State Water Survey
SSES	sanitary sewer evaluation study
SSO	sanitary sewer overflow

SECTION 2
FLOW MONITORING PROGRAM

2.01 EXISTING COLLECTION SYSTEM

The Village currently owns, operates, and maintains a sanitary sewer system that serves residential, commercial, and public users. These sewers were designed to convey wastewater for the existing users and also for future growth. The Village-owned sewers flow into MWRDGC-owned interceptor sewers that convey flow to MWRDGC's North Side WWTP.

The Village's sanitary system is a separate sanitary sewer system. A separate sanitary sewer system is a two-pipe system where wastewater flows through one network of pipes and stormwater flows through a separate network of pipes. However, because of the grade separation at the railroad tracks along Green Bay Road storm sewers are prevented from crossing the tracks. As a result, some of the separate storm sewers on the west side of the village discharge directly into the MWRDGC interceptors.

2.02 BASIN DELINEATION AND FLOW METERING LOCATIONS

The Village's sanitary sewer system is unique in that there are over 26 points of discharge into the MWRDGC interceptor sewer system. This made developing a metering program challenging and resulted in having a much higher number of flow meters than normally would be required for a system of similar size.

Ultimately, a total of 30 flow meters were installed in the Village's sanitary sewer system creating 30 sewershed basins with each basin monitored by a flow meter. The flow meters were maintained and data collected over an approximately seven-week monitoring period from April 13 through June 8. Table 2.02-1 provides an inventory of the flow metering locations and the upstream pipe sizes (flow meter sizes). Figure 2.02-1 shows the locations of each flow meter and the resulting metered areas or sewershed basins.

On July 23, 2011, the Village experienced an extreme rainfall event that produced over 6 inches of rain in less than 3 hours. In response to that event, the Village conducted a flood survey in September 2011 to identify how many residents and at what locations basement backups occurred. The results of this survey are shown in Figure 2.02-1.

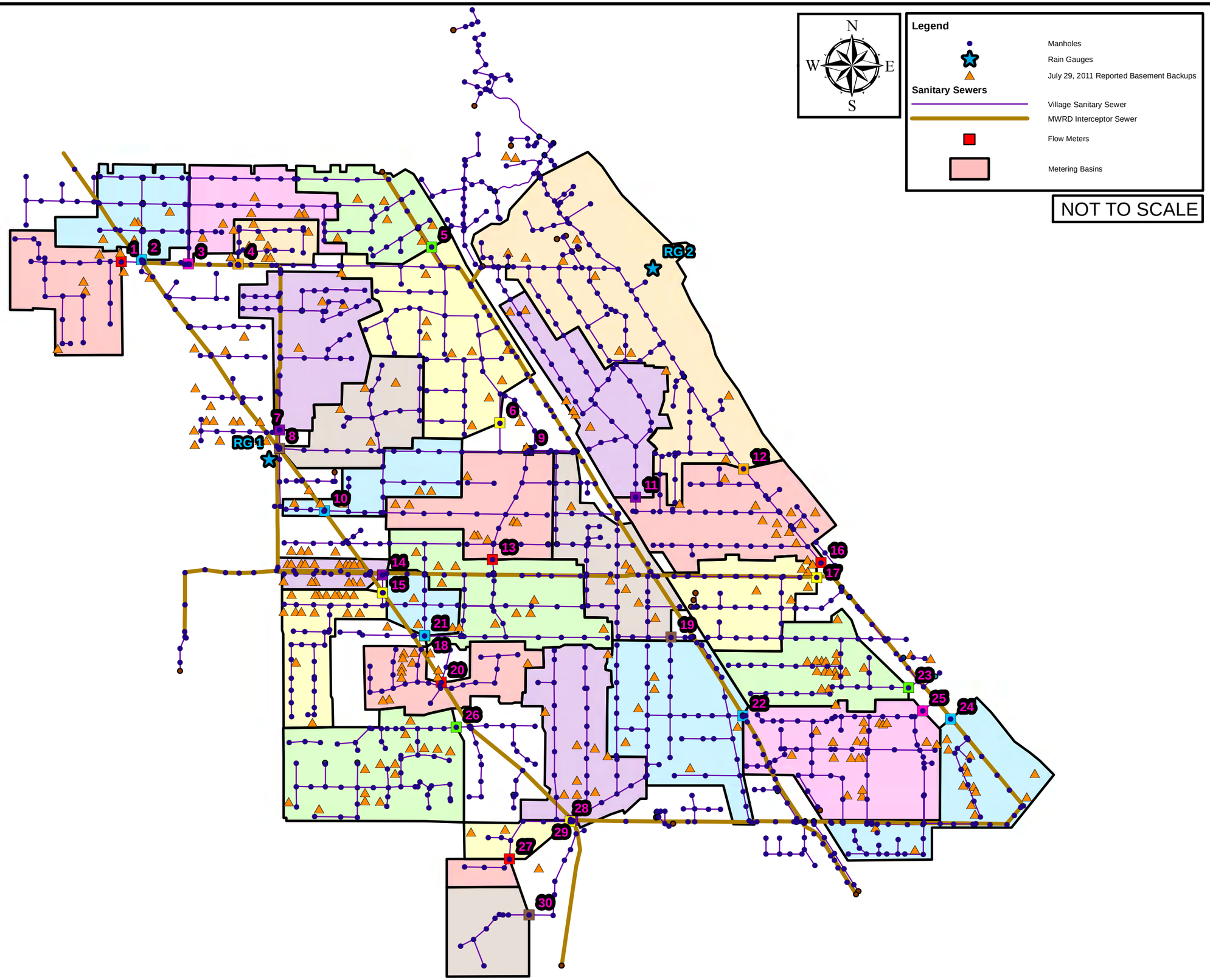
The flow metering program was developed to monitor as much of the system as practical, especially the areas that experienced basement backups according to the Village survey. However, a few areas of the Village were not metered. Because of the numerous MWRDGC connection points, including these unmetered areas would have required significantly more flow meters. Additionally, in many cases there was not a manhole suitable for meter installation or the tributary areas were too small to allow for reliable data collection. Areas not metered under this program are unshaded in Figure 2.02-1. Some of these areas did report basement backups, which was taken into consideration in making recommendations for future investigations.

Figure 2.02-2 shows a schematic of the flow meters in the conveyance system. This figure provides perspective on how the meters were interconnected and their position relative to the MWRDGC Interceptor sewer system.

TABLE 2.02-1

FLOW METER LOCATIONS AND SIZES

Meter	Meter Location	Sewer Size (inches)
M01	In the westbound lane of Tower Road just east of Boar Parkway	8
M02	At the intersection of Tower Road and Greenwood Avenue	10
M03	In the parkway south of the intersection of Tower Road and Vernon Avenue	15
M04	In the eastbound lane of Tower Road between Bell Lane and Forest Glen Drive	8
M05	Green Bay Road just north of Tower Road	12
M06	East parkway of Blackthorn Road north of Pine Street	15
M07	Northbound lane of Hibbard Avenue just north of Pine Street	10
M08	At the intersection of Hibbard Avenue and Pine Street	15
M09	North parkway of Pine Street between Provident Avenue and Walden Road	18
M10	Westbound lane of Elm Street east of Hibbard Avenue	10
M11	In the middle of Lincoln Avenue north of Elm Street	15
M12	In the middle of Sheridan Road between Pine and Spruce Street	27 x 18 Egg Shape
M13	Northbound lane of Provident Avenue between Oak and Cherry Street	15
M14	At the intersection of Ash Street and Glendale Avenue	10
M15	In the southbound lane of Glendale south of Ash Street	15
M16	In the middle of Sheridan Road between Cherry and Oak Street	36 x 24 Egg Shape
M17	Just west of the intersection of Cherry Street and Sheridan Road	32 x 21 Egg Shape
M18	Intersection of Rosewood Avenue and Willow Road (Same MH as M21)	15
M19	Intersection of Willow Road and Forest Street	27 x 18 Egg Shape
M20	Just north of the intersection of Locust Road and Mt. Pleasant Street	10
M21	Intersection of Rosewood Avenue and Willow Road (Same MH as M18)	8
M22	Outside northbound lane of Green Bay Road between Sunset Street and Church Road	18
M23	In the middle of Hawthorn Lane just West of Sheridan Road	18
M24	In the middle of Sheridan Road between Elder Lane and Fuller Lane	27 x 20 Egg Shape
M25	In the middle of Elder Lane between Sheridan and Essex Road	28 x 21 Egg Shape
M26	The intersection of Sunset and De Windt Road	12
M27	Northbound Lane of Fox Lane south of Hill Road	12
M28	MWRDGC manhole at the intersection of Hill and N. Indian Hill Road	10
M29	Just west of the intersection of Hill and N. Indian Hill Road	15
M30	Front yard of 40 Indian Hill Road	8



FLOW METERING BASINS

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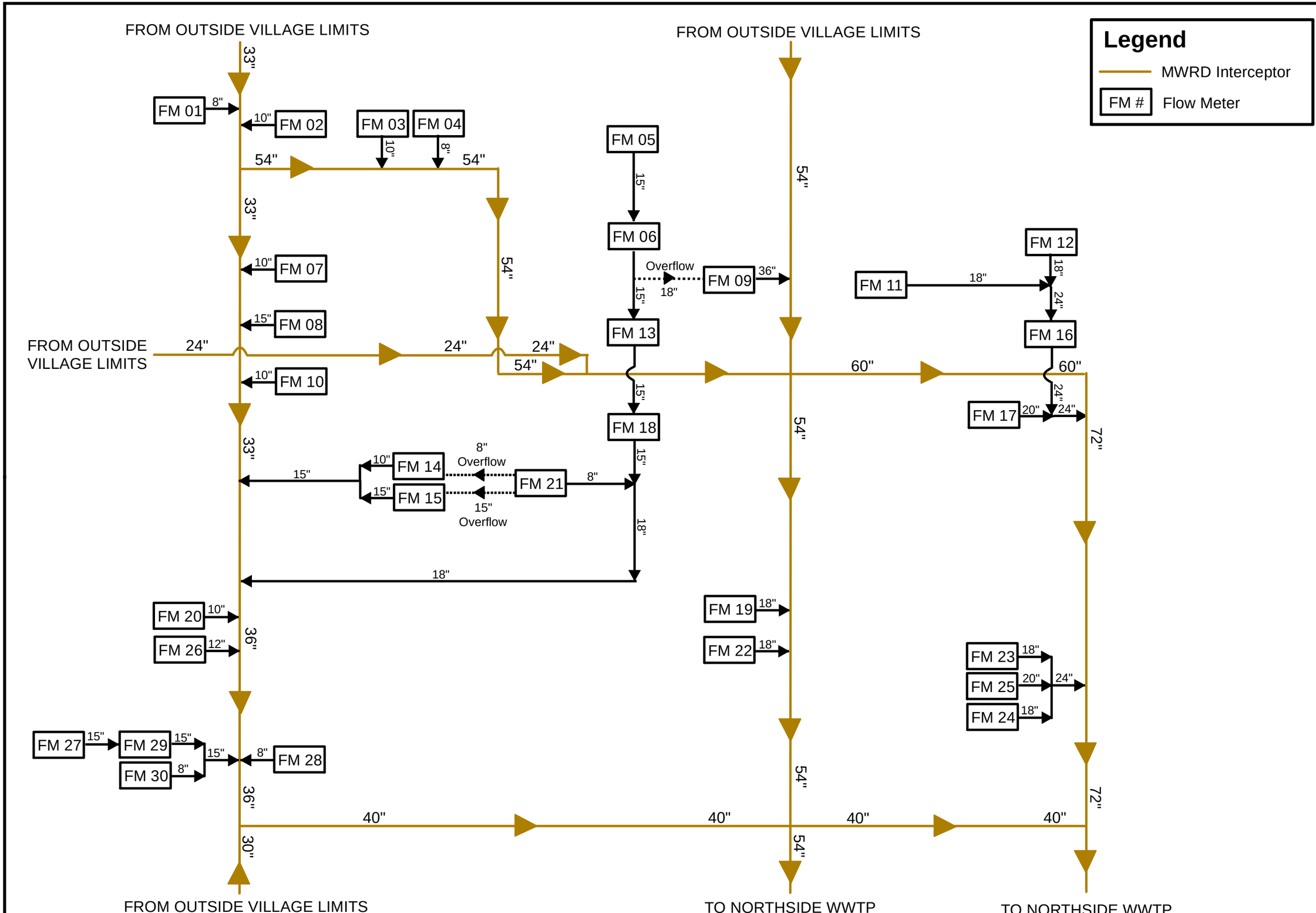
FIGURE 2.02-1



SYSTEM SCHEMATIC

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FIGURE 2.02-2

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In preparation for evaluating the flow metering data collected, it was recognized that sewershed size and pipe diameters were not consistent between basins, which could skew comparison of flow characteristics between basins. For example, evaluation of infiltration into a sewer system looks at groundwater entering the sanitary sewer system through sewer defects, which is directly related to sewer length and diameter. It is expected that a large sewershed basin with large diameter pipes will have a higher volume of infiltration than a small basin with small diameter pipes. However, a larger total infiltration volume does not necessarily indicate a larger infiltration problem. Therefore, to equalize basin size and pipe diameter variables between the basins, each basin was quantified by inch-miles of sewer. Table 2.02-2 is a summary of this quantification. A detailed quantification is included in Appendix A.

In Table 2.02-2 there is no quantification for Basins 09, 27, and 30. FM 09 was installed to measure any overflows from Basin 13. As a result, there was no associated basin with a network of pipes that required quantification.

Flow meters 27 and 30 were installed to measure and quantify the flow that enters the Village's system from an unincorporated portion of Cook County serviced by the Woodley Road Sanitary District located west of Locust Road. Since it is not part of the Village system, the details of the basins were not studied in this report.

Metering Basin	Length of Sewer		Equivalent Sewer Length
	(feet)	(miles)	(inch dia-mile)
M 01	5,440	1.03	8.24
M 02	4,768	0.90	7.52
M 03	5,819	0.94	11.24
M 04	2,594	0.49	3.93
M 05	5,899	1.12	9.98
M 06	14,240	2.11	25.93
M 07	10,881	2.06	16.88
M 08	4,708	0.89	10.27
M 09			
M 10	5,207	0.99	9.87
M 11	7,023	1.33	13.87
M 12	18,261	3.46	33.95
M 13	8,050	1.52	15.43
M 14	1,413	0.27	2.42
M 15	5,391	1.02	10.23
M 16	8,494	1.49	20.96
M 17	6,061	1.15	14.81
M 18	11,571	2.19	20.35
M 19	5,308	1.01	22.04
M 20	4,514	0.85	7.25
M 21	2,437	0.46	3.69
M 22	11,152	2.07	20.22
M 23	4,636	0.88	14.96
M 24	6,592	1.25	16.06
M 25	13,668	2.34	31.43
M 26	10,147	1.92	16.88
M 27			
M 28	7,017	1.33	10.64
M 29	1,604	0.30	4.03
M 30			

Table 2.02-2 Quantification of Flow Metering Basins

2.03 RAIN GAUGE LOCATIONS

Rainfall data was collected from two rain gauges located within the Village. Rain Gauge 1 (RG 1) is an existing ISWS-maintained rain gauge located in the southwest corner of the Village. The data from RG 1 was collected, maintained, and made available via the internet by the ISWS during the flow monitoring period.

The second rain gauge, Rain Gauge 2 (RG 2), was installed for the flow monitoring period at the Village's electric plant located at the intersection of Tower Road and Sheridan Road along the lakeshore.

The rain gauges collected rainfall over the seven-week period. The data collected was used to develop a relationship between rainfall totals, rainfall intensity, and wastewater flows in the collection system.

2.04 FLOW MONITORING OPERATIONS

The flow monitoring operations began with installation of 30 ISCO 2150 area-velocity flow meters and one ISCO 675 tipping-bucket rain gauge between April 9, 2012 and April 13, 2012. Figures 2.04-1 and 2.04-2 show photographs of the equipment used. The flow meters used a pressure transducer to detect water level and Doppler radar to detect velocity of flow over the top of the sensor, which is set at or near the bottom of the sewer pipe entering a selected flow metering manhole. The diameter and shape of the sewer were programmed into the flow meter, and the level reading was converted within the flow meter into a cross-sectional area of flow. Flow was calculated by multiplying the velocity readings by the flow meter's calculated flow area. Figure 2.04-3 shows a typical installation.

Figure 2.04-1 ISCO 2150 Flow Meter

Figure 2.04-2 ISCO Tipping Bucket Rain Gauge

Figure 2.04-3 Flow Meter Installation

After the initial installation, each of the flow meters and the rain gauge were monitored on a weekly basis. The stored data was downloaded from the meters and rain gauge to a laptop and a visual check of the data and site conditions was made to verify the meters were operating correctly. A manhole entry was made to correct any problems detected with the flow meters. Figure 2.04-4 shows a photograph of downloading data.

Following each week's data collection, a more thorough evaluation of the data was performed. This evaluation included a mass balance of flows comparing upstream and downstream data to confirm meters were working properly relative to each other.

The meters were removed June 7 and 8, 2012.

Figure 2.04-4 Flow Meter Data Download

SECTION 3
FLOW MONITORING DATA ANALYSIS

3.01 RAINFALL DATA ANALYSIS

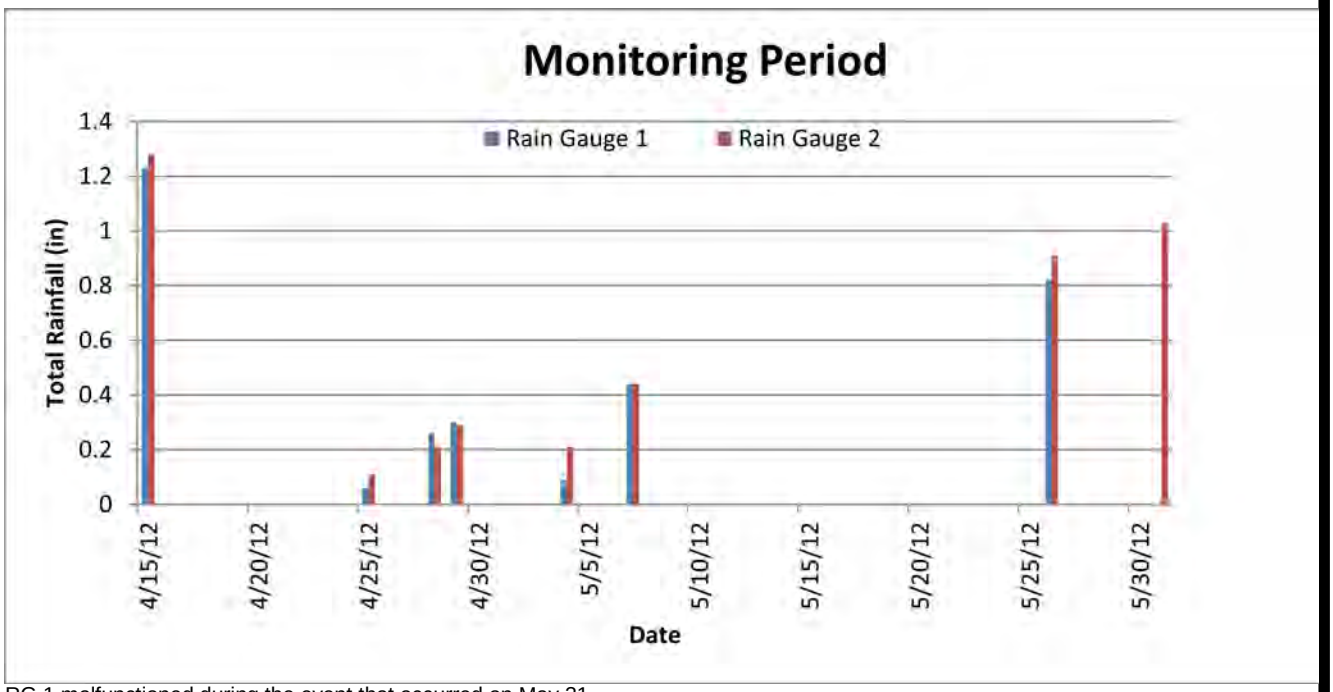
There were eight rainfall events evaluated over the seven-week flow monitoring period. There were additional smaller events during the study period, but for an event to be considered, more than 0.10 inch of rain was required. The eight rainfall events are detailed in Table 3.01-1. The rainfall distribution over the monitoring period is shown in Figure 3.01-1.

Date	Rain Gauge 1				Rain Gauge 2			
	Total Rainfall (in)	Total Duration (hrs)	Maximum Rainfall Intensity	Maximum Rainfall Recurrence Interval	Total Rainfall (in)	Total Duration (hrs)	Maximum Rainfall Intensity	Maximum Rainfall Recurrence Interval
4/15	1.23	24	.78 in/3 hour	<2 months, 3 hour	1.28	24	.37 in/1 hour	<2 months, 1 hour
4/25	0.06	9	.02 in/10 min	<2 months, 10 min	0.11	8.5	.04 in/1 hour	<2 months, 1 hour
4/28	0.26	1.67	.19 in/30 min	<2 months, 30 min	0.21	2	.11 in/1 hour	<2 months, 1 hour
4/29	0.30	5	.11 in/30 min	<2 months, 30 min	0.29	4.33	.12 in/30 min	<2 months, 30 min
5/4	0.09	2	.02 in/10 min	<2 months, 10 min	0.21	2.67	.13 in/30 min	<2 months, 30 min
5/7	0.44	2.5	.26 in/1 hour	<2 months, 1 hour	0.44	3	.2 in/30 min	<2 months, 30 min
5/26	0.82	1.5	.55 in/10 min	1.2 year, 10 min	0.91	1	.59 in/10 min	1.25 year, 10 min
5/31					1.03	8.5	.44 in/2 hour	<2 months, 2 hour

The shaded light gray indicates the events chosen for analysis.
The shaded dark gray indicates a period when the associated rain gauge was not working properly.

Table 3.01-1 Rainfall Event Details

The data collected at each rain gauge was used to analyze each rainfall event. The rainfall intensity for the most intense portion of the rainfall event was used to estimate a recurrence interval in accordance with the *Rainfall Frequency Atlas of the Midwest* by Huff and Angel. Rainfall recurrence intervals consider both magnitude and duration of a rainfall event and are based on a statistical analysis representing the probability that the given event will be equaled or exceeded in any given year. For example, in any given year statistically there is a 1 in 2 chance that 0.67 inches of rain will fall in 10 minutes in the Village. Therefore, the event is said to have a 2-year recurrence interval. Furthermore, in any given year statistically there is a 1 in 1 chance that 0.55 inches of rain will fall in 10 minutes. This is considered to have a 1-year recurrence interval. On May 26, RG 2 recorded 0.59 inches of rain in 10 minutes. Since this amount of rainfall is between the 1- and 2-year storms for a 10-minute duration, we interpolated to estimate the event at a 1.25-year recurrence interval.



RG 1 malfunctioned during the event that occurred on May 31.

Figure 3.01-1 Rainfall Events

A rainfall event used for data analysis would ideally be uniform across the Village. A uniform event would result in approximately equal rain gauge data at each gauge location. If the data collected at each rain gauge is approximately equal, it can be inferred that the rainfall between the rain gauges was also approximately equal. This allows us to assume that sewershed basins not next to a rain gauge received approximately the same rainfall observed at a rain gauge which, in turn, allows for a more equal comparison between basins when evaluating the severity of I/I into the system. Each sewershed basin was assigned to one of the two rain gauges.

The most significant events observed during the monitoring period occurred on April 15, May 26, and May 31. The April 15 and May 31 events were characterized by long low-intensity soaking events. While these two events had recurrence intervals less than two months, over 1 inch of rain fell and the flow monitoring data suggest they impacted flow characteristics in the sanitary sewer system.

The May 26 event was a short, but intense, event that occurred after a prolonged period of dry weather. This type of event is a good indicator of sources of inflow in the system because the long period of dry weather before the event most likely resulted in more absorption by the dry soils and may have reduced the impacts of infiltration. With the impact of infiltration reduced, the increase in flows observed as a result of this event was most likely inflow. This inference seems to be supported by the data collected.

3.02 FLOW METER DATA EVALUATIONS

On a weekly basis over the flow monitoring period, the flow metering data was compiled and evaluated to determine two things: (1) the quality of the data collected at each individual flow metering location and (2) how the meters were working relative to each other.

To determine the quality of the data collected, a scatter graph was created for each flow meter each week. The scatter graphs consisted of plotting the velocity data vs. the level data on the same graph. The shape and pattern of the scatter graph provided valuable insight into how the flow meter was functioning and the quality of the data it was collecting as well as how the hydraulic conditions in the sewers were changing during rain events. Figure 3.02-1 shows an example scatter graph created for data evaluation. As should be expected, the data points generally fall into a relatively tight line. This scatter graph suggests the flow meter is collecting good data and the sewer did not surcharge during the month of April.

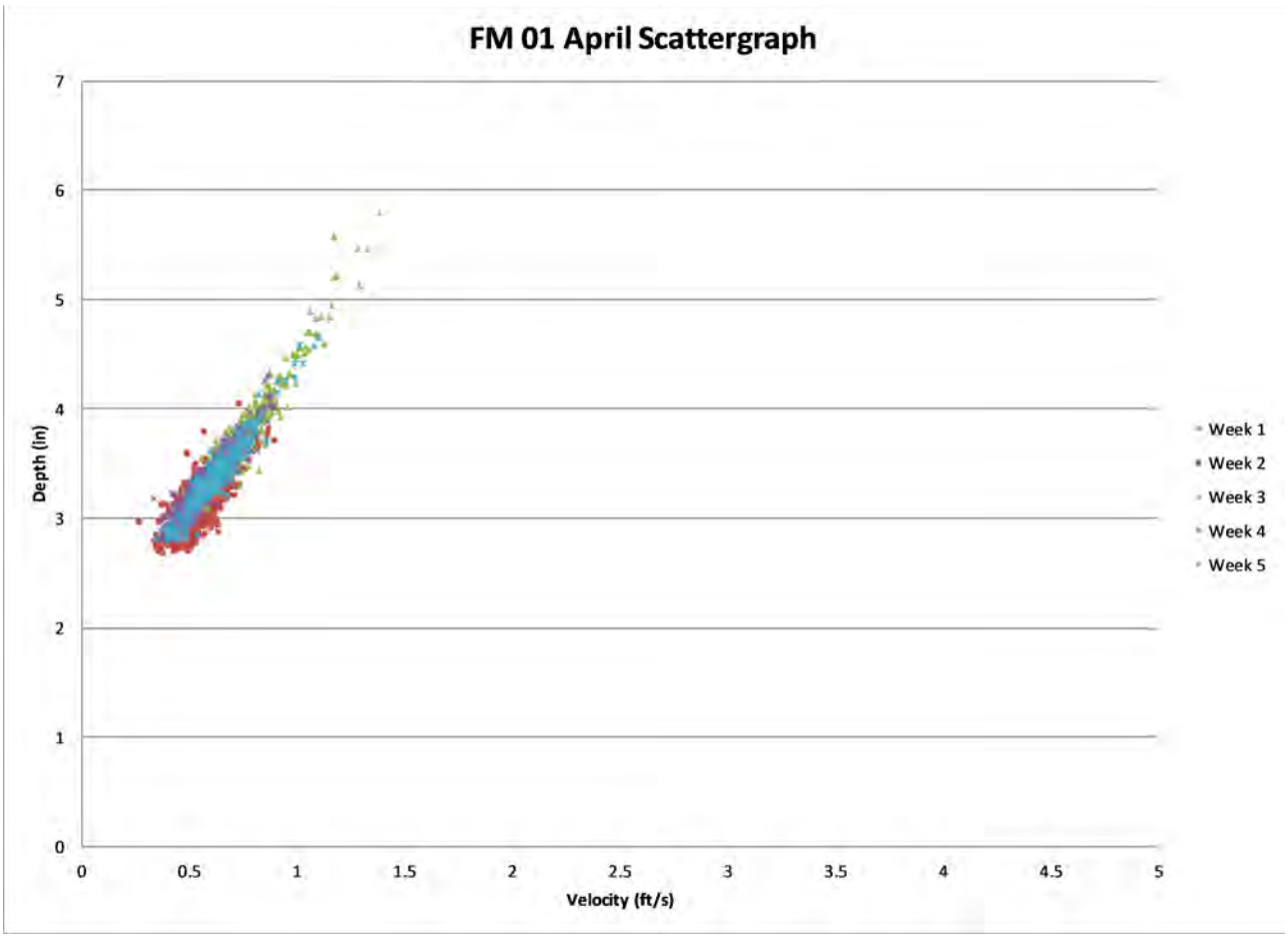


Figure 3.02-1 Example Scatter Graph

To determine how the meters were working relative to each other, a mass balance was calculated between certain flow meters. A mass balance analysis is a comparison between downstream flow data and flow data collected directly upstream. While most flow meters were installed directly upstream of the MWRDGC intercepting sewers, there were some meters upstream of other meters. In these situations, flow meter data was evaluated by removing the influence of upstream meters by subtracting the upstream flow meter data from the downstream data, taking time of travel into account. In theory, any flow generated in an upstream basin should be measured at the flow meter location downstream. Furthermore, additional sewerage collected from within the downstream basin should also be measured at the downstream flow meter. This means the flow rates observed at the downstream meter should always be higher than the flows observed at the upstream meter.

If the results of the data evaluation suggested a flow meter was not working properly, a specific maintenance trip was made to correct the flow meter in question, or the meter was adjusted during the next weekly download.

Appendix B discusses the flow meter data evaluation in more detail providing a narrative description of each flow metering location and the quality of data collected, specifically during the three study events. Appendix B also provides flow response graphs for each flow metering location during each of the three study rainfall events.

3.03 BASELINE FLOW ANALYSIS

A baseline flow analysis was performed to determine the baseline flow characteristics of each sewershed basin.

To determine the baseline flow at each meter, dry weather flow values collected at 10-minute intervals over each dry weather day were averaged to create a 24-hour baseline flow consisting of 144 data points for each basin. For a day to be considered a “dry weather” day, it had to satisfy two criteria: (1) it had to have less than 0.10 inches of rain and (2) there had to be at least 48 hours of dry weather preceding it. Table 3.03-1 shows the results of the baseline flow analysis.

Flow Meter	Baseline Flow (gpm)		
	Minimum	Average	Maximum
FM 01	21.5	32.7	47.2
FM 02	27.1	46.4	83.8
FM 03	6.8	12.5	20.9
FM 04	8.5	16.2	31.7
FM 05	29.2	46.0	60.9
FM 06	8.6	24.8	48.6
FM 07	6.6	8.2	12.2
FM 08	48.7	62.2	83.8
FM 09	27.6	43.2	65.8
FM 10	13.6	16.5	21.0
FM 11	25.9	47.5	69.2
FM 12	55.2	114.0	172.5
FM 13	11.5	25.7	43.2
FM 14	19.1	29.8	51.0
FM 15	16.9	25.2	36.6
FM 16	18.4	72.6	111.3
FM 17	29.1	43.2	70.7
FM 18	36.8	56.5	92.4
FM 19	64.9	89.5	110.9
FM 20	36.2	47.4	56.8
FM 21	13.3	16.6	22.4
FM 22	82.6	122.9	162.1
FM 23	39.0	60.0	91.0
FM 24	48.5	61.8	77.2
FM 25	16.0	24.0	35.5
FM 26	43.1	61.2	87.3
FM 27	95.0	108.9	127.1
FM 28	15.3	28.4	48.9
FM 29	12.6	26.2	61.0
FM 30	46.8	57.2	69.9

Table 3.03-1 Baseline Flow Analysis

The flows presented in Table 3.03-1 represent the baseline flow characteristics for each individual sewershed basin and were used for the wet weather analyses in the next section.

3.04 WET WEATHER FLOW ANALYSIS

A wet weather flow analysis was performed for each sewershed basin for each of the three rain events that occurred on April 15, May 26, and May 31. There were two analyses performed on each basin.

A. Inflow Analysis

The inflow analysis determined the peaking factor of each basin for each event by taking the peak flow observed during the rain event and dividing it by the baseline flow value that occurred at the same time of day. For example, if the peak flow occurred at 2:20 A.M., then the peaking factor was determined by taking the peak flow value and dividing by the baseline flow value at 2:20 A.M. as calculated in the baseline flow analysis. Peaking factor is generally a good analysis of inflow because it quantifies the quick response observed within the system directly caused by rainfall. When there are inflow problems, it tends to cause flows to peak quickly to multiple times higher than the baseline dry weather flows.

Table 3.04-1 shows the results of the peaking factor analysis. Figure 3.04-1 graphically presents the results for each flow meter location. The peaking factors determined for each rainfall are depicted by the three different colored bars. This graphic contrasts the peaking factors at each flow meter providing perspective as to which basins are most susceptible to inflow.

TABLE 3.04-1

INFLOW ANALYSIS–PEAKING FACTORS

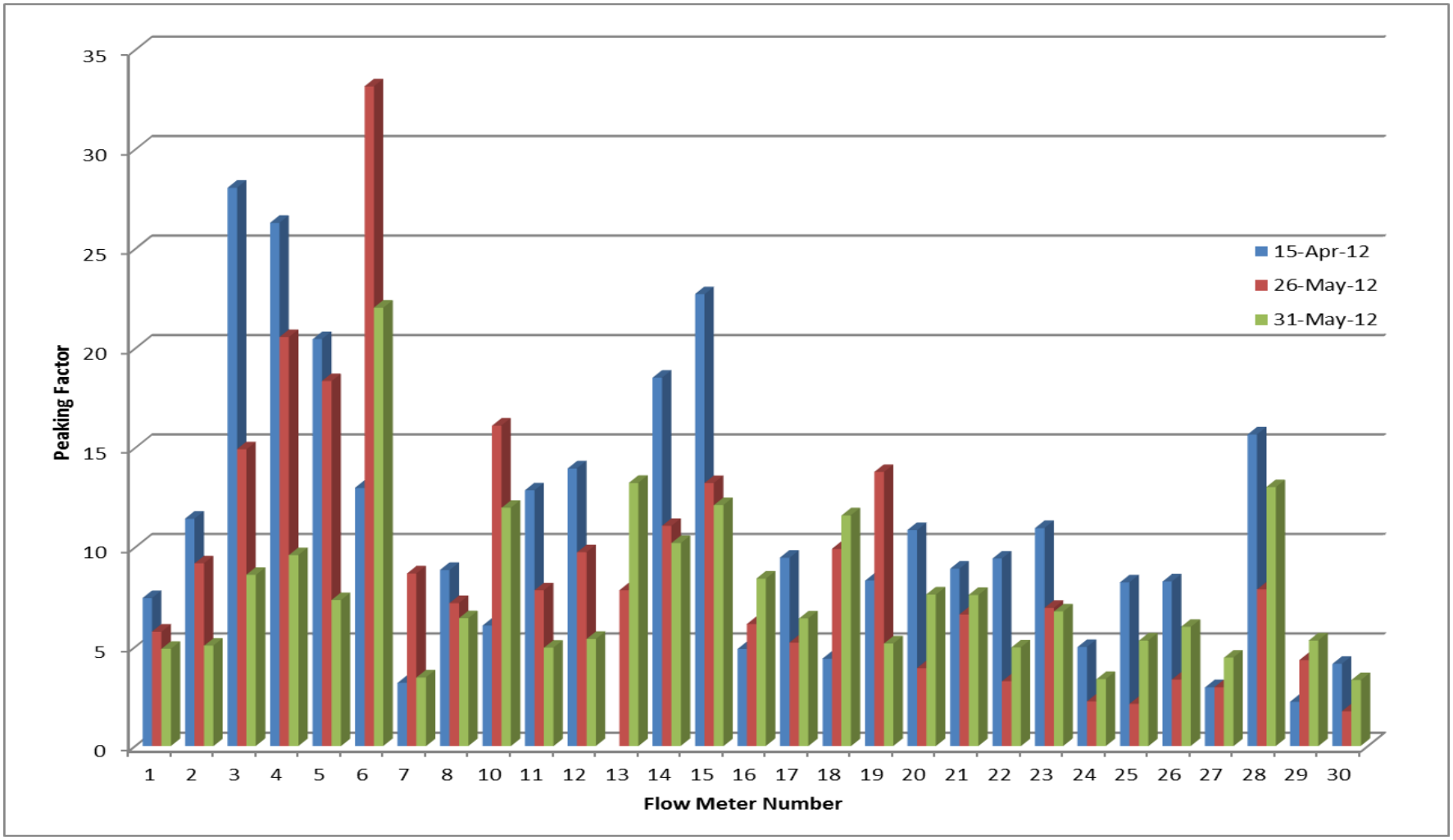
Metered Basin[1]	April 15, 2012			May 26, 2012			May 31, 2012		
	Corresponding Baseline Flow (gpm)	Peak Flow (gpm)	Peaking Factor	Corresponding Baseline Flow (gpm)	Peak Flow (gpm)	Peaking Factor	Corresponding Baseline Flow (gpm)	Peak Flow (gpm)	Peaking Factor
1	22.6	168.3	7.4	35.4	203.3	5.8	34.0	166.4	4.9
2	28.1	321.1	11.4	57.5	528.7	9.2	46.0	232.7	5.1
3	7.2	202.6	28.1	14.8	220.6	14.9	13.1	113.0	8.6
4	9.3	244.3	26.3	21.2	435.9	20.6	18.0	172.5	9.6
5	31.0	635.2	20.5	52.3	959.6	18.4	52.7	386.8	7.3
6	17.0	220.9	13.0	38.9	1288.8	33.2	26.1	576.1	22.0
7	9.7	31.0	3.2	10.4	90.4	8.7	9.1	31.2	3.5
8	50.6	448.1	8.9	69.0	496.5	7.2	64.3	413.4	6.4
9	18.6	406.0	12.5	17.2	549.0	10.2		441.0	7.6
10	18.6	112.8	6.1	17.2	276.8	16.1	14.7	176.3	12.0
11	27.1	348.7	12.9	63.7	498.4	7.8	60.2	297.8	5.0
12	64.1	894.3	14.0	149.7	1458.7	9.8	133.8	720.6	5.4
13[2]				26.5	207.6	7.8	33.4	441.6	13.2
14	19.7	364.1	18.5	32.1	355.1	11.1	31.6	322.7	10.2
15	17.3	393.9	22.7	29.3	386.9	13.2	26.1	316.7	12.1
16	81.4	397.1	4.9	67.3	413.2	6.1	89.9	756.6	8.4
17	29.6	280.3	9.5	48.8	254.2	5.2	44.1	283.4	6.4
18	131.5	577.3	4.4	65.0	644.3	9.9	58.5	678.3	11.6
19	67.8	563.8	8.3	103.6	1427.6	13.8	100.0	516.1	5.2
20	37.2	403.8	10.9	53.0	207.3	3.9	52.4	399.1	7.6
21	13.7	122.5	8.9	17.6	116.7	6.6	16.7	127.2	7.6
22	83.2	784.7	9.4	137.9	450.0	3.3	131.7	653.2	5.0
23	39.6	434.5	11.0	67.3	468.3	7.0	64.6	437.9	6.8
24	49.2	244.9	5.0	67.6	152.5	2.3	65.0	219.3	3.4
25	16.2	133.6	8.2	26.2	55.5	2.1	25.0	132.9	5.3
26	43.4	359.0	8.3	70.1	234.0	3.3	67.9	407.5	6.0
27	96.1	374.8	3.0	109.2	323.0	3.0	115.7	514.5	4.5
28	16.5	259.2	15.7	32.8	258.5	7.9	30.0	390.6	13.0
29	58.8	131.2	2.2	7.6	33.1	4.3	11.0	58.4	5.3
30	40.7	168.3	4.1	61.6	108.0	1.8	57.8	191.5	3.3

[1] FM9 was omitted from the analysis because it was installed to capture overflows from Basin 13. See Section 3.05 for details.

[2] Gray shading indicates the meter was not functional. Refer to Section 3.05 for details.

FIGURE 3.04-1

PEAKING FACTORS AT FLOW METERS



B. Infiltration Analysis

The infiltration analysis looked at the elevated flows in the system over a period of time following the rainfall event and involved calculating an infiltration volume for each sewershed basin for each wet weather event and normalizing the volume based on inch-diameter miles of sewer in each basin. The volume of infiltration for each basin was determined by calculating the flow volume starting 30 minutes after the conclusion of the rainfall event until the flow in the sewer returned to baseline flow levels and then subtracting the baseline volume over the same period of time. The reason for waiting 30 minutes after the rainfall event was to isolate the infiltration portion of the sewer flow response. If the analysis was performed starting at the beginning of the event, it would include the effects of inflow into the system. A 30-minute delay was used because most of the sewershed basin areas are small enough that surface flow and runoff, which represents inflow, would have enough time to get in the system and not skew the results of the analysis. Furthermore, the shapes of the hydrographs presented in Appendix B show a majority of the peak flows have significantly dropped off after approximately 30 minutes suggesting the delay appropriately isolates the sources of infiltration.

The final step of the analysis divided the volume calculated as described above by the inch diameter-miles calculated for each basin, as presented in Table 2.02-2. Table 3.04-2 shows the results of the infiltration analysis.

Figure 3.04-2 graphically presents the results for each flow meter location. The infiltration rate determined for each rainfall is depicted by the three different colored bars. This graphic contrasts the infiltration rate at each flow meter, providing perspective as to which basins are most susceptible to infiltration.

TABLE 3.04-2

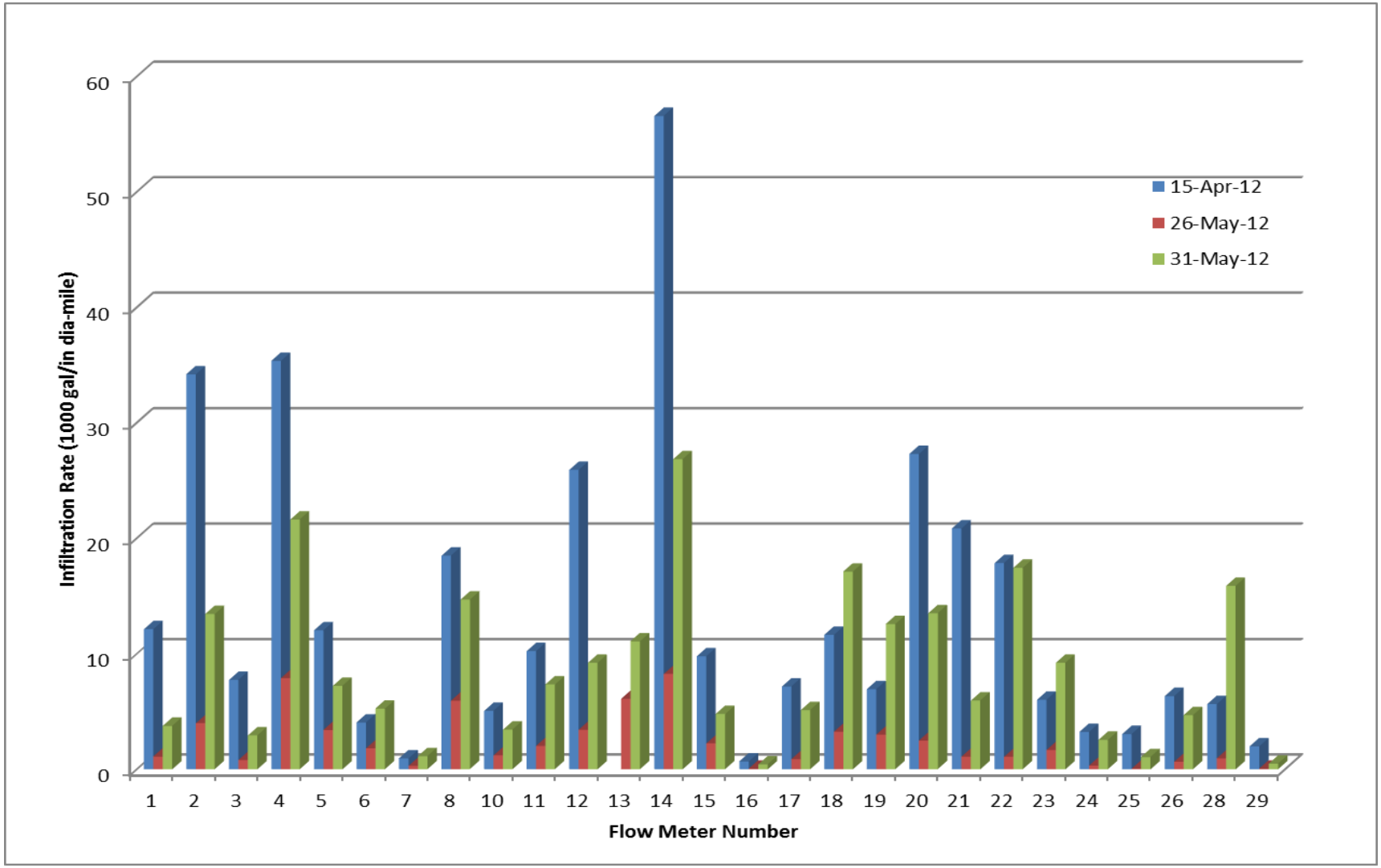
INFILTRATION ANALYSIS

Metered Basin[1]	April 15, 2012		May 26, 2012		May 31, 2012	
	Infiltration Volume (1000 gal)	Infiltration Rate (1000 gal/inch dia.-mile)	Infiltration Volume (1000 gal)	Infiltration Rate (1000 gal/inch dia.-mile)	Infiltration Volume (1000 gal)	Infiltration Rate (1000 gal/inch dia.-mile)
1	99.93	12.12	8.95	1.09	31.15	3.78
2	256.99	34.19	30.14	4.01	100.56	13.38
3	87.23	7.76	8.54	0.76	32.8	2.92
4	139.47	35.49	31	7.89	84.92	21.61
5	119.94	12.02	33.54	3.36	72.47	7.26
6	104.67	4.04	46.9	1.81	135.69	5.23
7	15.8	0.94	5.49	0.33	18.67	1.11
8	190.2	18.52	60.73	5.91	150.76	14.68
10	50.02	5.07	11.75	1.19	33.99	3.44
11	141.96	10.23	27.55	1.99	101.71	7.33
12	879.53	25.91	116.4	3.43	313.04	9.22
13[2]			94.05	6.10	170.57	11.06
14	136.92	56.54	19.68	8.13	64.7	26.72
15	99.85	9.76	22.64	2.21	48.67	4.76
16	14.22	0.68	0.96	0.05	9.42	0.45
17	106.33	7.18	12.69	0.86	76.5	5.17
18	416.11	11.63	66.25	3.26	348.09	17.11
19	152.6	6.92	66.01	2.99	276.68	12.55
20	198.03	27.31	18.19	2.51	97.81	13.49
21	77.07	20.87	4.29	1.16	21.99	5.96
22	360.53	17.83	21.58	1.07	353.29	17.47
23	90.26	6.03	24.68	1.65	138.33	9.24
24	52.02	3.24	5.17	0.32	41.01	2.55
25	96.25	3.06	1.53	0.05	32.56	1.04
26	106.68	6.32	11.09	0.66	79.28	4.70
28	59.69	5.61	9.77	0.92	168.86	15.86
29	7.86	1.95	0.17	0.04	1.94	0.48

[1] FM9, FM27, and FM30 were omitted from this analysis. See Section 3.05 for details.
[2] Gray shading indicates the meter was not functional. Refer to Section 3.05 for details.

FIGURE 3.04-2

INFILTRATION RATES AT FLOW METERS



3.05 ANALYSIS ANOMALIES

Overall, the data collected by the flow meters was generally of good quality and analyses of I/I were successful for all of the sewershed basins. However, as evident from the tables and figures presented in Sections 3.03 and 3.04, there were a few basins not included in the analyses. This section explains why some data was omitted from the analyses.

A. FM 09

Flow meter (FM) 09 was installed in a relief sewer that acted as an overflow from Basin 13 (see Figure 2.02-2). As a result, the data collected from FM 09 was used to supplement the data collected at FM 13 and FM 18. The flow recorded at FM 09 had to be added to the data collected at FM 13 and FM 18 to quantify the actual flow rates generated within those sewershed basins because it overflowed from the basin before being recorded by the respective flow meters.

Since this flow meter was installed strictly as a supplement to other meters, it was not analyzed directly. However, the data was incorporated for both the I/I analyses for Basins 13 and 18.

B. FM 13

All flow metering equipment was calibrated and certified by the manufacturer before beginning the flow metering program. However, as sometimes happens with electrical equipment, an error occurred at FM 13 shortly after it was installed on April 9 causing it to not record data. The error was discovered and addressed during recalibration of the meter on April 11 and verified to be working properly during data download on April 14. Unfortunately, the meter once again failed and did not record data during the April 15 wet weather event. The meter was replaced and worked properly for the remainder of the flow metering period.

Since data was not obtained for the April 15 event at FM 13, that basin was not analyzed for the April 15 event. Instead, Basin 18 was expanded to include Basin 13 for the analyses of the April 15 event.

C. FM 27 and 30

These meters were installed to monitor the flow into the Village system from an unincorporated development outside the Village limits served by the Woodley Road Sanitary District. They were installed to quantify the outside impacts to the Village's system. These basins were included in the inflow analysis but not the infiltration analysis because information regarding the length and size of pipes within these basins was not available.

3.06 CONCLUSIONS

The reports of basement backups during the July 23, 2011 storm event suggest the Village's sanitary sewer system is susceptible to I/I that could have contributed to the basement backups. While none of the metered rainfall events between April 9, 2012, and June 8, 2012, were large enough to mirror the conditions that occurred during the July 23, 2011 event, the flow metering data collected during this

study affirms the presence of I/I within the system. Additionally, the data presented in the figures from Section 3.04 suggest the sources of I/I are widespread throughout most of the system.

Ideally the flow monitoring data would identify a group of specific basins where the sources of I/I are significantly more pronounced than the rest of the basins making it clear which basins are priorities for further investigations and focused attention on reduction of I/I. In the Village's case, this identification is not as clear cut. Therefore, a ranking methodology was used to quantify the relative magnitude of I/I produced in each sewershed basin.

A. Ranking Methodology

The results of the I/I analyses were used to rank the basins. Considering the inflow analysis results, each basin was given a score of 1 through 29 (Basin 09 was not included in the ranking) with the basin having the highest peaking factor receiving a score of 1 and the lowest peaking factor receiving a score of 29. Considering the infiltration analysis, each basin was given a score of 1 through 27 (Basins 09, 27, and 30 were not included in the ranking) with the basin having the highest infiltration rate receiving a score of 1 and the basin with the lowest infiltration rate receiving a score of 27.

Once scores were given for each basin for each event and for each analysis, an overall score was calculated by adding the two average scores together. The basins were then ranked based on the overall average score.

As previously noted, Basin 13 was not functioning during the April 15 event. Therefore, the overall score for Basin 13 was based on four individual scores rather than six.

B. Ranking Results

Tables 3.06-1, 3.06-2, and 3.06-3 show the results of the three sets of rankings. Table 3.06-1 shows rankings based on the peaking factor analysis. Table 3.06-2 shows the rankings based on the infiltration analysis. Table 3.06-3 is the overall basin rankings taking into account both the I/I analyses.

TABLE 3.06-1

PEAKING FACTOR RANKINGS

Rank	Flow Metering Basin	Average Score	April 15, 2012		May 26, 2012		May 31, 2012	
			Peaking Factor	Score	Peaking Factor	Score	Peaking Factor	Score
1	6	3.33	12.98	8	33.16	1	22.04	1
2	4	4	26.3	2	20.56	2	9.6	8
3	15	4.67	22.72	3	13.22	7	12.12	4
4	3	5	28.07	1	14.92	5	8.61	9
5	14	6.67	18.52	5	11.07	8	10.21	7
6	5	7	20.46	4	18.35	3	7.34	14
7	28	7.67	15.67	6	7.88	14	13.02	3
8	13	8.5			7.83	15	13.23	2
9	10	10.33	6.06	22	16.11	4	11.98	5
10	12	12.33	13.96	7	9.75	11	5.39	19
11	18	13.67	4.39	25	9.91	10	11.6	6
12	23	15	10.96	12	6.95	18	6.77	15
13	19	15.33	8.32	18	13.78	6	5.16	22
13	2	15.33	11.43	11	9.19	12	5.05	23
15	21	15.67	8.92	16	6.62	19	7.6	12
16	20	16	10.86	13	3.91	24	7.62	11
17	11	16.33	12.86	9	7.83	15	4.95	25
18	8	16.67	8.85	17	7.19	17	6.43	16
19	17	17.67	9.47	14	5.2	22	6.42	17
20	16	18	4.88	24	6.14	20	8.42	10
21	26	20.67	8.28	19	3.34	25	6	18
22	22	21.67	9.43	15	3.26	26	4.96	24
23	1	22.67	7.44	21	5.75	21	4.89	26
23	7	22.67	3.18	27	8.68	13	3.45	28
25	25	23	8.23	20	2.12	29	5.31	20
26	29	24	2.23	29	4.32	23	5.31	20
27	24	26.67	4.98	23	2.25	28	3.37	29
28	27	27.33	2.96	28	2.96	27	4.45	27
29	30	28.67	4.14	26	1.75	30	3.32	30

TABLE 3.06-2

INFILTRATION ANALYSIS RANKINGS

Rank	Flow Metering Basin	Average Score	April 15, 2012		May 26, 2012		May 31, 2012	
			Infiltration Rate	Score	Infiltration Rate	Score	Infiltration Rate	Score
1	14	1	56.57	1	8.26	1	26.84	1
2	4	2	35.37	2	7.89	2	21.63	2
3	2	5.33	34.19	3	3.99	5	13.44	8
4	8	5.67	18.5	7	5.94	4	14.7	6
5	13	6.5			6.09	3	11.08	10
6	20	7	27.3	4	2.48	10	13.51	7
7	12	7.33	25.92	5	3.42	6	9.22	11
8	18	7.67	11.63	11	3.24	8	17.1	4
9	22	9	17.85	8	1.09	16	17.45	3
10	5	10.33	12.03	10	3.41	7	7.22	14
11	19	11.33	6.94	16	2.99	9	12.57	9
12	11	12.33	10.23	12	2.02	12	7.35	13
13	21	13	20.85	6	1.08	18	5.96	15
14	15	14	9.78	13	2.25	11	4.79	18
15	23	14.33	6.01	18	1.67	14	9.22	11
15	28	14.33	5.64	19	0.94	19	15.88	5
17	1	15	12.13	9	1.09	16	3.76	20
18	6	16.67	4.05	21	1.81	13	5.25	16
19	17	17.33	7.16	15	0.88	20	5.13	17
20	10	18.67	5.07	20	1.22	15	3.44	21
21	3	19	7.74	14	0.8	21	2.94	22
22	26	19.33	6.34	17	0.65	22	4.68	19
23	24	22.67	3.24	22	0.31	23	2.55	23
24	7	24.33	0.95	25	0.3	24	1.13	24
24	25	24.33	3.05	23	0.06	25	1.05	25
26	29	25.67	1.98	24	0.04	27	0.48	26
27	16	26.33	0.67	26	0.05	26	0.43	27

TABLE 3.06-3

OVERALL BASIN RANKINGS

Rank	Flow Metering Basin	Overall Score	Peaking Factor Average Score	Infiltration Rate Average Score
1	4	6	4	2
2	14	7.67	6.67	1
3	13	15	8.5	6.5
4	5	17.33	7	10.33
5	15	18.67	4.67	14
6	12	19.66	12.33	7.33
7	6	20	3.33	16.67
8	2	20.66	15.33	5.33
9	18	21.34	13.67	7.67
10	28	22	7.67	14.33
11	8	22.34	16.67	5.67
12	20	23	16	7
13	3	24	5	19
14	19	26.66	15.33	11.33
15	11	28.66	16.33	12.33
16	21	28.67	15.67	13
17	10	29	10.33	18.67
18	23	29.33	15	14.33
19	22	30.67	21.67	9
20	17	35	17.67	17.33
21	1	37.67	22.67	15
22	26	40	20.67	19.33
23	16	44.33	18	26.33
24	7	47	22.67	24.33
25	25	47.33	23	24.33
26	24	49.34	26.67	22.67
27	29	49.67	24	25.67

3.07 BASIN PRIORITIZATION

Table 3.06-3 presents overall basin rankings solely based on the I/I observed during the flow monitoring period. However, there are other factors that contribute to prioritization of the basins that can not necessarily be quantified with data analysis. One such factor is the results of the flooding survey presented in Figure 2.02-1. In addition, sources of inflow are traditionally both easier and less expensive to locate and repair. As a result, the ranking system combined with engineering judgment accounting for the flooding survey results and potential future costs, help determine the prioritization and schedule for future investigations.

A. Highest Priority Basins

Figure 3.07-1 shows the basins given the highest priority for future investigations. The following discusses why each basin was chosen.

Basin 04 was included as a high priority because of how high it ranked based on the data collected during the flow metering period supported by the flooding reported as a result of the July 23, 2011 event.

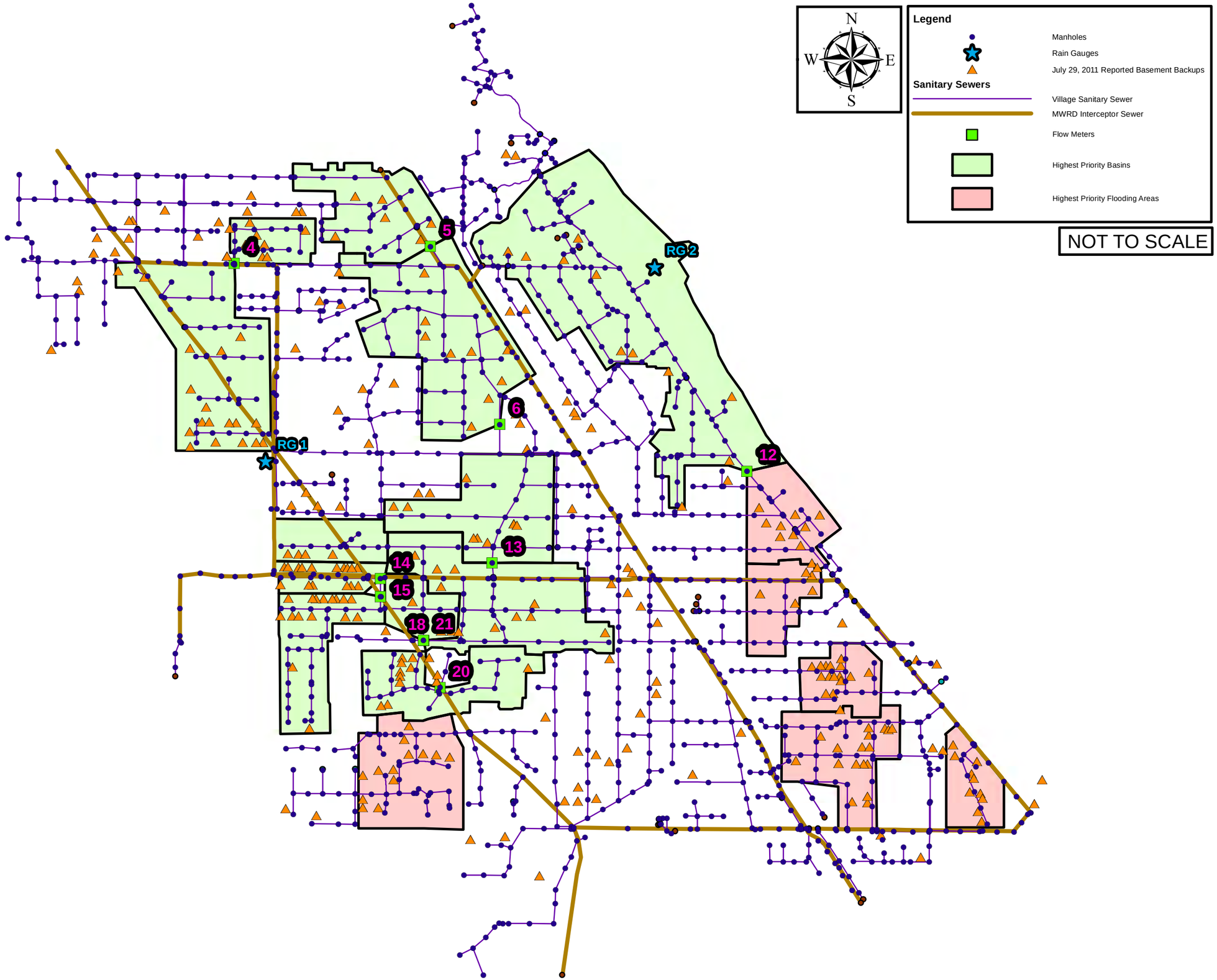
Basin 14 exhibited high values of both inflow and infiltration and was ranked second highest in the ranking system, and it also showed significant flooding according to the flood survey results.

Basin 15 was prioritized because it is a top ten basin according to the rankings, but more importantly the flooding survey suggests extensive flooding in this area. Also, its proximity to Basin 14 makes it a logical basin for future investigation.

Basins 05, 06, 13, and 18 were included in the highest priority group because each basin ranked high in the overall rankings and the peaking factor rankings. In addition, flooding was reported in each of those basins according to the survey results. Most importantly however, these basins interact very closely because they are in series (see Figure 2.02-2). Furthermore, the presence of a relief sewer from Basin 13, which also relieves Basin 18, suggest that excess flow has historically been an issue throughout these basins.

Basin 21 was included as a high priority basin not because the rankings suggest this basin is subject to extensive I/I but because it includes an overflow to Basins 14 and 15 and future investigations appear warranted throughout this area.

Basin 12 was included as a high priority basin because it ranked high in the overall rankings. While the risk of basement backups in this area appears low because of the topography of the basin and relatively few basement backups indicated in the flood survey, removing the excess flow would provide added capacity downstream and could benefit Basin 16. According to the flow metering data, Basin 16 does not appear to be a basin with high I/I; however, the flooding survey suggests there is a problem with basement backups along the main sewer on Sheridan Road. This could be because I/I from Basin 12 is reducing the capacity of the sewers within Basin 16 and it is the lack of capacity causing the reported problems in Basin 16.



HIGHEST PRIORITY BASINS

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FIGURE 3.07-1

There are several areas of the Village that were not metered that reported basement backups in the flood survey, specifically the areas west of Basin 07 and north of Basin 14. These areas are also recommended to be included as high priority areas.

The results of the flood survey indicate there were several clusters of heavy flooding located within basins that, from a flow metering perspective, do not appear to have significant sources if I/I. Specifically these clusters appear within Basins 16, 17, 20, 23, 24, 25, and 26. Despite the flow metering data suggesting these basins do not require high priority, the specific cluster areas should be treated as a high priority to identify potential specific sources of I/I concentrated in these areas.

B. Remaining Basins

The flood survey report and the results of the flow metering analyses indicate there are other areas of the Village that have concerns with I/I and potential for basement backups. The intention of the highest priority basin ranking is not to exclude these other areas but to give the Village focus on where to start further investigations. As discussed in Section 5, the remaining basins will be addressed following the further investigation of the priority areas and follow-up evaluations of I/I removal success.

SECTION 4
FURTHER INVESTIGATIONS

4.01 MOVING FORWARD

The purpose of the flow monitoring study was to identify areas of the Village's sanitary sewer system where I/I is most prolific. The study findings, as well as the results of the Village's flood survey for the July 23, 2011 event, have provided an understanding of where the Village's sanitary sewer system is susceptible to excess flow because of wet weather conditions. Moving forward, this information will be used to guide investigations to pinpoint the sources of excess flow into the system and develop a plan for eliminating these sources and reducing excess flow.

Sources of I/I are identified through a series of physical investigations described in the following section.

4.02 INVESTIGATION METHODS

The following methods are used to locate sources of I/I. Although both inflow and infiltration are important contributors to excess flow in the sewer system, sources of inflow are of immediate concern to the Village because they have the most direct impact on surcharging and basement flooding. Additionally, sources of inflow are often easier to find and less expensive to remove. For this reason, locating inflow sources is emphasized in this report. Assessments of infiltration will also come out of these investigations and will be used to provide insight into the condition of the sewer infrastructure.

A. Manhole Assessments

Manholes can be a large contributor of inflow into a sanitary sewer system. There are a number of defects within the top half of a manhole where inflow can enter in the system. For instance, open pick holes, missing bolts, torn gaskets, offset frames, and broken riser rings are not uncommon and all allow water to seep into the manhole. If a manhole is located in a low area that holds water or in the path of concentrated rainfall runoff, the impacts of these defects are significantly increased. A manhole assessment program involves visually inspecting manholes, their location, and identifying, categorizing, and quantifying the impacts of each manhole defect.

The data gathered during a manhole assessment program is entered into a database that conveniently stores the data, integrates with geographic information systems (GIS) and is a valuable tool for planning repairs. Physical investigations identify the defects and an overall condition of the manhole. The location and nature of each defect is recorded and given a severity rating of minor, moderate, or severe. Initial recommendations for rehabilitation are made by field staff performing the assessment. The magnitude of inflow associated with each defect is also estimated for use in predicting benefit versus cost for rehabilitation. Appendix C includes an example of an inspection form used for the assessment of manholes.

B. Smoke Testing

Smoke testing is a process that involves blowing a white, odorless simulated smoke into the sanitary sewer system, which, as opposed to water seeping into the system, allows smoke to seep out of the system. In locations where water enters the system, the smoke will exit the system. The smoke is nontoxic, does not leave a residue, and is produced chemically rather than with fire. Figure 4.02-1 provides a visual of this process. Field staff visually observe the areas surrounding the smoke testing operation to locate where smoke is leaving the system. Each instance of smoke is documented via photograph and on a Smoke Testing Field Log. Figure 4.02-2 provides an example photograph taken during smoke testing showing a cross-connection between the sanitary sewer system and the storm sewer system.

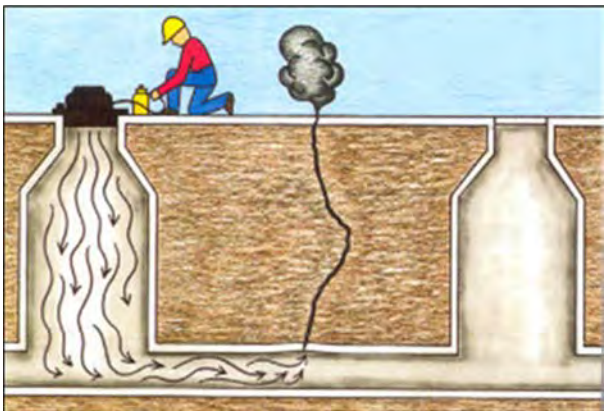


Figure 4.02-1 Smoke Testing Concept

Smoke testing serves multiple purposes. It can identify sources of inflow not directly related to the condition of the manholes in the system. Sources such as connected downspouts, foundation drains, sump pump connections, and storm sewer cross-connections are readily located. Smoke testing also confirms observations made during the manhole assessment program. If there are defects, such as broken riser rings, offset frames, or open pick holes, smoke will exit the system at these locations.

Figure 4.02-2 Example of a Storm Sewer Cross-Connection

Smoke testing is also a valuable tool for focusing other more expensive investigations such as televising and dye testing.

C. Sewer Televising

Sewer televising involves inserting a camera into the sanitary sewer system to observe the condition of the pipe system. Figure 4.02-3 shows a still shot from a televising project. Clear water entering the sanitary sewer system through a pipe defect is observed by the televising crew. Televising can be expensive and time-consuming. Therefore, this investigation technique is often done after a smoke testing program. Televising efforts are concentrated in locations where smoke showed evidence of defects making the operation more efficient from both a time and cost perspective.

Figure 4.02-3 Clear Water Entering a Separate Sanitary System During Televising

Televising generally identifies sources of infiltration from pipe defects. However, it can also be valuable in identifying inflow sources. For example, a connected sump pump could be indicated by intermittent or continual clear water flow from a lateral. Coupled with dye testing (discussed below), televising will identify where stormwater cross-connections enter the system. Televising also finds major defects such as collapsed pipes. A collapsed pipe can restrict flow in a sewer and the excess flow through the broken pipe reduces system capacity. The reduced capacity can cause a system bottleneck contributing to basement backups. Additionally, a sewer collapse can be the source of significant infiltration. While normally infiltration does not contribute much to basement backups, a significant sewer break can contribute so much infiltration volume relatively quickly that it acts similar to inflow.

D. Dye Testing

Dye testing is a method often done in conjunction with sewer televising. It involves flooding the storm sewer system with a bright-colored nontoxic dye that is used to both confirm and quantify inflow sources associated with storm sewer cross-connections.

Dye testing is another method that is both expensive and time intensive. Therefore, it is most appropriately done when the results of smoke testing suggest there is a cross-connection between the storm and sanitary sewer systems. Once the storm sewer system is flooded with dye, the adjacent sanitary sewers are televised. If there is a cross-connection between the systems, the dyed water appears in the sanitary sewer and is captured by the televising crew.

4.03 ADDITIONAL INVESTIGATIONS

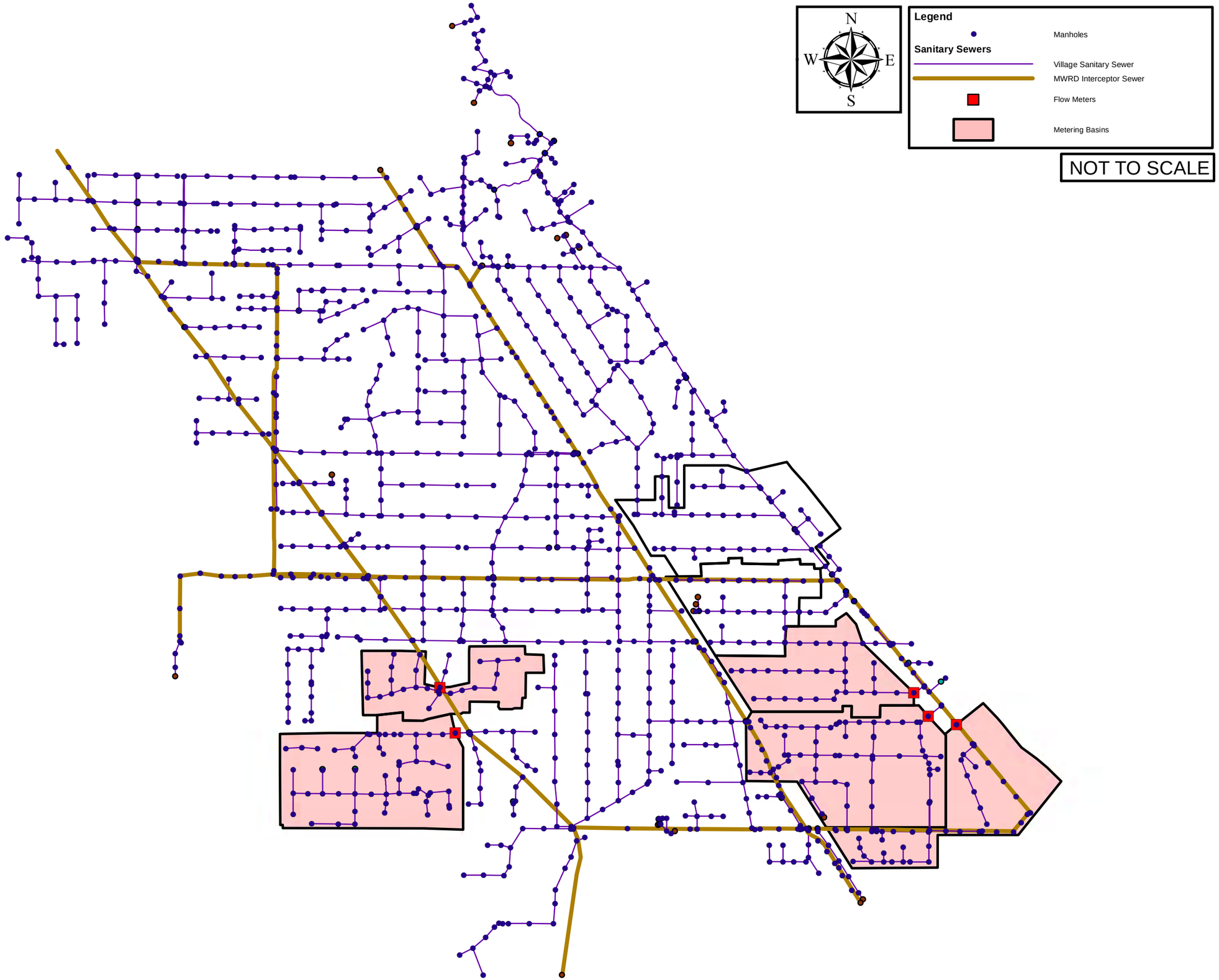
The investigations presented above are standard practices that are commonly used for all SSES studies regardless of system characteristics. However, the Village has some unique factors, as indicated by the July 23, 2011 flood study, that could be causing basement backups in the system. As discussed in Section 3, the flood study indicated large clusters of flooding in basins where the flow monitoring data did not suggest significant sources of I/I exist. This suggests there are other factors which contributed to the system flooding that are triggered during large events but not smaller ones.

Review of the flood study seems to indicate a number of the reported flooding clusters occurred fairly close to the MWRDGC intercepting sewers. It is possible these areas experienced basement backups as a result of surcharging in the MWRDGC intercepting sewers. There are a number of

reasons that could cause the MWRDGC interceptors to surcharge, including excessive wet weather flows from the surrounding communities such as Wilmette and Kenilworth that also discharge into the MWRDGC sewer system. Unfortunately, none of the rainfall events that occurred over the flow monitoring period were very significant and it is not believed that the capacity of the MWRDGC interceptors was exceeded. Additionally, none of the flow data studied indicated the MWRDGC interceptors backed up into the Village system.

To evaluate whether the MWRDGC is impacting Winnetka's sewer system, particularly where the flood clusters were identified, a cursory survey and hydraulic study of the MWRDGC interceptor system and the Village sewer system should be performed. This would include review of engineering drawings for the MWRDGC system as well as performing a cursory elevation survey of the Village system. The relationship of the MWRDGC system to the Village system would provide important insight into the potential for impact because of surcharging of the MWRDGC system.

Additionally, installation of flow meters at key locations and collection of flow and rain data for an extended period of time may result in capturing a large enough rainfall to evaluate from a flow metering standpoint whether the MWRDGC interceptors impact the Village's sewers. Figure 4.03-1 presents a suggested extended flow monitoring program that includes installation of five flow meters for an eight-month monitoring period from the beginning of March through the end of October. This schedule allows the meters to be installed during the wet spring months, during the summer thunderstorm season, and the traditionally wet fall season maximizing the potential of capturing an event that results in surcharged interceptors.



EXTENDED FLOW METERING PROGRAM

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WINNETKA, IL

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FIGURE 4.03-1

SECTION 5
RECOMMENDED SSES INVESTIGATION PLAN

5.01 NEXT STEPS

The next step in the Village's SSES is to plan for and undertake an investigation program to identify sources of excess flow. These investigations are generally performed in phases based on weather conditions. Figure 5.01-1 provides a graphic of typical phasing of investigations. Manhole assessments are performed during wet weather when susceptibility to runoff and sources of flow into the manholes will be most noticeable. Smoke testing is performed during dry weather when the ground is dry and will allow smoke to easily travel to the surface. Televising is typically performed during wet weather when sources of flow into the sewer are most noticeable and is often done in conjunction with dye testing.

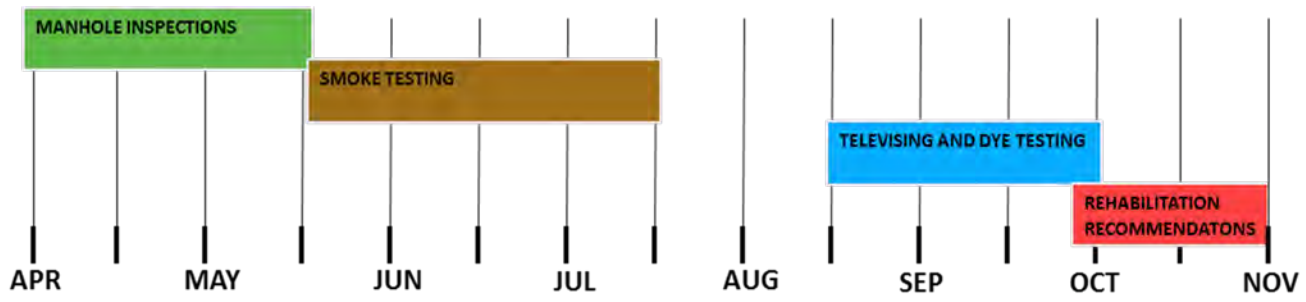


Figure 5.01-1 Typical Yearly Phasing of Further Investigations

5.02 OPINION OF PROBABLE COST

The cost to perform the SSES investigations and develop rehabilitation recommendations for the priority basins is approximately $180,500. This cost includes $77,500 in sewer cleaning and televising costs. Since the quantity of televising that may be necessary in each basin is not certain at this time, this opinion of cost anticipates 50 percent of each basin being televised. This estimate is based on past similar projects but may change based on results of the other SSES investigations.

The opinion of probable cost to perform SSES investigations on the remaining basins is approximately $235,000. This cost includes $100,000 in sewer cleaning and televising costs, anticipating 50 percent of each basin being televised.

The opinion of probable cost to perform SSES investigations over the entire Village is approximately $415,500. Appendix D provides a breakdown of these costs for each individual basin.

An opinion of probable cost was also developed for the additional investigations discussed in Section 4.03. The cost to perform a cursory elevation survey and hydraulic study of the MWRDGC interceptor sewer system and the Village's sanitary sewer system is approximately $30,000.

The opinion of probable cost to perform a supplemental flow monitoring program is approximately $134,000. This program includes installation of five flow meters for an eight-month period to study the areas shown in Figure 4.03-1 and anticipates the Village contracting with a consultant to supply, install, maintain, and remove the flow meters.

As an alternative to using a consultant, the option of the Village purchasing a number of meters and performing installation, calibration, interrogation, and removal of the meters itself was investigated. This alternative was determined to be advantageous to the Village because it significantly reduces costs and provides flexibility for the Village to install and rotate meter locations as desired. The opinion of probable cost for purchasing these flow meters is $24,500. This includes the cost of three 2150 ISCO area velocity flow meters, the associated ancillary equipment, including computer software, transducers, mounting rings, and training of Village staff by Strand Associates, Inc.®. This cost anticipates purchase of only three meters, which would be rotated as desired to study the five priority locations. After consideration of this alternative, the Village decided to proceed with this option.

5.03 RECOMMENDED INVESTIGATION PLAN

Planning for the SSES investigations and the resulting rehabilitation efforts needs to fit into the Village's capital improvements budget. Based on discussions with Village staff, it is recommended the Village proceed with a pilot SSES investigation program in the fall of 2012. The pilot program is designed to investigate a cross section of areas including priority basins and areas that reported significant flooding in July 2011. The intent of the pilot program is to provide the Village with a sample of defects found in the Village's system and the type of rehabilitation methods required to address the problems. From this information a projection of potential rehabilitation costs for the entire Village will be made and then programmed into the Village's Capital Improvement budget. Figure 5.03-1 shows the basins and areas chosen for the pilot SSES program.

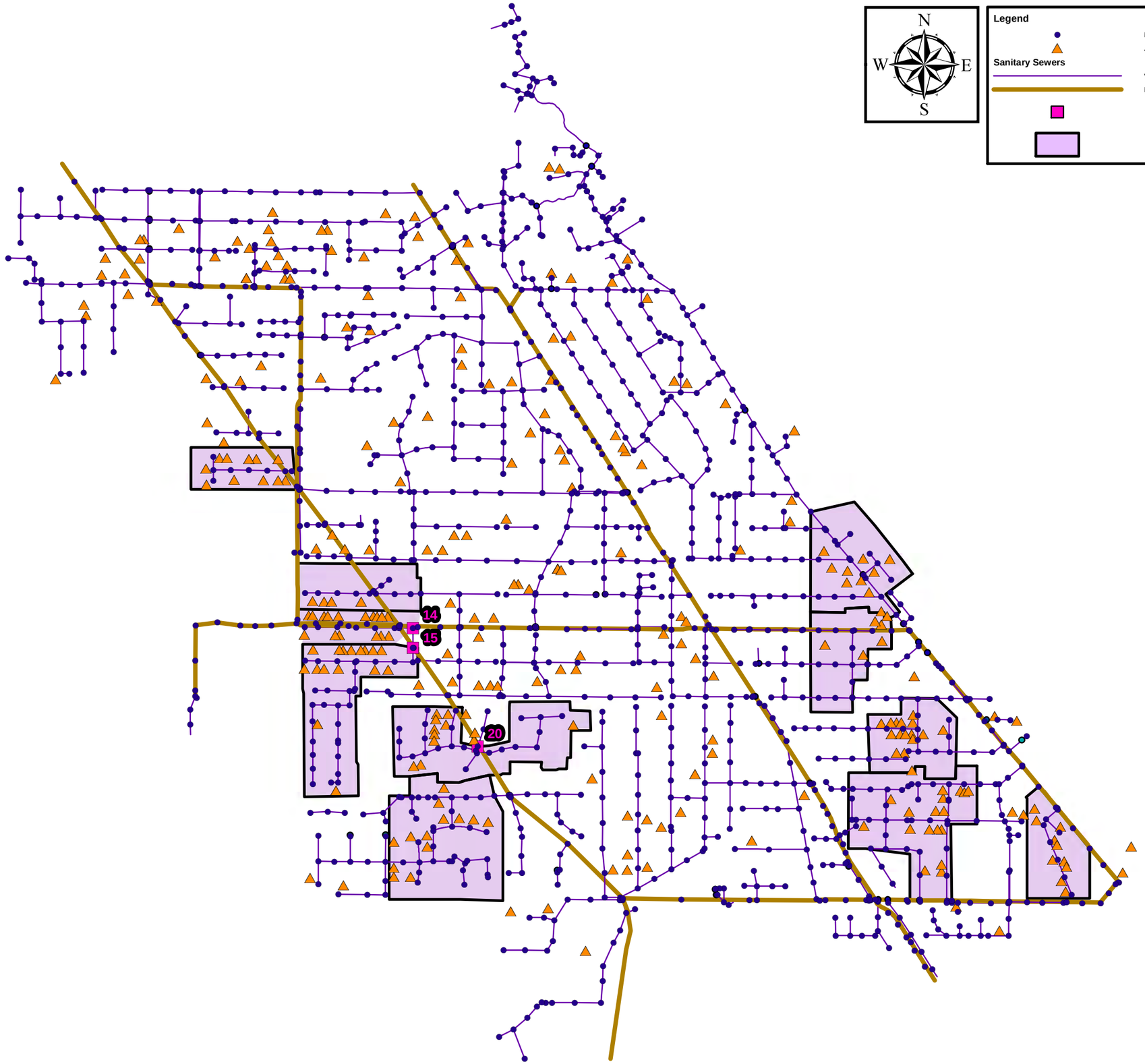
Over the subsequent two years, all the SSES investigations will be performed for the entire Village sanitary sewer system. The first year will include all the priority areas, the second year would include the remaining areas. Additionally, in the first year, the hydraulic analysis and extended flow metering program will be performed.

Table 5.03-1 presents the schedule and opinion of cost to undertake the SSES investigations. The table provides an opinion of cost for the pilot study and the resulting reduced cost for study of the priority basins. The table also includes the cost for the Village to purchase its own meters and perform an extended flow metering program.

Table 5.03-1 lays out the schedule and annual cost for the recommended SSES investigation plan. The results of the pilot study and remaining SSES investigations will determine the rehabilitation costs and schedule required. Rather than provide broad assumptions, the rehabilitation cost and schedule have been omitted and will be provided upon completion of the SSES investigations.

Year	Investigations	Cost	Total Annual Cost
2012	SSES Pilot Study	$46,900	$75,000
	Pilot Study Televising	$28,100	
2013	SSES Investigations of Remaining Priority Areas	$56,100	$160,000
	Televising of Remaining Priority Areas	$49,400	
	Hydraulic Analysis	$30,000	
	Purchase Flow Meters and Training	$24,500	
2014	SSES Investigations of Remaining Basins	$135,000	$235,000
	Televising of Remaining Basins	$100,000	

Table 5.03-1 Recommended Plan and Schedule



PILOT STUDY

SANITARY SEWER EVALUATION SURVEY
VILLAGE OF WINNETKA
WINNETKA, IL

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FIGURE 5.03-1

APPENDIX A
BREAKDOWN OF SANITARY SUBBASINS

APPENDIX A
BREAKDOWN OF SANITARY SUBBASINS

Meter	Sewer Diameter	Length of Sewer		Equivalent Sewer Length
	(in)	(ft)	(miles)	inch-mile
1	8	5440	1.03	8.24
Total		**5440**	**1.03**	**8.24**
Acreage		50.7		
2	8	3998	0.76	6.06
	10	770	0.15	1.46
Total		**4768**	**0.90**	**7.52**
Acreage		43.6		
3	8	959	0.18	1.45
	10	4013	0.76	7.60
	12	384	0.07	0.87
	15	463	0.09	1.32
Total		**5819**	**0.94**	**11.24**
Acreage		42.0		
4	8	2594	0.49	3.93
Total		**2594**	**0.49**	**3.93**
Acreage		17.4		
5	8	3969	0.75	6.01
	10	1118	0.21	2.12
	12	812	0.15	1.85
Total		**5899**	**1.12**	**9.98**
Acreage		45.8		
6	8	8970	1.70	13.59
	10	2159	0.41	4.09
	12	1036	0.20	2.35
	15	2075	0.39	5.89
Total		**14240**	**2.11**	**25.93**
Acreage		94.7		
7	8	9841	1.86	14.91
	10	1040	0.20	1.97
Total		**10881**	**2.06**	**16.88**
Acreage		67.2		
8	8	1934	0.37	2.93
	10	152	0.03	0.29
	12	696	0.13	1.58
	15	1926	0.36	5.47
Total		**4708**	**0.89**	**10.27**
Acreage		47.1		

Meter	Sewer Diameter	Length of Sewer		Equivalent Sewer Length
	(in)	(ft)	(miles)	inch-mile
9	Overflow for Basin 13			
10	8	1232	0.23	1.87
	10	2720	0.52	5.15
	12	1255	0.24	2.85
Total		**5207**	**0.99**	**9.87**
Acreage		33.4		
11	8	3036	0.58	4.60
	10	1928	0.37	3.65
	12	398	0.08	0.90
	15	1661	0.31	4.72
Total		**7023**	**1.33**	**13.87**
Acreage		66.3		
12	6	337	0.06	0.38
	8	10624	2.01	16.10
	10	2712	0.51	5.14
	12	2986	0.57	6.79
	15	1602	0.30	4.55
	18	291	0.06	0.99
Total		**18261**	**3.46**	**33.95**
Acreage		184.2		
13	8	5613	1.06	8.50
	15	2437	0.46	6.92
Total		**8050**	**1.52**	**15.43**
Acreage		47.8		
14	8	672	0.13	1.02
	10	741	0.14	1.40
Total		**1413**	**0.27**	**2.42**
Acreage		7.4		
15	8	455	0.09	`
	10	4008	0.76	7.59
	15	928	0.18	2.64
Total		**5391**	**1.02**	**10.23**
Acreage		39.4		

Meter	Sewer Diameter	Length of Sewer		Equivalent Sewer Length
	(in)	(ft)	(miles)	inch-mile
16	6	131	0.02	0.15
	8	3016	0.57	4.57
	10	1025	0.19	1.94
	15	2025	0.38	5.75
	18	1669	0.32	5.69
	24	628	0.12	2.85
Total		**8494**	**1.49**	**20.96**
Acreage		76.0		
17	8	2481	0.47	3.76
	10	1326	0.25	2.51
	20	2254	0.43	8.54
Total		**6061**	**1.15**	**14.81**
Acreage		47.5		
18	8	9233	1.75	13.99
	12	503	0.10	1.14
	15	1835	0.35	5.21
Total		**11571**	**2.19**	**20.35**
Acreage		72.8		
19	8	4383	0.83	6.64
	10	954	0.18	1.81
	12	448	0.08	1.02
	15	1305	0.25	3.71
	18	2601	0.49	8.87
Total		**5308**	**1.01**	**22.04**
Acreage		56.9		
20	8	3424	0.65	5.19
	10	1090	0.21	2.06
Total		**4514**	**0.85**	**7.25**
Acreage		41.6		
21	8	2437	0.46	3.69
Total		**2437**	**0.46**	**3.69**
Acreage		17.9		

Meter	Sewer Diameter	Length of Sewer		Equivalent Sewer Length
	(in)	(ft)	(miles)	inch-mile
22	8	6145	1.16	9.31
	9	703	0.13	1.20
	10	2044	0.39	3.87
	12	1220	0.23	2.77
	15	834	0.16	2.37
	18	206	0.04	0.70
Total		**11152**	**2.07**	**20.22**
Acreage		86.6		
23	8	1926	0.36	2.92
	10	393	0.07	0.74
	12	2581	0.49	5.87
	15	407	0.08	1.16
	18	1255	0.24	4.28
Total		**4636**	**0.88**	**14.96**
Acreage		54.0		
24	8	971	0.18	1.47
	9	1518	0.29	2.59
	10	1911	0.36	3.62
	12	2116	0.40	4.81
	18	1047	0.20	3.57
Total		**6592**	**1.25**	**16.06**
Acreage		65.9		
25	6	116	0.02	0.13
	8	6222	1.18	9.43
	12	2871	0.54	6.53
	15	599	0.11	1.70
	18	2571	0.49	8.76
	20	1289	0.24	4.88
Total		**13668**	**2.34**	**31.43**
Acreage		91.7		
26	8	8166	1.55	12.37
	12	1981	0.38	4.50
Total		**10147**	**1.92**	**16.88**
Acreage		85.5		
27	12	710	0.13	1.61
Total		**710**	**0.13**	**1.61**
Acreage		9.0		

Meter	Sewer Diameter	Length of Sewer		Equivalent Sewer Length
	(in)	(ft)	(miles)	inch-mile
28	8	6985	1.32	10.58
	10	32	0.01	0.06
Total		**7017**	**1.33**	**10.64**
Acreage		67.5		
29	12	925	0.18	2.10
	15	679	0.13	1.93
Total		**1604**	**0.30**	**4.03**
Acreage		14.9		
30	8	1563	0.30	2.37
Total		**1563**	**0.30**	**2.37**
Acreage		34.3		

APPENDIX B
FLOW METERING EVALUATIONS

B.01 FLOW METERING BASIN DESCRIPTIONS

The following evaluation provides a summary of each metering location, the data collected, and concerns identified based on the three study rainfall events. The information presented is best considered in conjunction with the dry and wet weather flow analyses presented in Section 3.

A. Basin 01

This basin was approximately 50.7 acres in area. It collected flow from the most northwest portion of the Village. The flow meter collected good data throughout the monitoring period. The sewerage from this basin flowed directly into the MWRDGC interceptor system.

B. Basin 02

This basin was approximately 43.6 acres in area, located north of Tower Road between Grove Street and Vernon Avenue. This flow meter collected good data throughout the monitoring period. The sewerage from this basin flowed directly into the MWRDGC interceptor system.

C. Basin 03

This basin was unique among some of the other basins in that it had a relief sewer located within it. There are two sewers that travel from north to south along Vernon Avenue. The eastern most line collects flow from the collector sewers along Scott and Asbury Avenues. However, there exists three overflow pipes connecting the eastern line to the western line. The inverts of these overflow pipes are set higher than the invert of the downstream sewers. When flows get too high and the water level rises it would reach the invert of the overflow sewers and flow into the adjacent sewer line. An analysis of the data and physical observations, such as the presence of debris in the overflow pipe flowline both before and after rainfall events, suggest that none of the events that occurred during the monitoring period caused an overflow.

This basin was 42 acres in area and the data collected was of good quality. The connection to the MWRDGC interceptor is located directly downstream.

D. Basin 04

This basin was approximately 17.4 acres in area, located north of Tower Road, collecting sewerage from the Forest Glen area. The meter functioned well during the monitoring period and the basin flows directly to the MWRDGC interceptor.

E. Basin 05

The flow metering data collected from Basin 05 was good. The basin was 45.8 acres in area encompassing the area north of Tower Road, west of the railroad tracks and East of Euclid Avenue. Sewerage from this basin continued downstream to Basin 06.

F. Basin 06

As stated above, Basin 06 received flow from the Basin 05 as well as sewerage from an 94.7 acre area. The data collected at this metering location was good throughout the metering period. Basin 06 was tributary to Basin 13.

G. Basin 07

This flow meter had some sediment issues that caused some data dropouts to occur. When velocities are low within sewers it causes solids to settle out. When these solids deposit on top of the flow meter sensor it prevents the meter from collecting a velocity reading. To combat this, every week during the data download process we made sure to clean this location. The diligent cleaning program for this metering location ensured that the data collected at this location was good.

This basin had an area of 67.2 acres and was directly upstream of an MWRDGC interceptor.

H. Basin 08

This flow meter collected good data. However, during the middle of the night during low flows the meter was having difficulty collecting data because the flow level was too low. We made a maintenance visit to this location during the monitoring period to push the meter further into the pipe and this solved the problem. Since the flow level was elevated during rainfall events, this did not affect any of the wet weather data collected.

This basin was 47.1 acres in size and was directly upstream of the MWRDGC interceptor.

I. Basin 09

This flow meter was installed in an 18 inch relief sewer designed to offload a small portion of dry weather and a significant portion of the wet weather flows from the Basin 13 towards an MWRDGC interceptor. All data collected at this flow meter actually represented flow generated upstream in Basins 13, 06, and 05. The data was used to adjust the data collected by Basin 13. As a result, the wet weather analyses described later in this section was not applied to Basin 09. This is described further in Section 3.05.

The dry weather flows at this metering location were fairly low since it was monitoring a relief sewer. This resulted in solid depositing on the flow metering sensor. This was another site that required cleaning every time the data was downloaded. The data collected at this location was generally good despite the solids deposits.

J. Basin 10

Basin 10 presented problems throughout the flow monitoring period. Firstly, the velocities within the sewer were very low resulting in severe solids depositing. We explored the option of moving the meter. However, the next manhole upstream was a junction point of two sewers, which would have required

the installation of an additional meter. Rather than moving the meter and increasing the cost, we were diligent in cleaning the solids deposits during each data download.

Despite the heavy solids deposits, the meter was functional during all of the rainfall events and provided generally good data throughout the monitoring period. The MWRDGC interceptor was directly downstream of this metering location.

The flow response graph at this location suggested that a backup occurred during the April 15 and May 26 events as evidenced by the negative flow observed during the event. It is unclear based on the flow metering data whether the backup was caused by the capacity of the sewer being exceeded or as a result of downstream influence from the MWRDGC intercepting sewer.

K. Basin 11

This meter was located east of the railroad tracks in the downtown area north of Elm Street. Its tributary area was 66.3 acres and the data collected at this location was good. Basin 11 was tributary to Basin 16.

L. Basin 12

This basin encompassed the northeastern portion of the Village and had the largest basin area at 184.2 acres. This flow metering location was unique in that the sewer was an egg-shaped brick sewer. The shape of the sewer was accounted for to accurately calculate flow rates.

The data collected at this location was good and this meter was also tributary to Basin 16.

M. Basin 13

This flow meter experienced a mechanical error and did not collect data during portions of the first few weeks of the monitoring period. As a result, this meter was not operational during the April 15 event. This is discussed in further detail in Section 3.05. Once the meter was replaced, it collected good data during the rest of the monitoring period including the final two study rainfall events.

This basin was 47.8 acres in size and was located downstream of Basin 06 and upstream of Basin 18. As discussed previously, the data collected at Basin 13 was adjusted using the data collected by Basin 09.

N. Basin 14

This flow meter provided good data during the monitoring period, especially during the study rainfall events. A maintenance trip was required early on in the monitoring period to push the flow meter deeper into the pipe to reduce turbulence. This resulted in better data the rest of the monitoring period.

This basin contained an overflow relief sewer from Basin 21. The flow metering data and physical observations, such as the presence of debris in the overflow pipe flow line both before and after rainfall events suggest an overflow did not occur during the flow monitoring period.

This flow metering basin was 7.4 acres and was directly tributary to the MWRDGC interceptor system.

O. Basin 15

This flow meter provided good data throughout the monitoring period. The basin was 39.4 acres. This basin also contains an overflow from Basin 21 and similar to Basin 14 the data and physical observations suggest an overflow did not occur during the metering event.

P. Basin 16

This flow meter was installed in a brick egg-shaped sewer. As a result, similar metering adjustments were required as described under Basin 12. This meter collected the sewerage from Basin 11 and Basin 12. The data collected here was good throughout the period. This basin was 76 acres in area and was tributary to the MWRDGC interceptor system.

Q. Basin 17

This flow meter was also installed in a brick egg-shaped sewer and required the adjustments described above. Overall the data collected at this location was good. The basin area was 47.5 acres and was directly connected to the MWRDGC interceptor system.

R. Basin 18

This flow meter was located downstream of Basin 13. The data collected at this location was good and it flowed to the MWRDGC interceptor system.

S. Basin 19

This flow meter was located in an egg-shaped brick sewer and the metering was adjusted accordingly. This location experienced severe solids deposition resulting in some lost data during dry weather. However, this was one location that was cleaned during each data download and therefore was fully operational for each study rainfall event. This basin was 56.9 acres in area and was directly upstream of the MWRDGC interceptor.

T. Basin 20

This basin was 41.6 acres in area and the data collected was good throughout the flow monitoring period.

U. Basin 21

This basin was 17.9 acres in area and was directly upstream of the MWRDGC interceptor. However, this metering basin has two overflows into other basins as described above (Basin 14 and Basin 15). Despite the presence of the overflow pipes, the data suggest there were no overflows during the flow monitoring period. We were able to make this determination by analyzing the level and flow data

collected by the meter. If an overflow occurred upstream the level data collected at this location would have leveled off at the elevation of the overflow pipes. Similarly, the shape of the flow curve, found later in this Appendix, would show evidence of an overflow.

V. Basin 22

Basin 22 was 86.6 acres in size. The flow meter at this location collected good data throughout the flow monitoring period. There were a few times some obstructions caused a loss in velocity data, however this did not occur during any of the study wet weather events. This meter was directly upstream of the connection to the MWRDGC interceptor.

W. Basin 23

This flow meter collected good data throughout the metering period. The basin had an area of 54 acres and was directly tributary to the MWRDGC interceptor system.

X. Basin 24

This flow meter collected good data throughout the monitoring period. This meter was also installed in an egg-shaped sewer and the metering was adjusted to account for that. The basin had an area of 65.9 acres. This basin was directly upstream of the MWRDGC connection.

Y. Basin 25

This flow meter was the last meter installed in an egg-shaped sewer and required adjustment for that reason. It was located directly upstream of the MWRDGC interceptor and collected good data throughout the monitoring period. The basin had an area of 91.7 acres.

Z. Basin 26

This flow meter collected sewerage from the southwest portion of the Village. The data collected was good for all three study events and throughout the monitoring period. This basin was 85.5 acres and was directly tributary to the MWRDGC interceptor system.

AA. Basin 27

This flow meter along with Basin 30 were unique among the other meters in that, it was installed to monitor flow entering the Village of Winnetka system from the Woodley Road Sanitary District. This is described in more detail in Section 3.05. The size of the tributary area to this flow meter is unknown because mapping information for this area was unavailable. The data collected at this location was good, however, on two occasions the meter needed to be cleaned free of rags. Neither incident affected any of the three study rainfall events.

AB. Basin 28

This meter was installed in a Village of Winnetka sewer that was directly connected to an MWRDGC owned manhole requiring a confined space entry. Before entering the MWRDGC manhole, however, we needed to receive permission.

Strand Associates and Village of Winnetka personnel met at the MWRDGC offices in downtown Chicago on April 4, 2012. The purpose of the meeting was to inform the MWRDGC of the intent and goals of the project and to receive permission to access their manhole. The result of the meeting was positive and we were able to install the flow meter.

This basin had an area of 67.5 acres.

AC. Basin 29

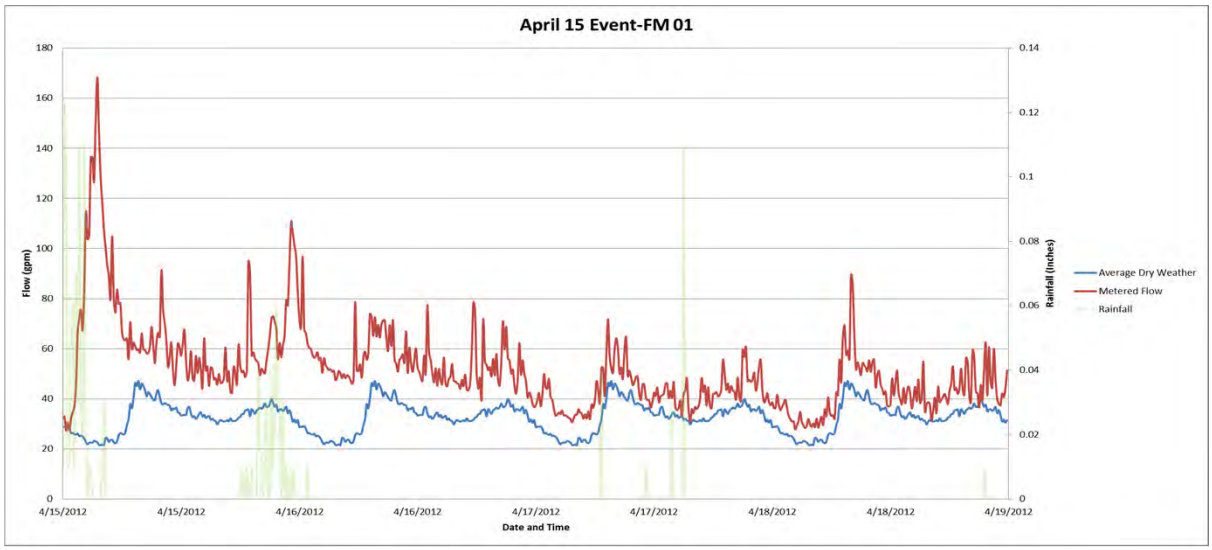
This basin was downstream of Basin 27. The data appeared to be good based on the quality control checks performed on the data. This basin was 14.9 acres and directly upstream of the MWRDGC interceptor system.

AD. Basin 30

This basin was similar to Basin 27. It was installed to monitor flows into the Village from the Woodley Road Sanitary District. This meter collected generally good data, although there were times when rags collected on the probe and caused erroneous data. This did not affect any of the study events, however. As was the case with Basin 27, the actual size of this basin is unknown because mapping was unavailable at the time of this report. See Section 3.05 for further details regarding this basin.

B.02 WET WEATHER FLOW RESPONSES

The following graphs represent the flow response at each metering location that occurred during the three study events that occurred on April 15, May 26, and May 31.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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
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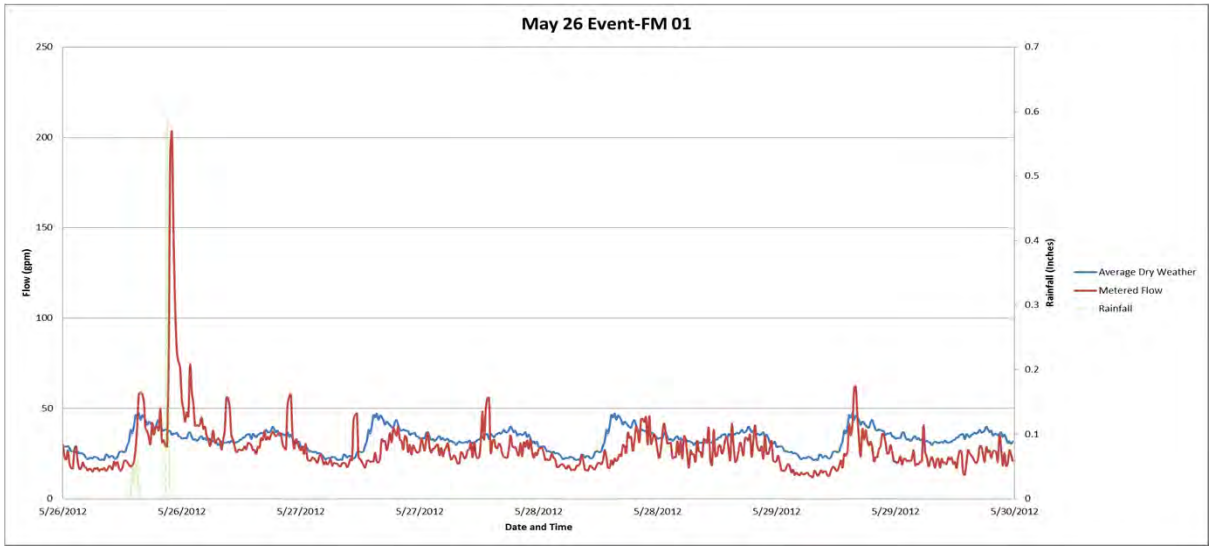
4/18/2012
4/19/2012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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
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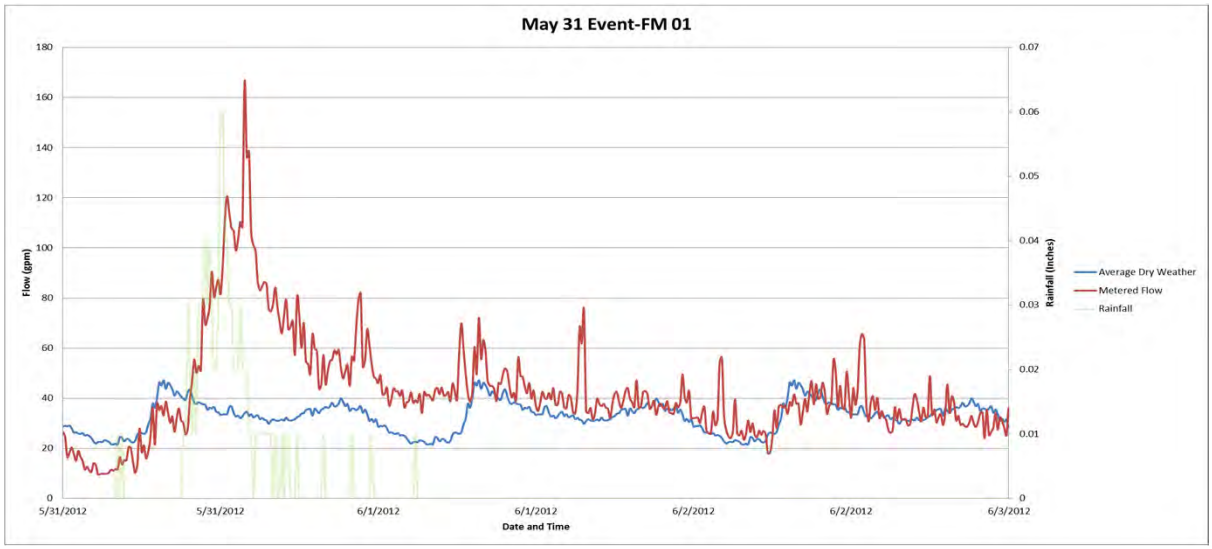
5/30/2012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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
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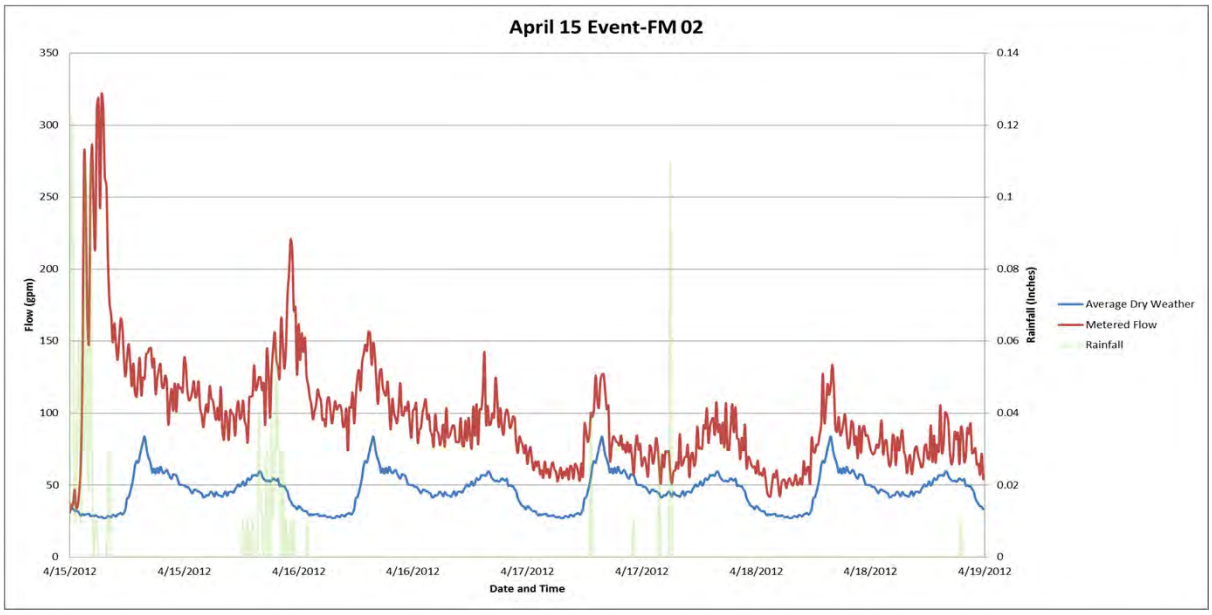
6/2/2012
6/3/2012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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
350
300
250
200
150
100
50
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
4/15/2012
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4/16/2012
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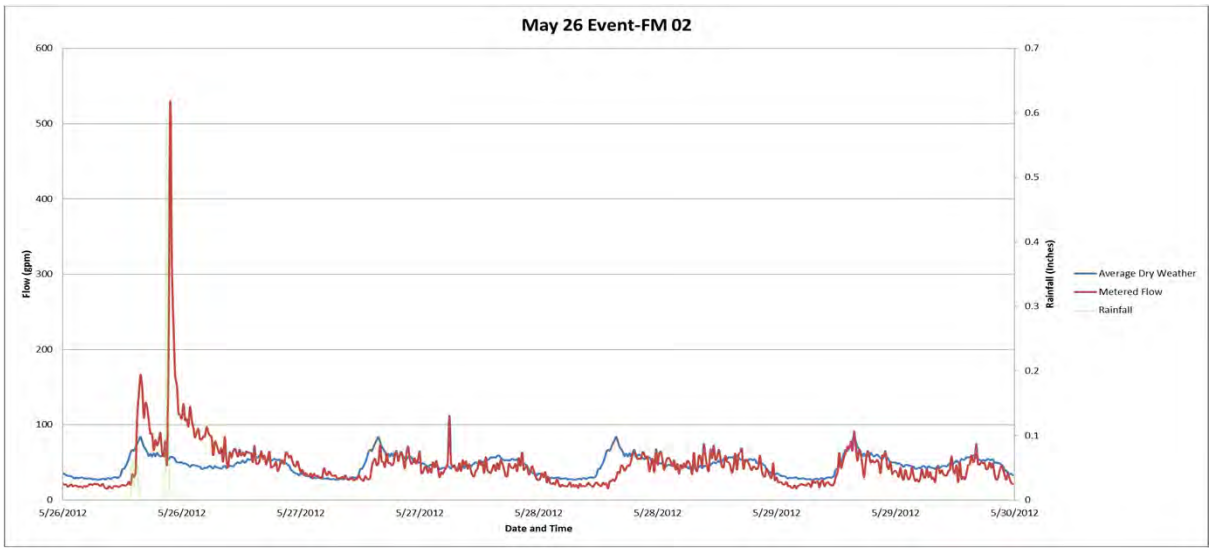
4/18/2012
4/19/2012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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
600
500
400
300
200
100
0
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5/26/2012
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5/27/2012
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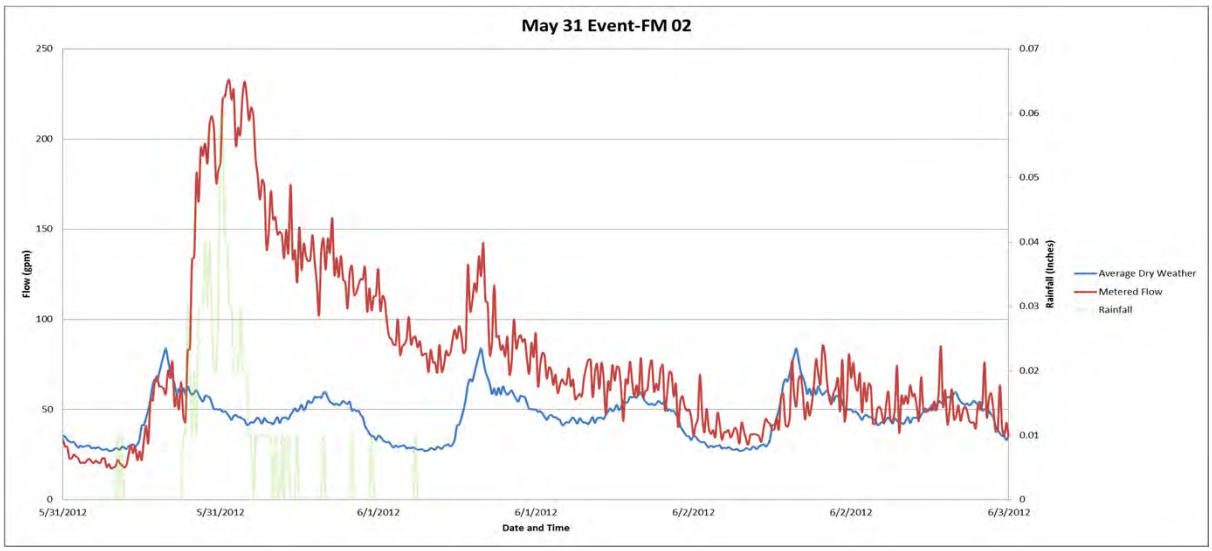
5/30/2012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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
250
200
150
100
50
0
0.07
0.06
0.05
0.04
0.03
0.02
0.01
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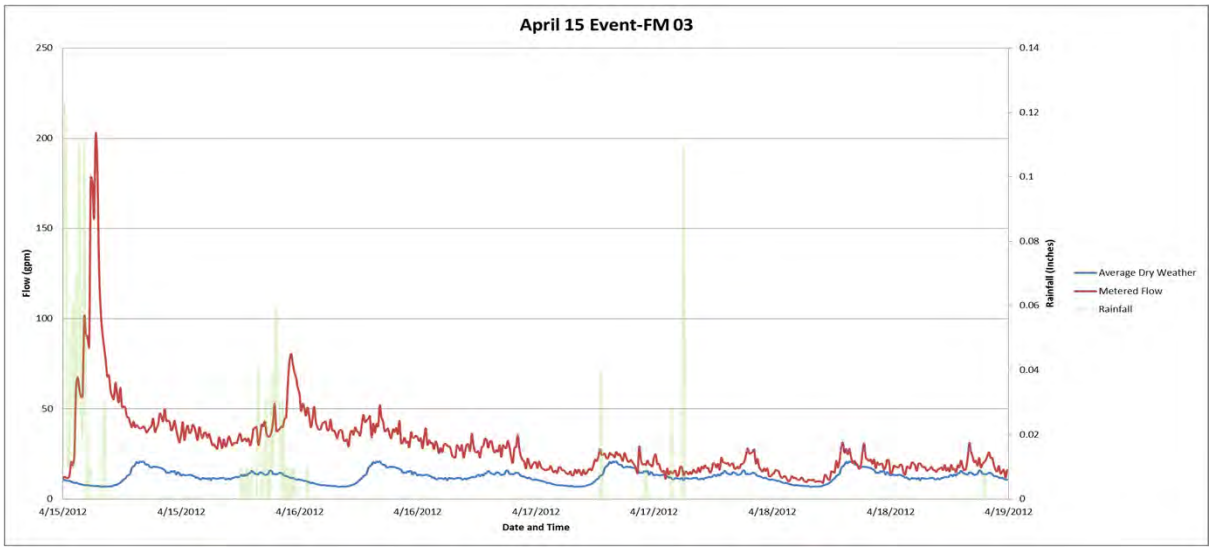
6/3/2012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Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
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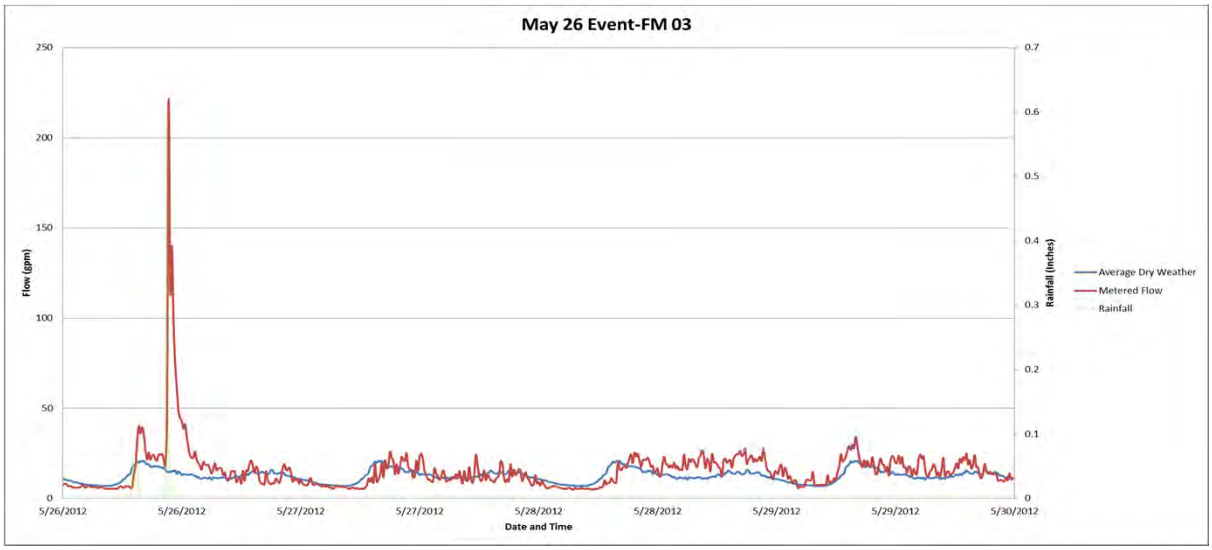
4/18/2012
4/19/2012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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
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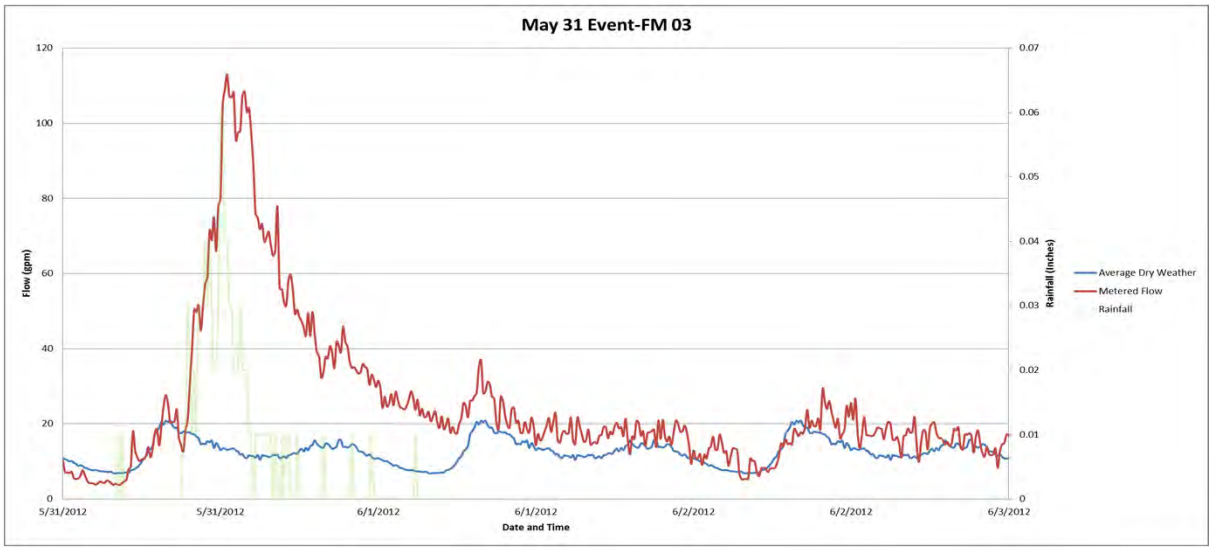
5/30/2012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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
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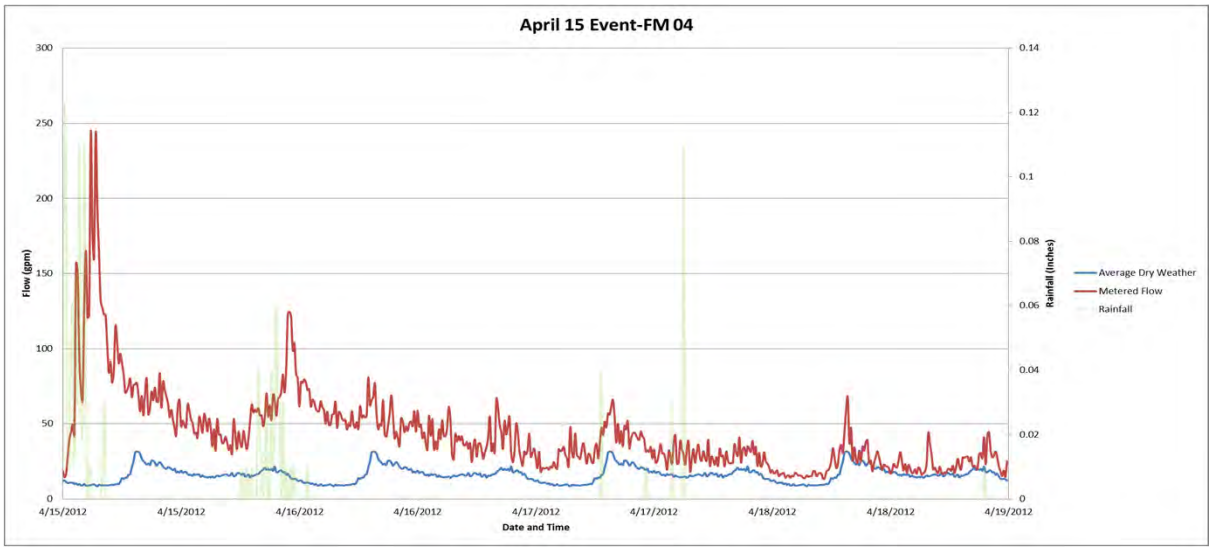
6/2/2012
6/3/2012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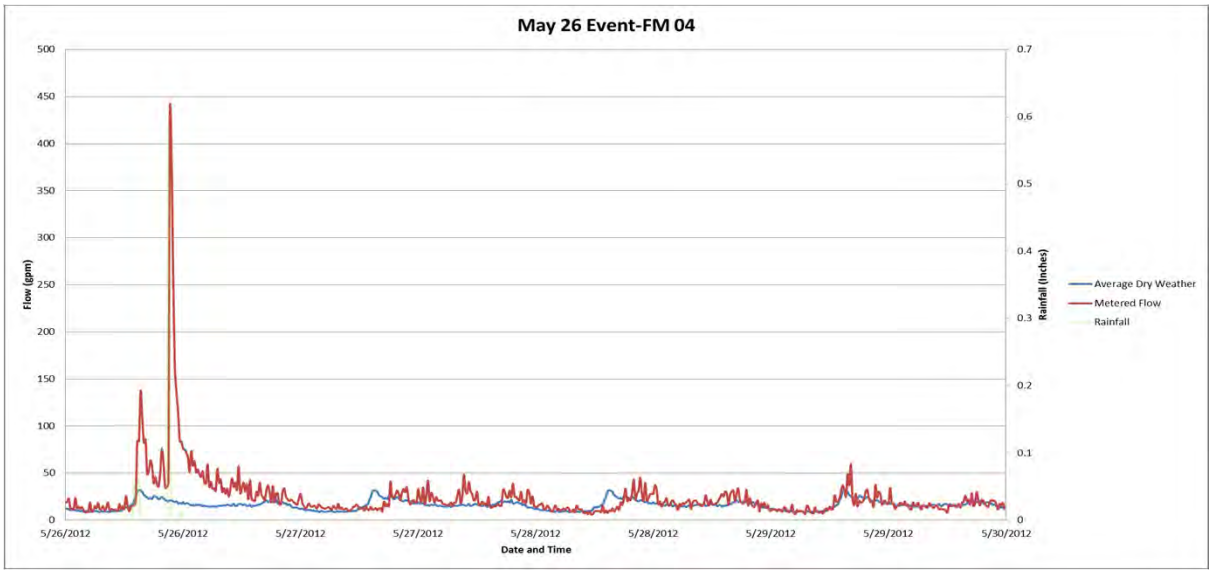
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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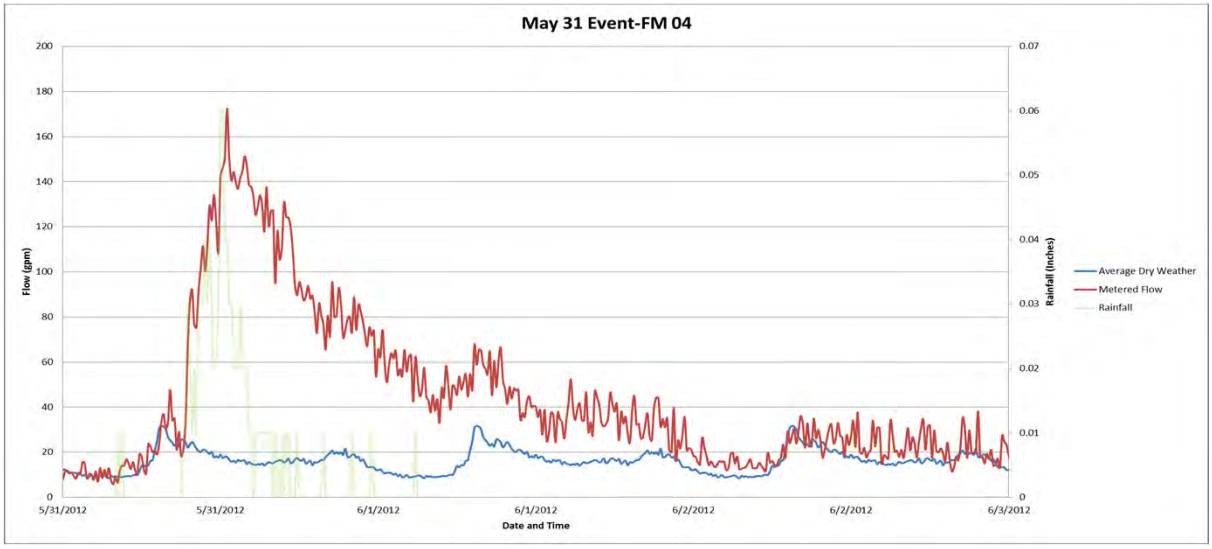
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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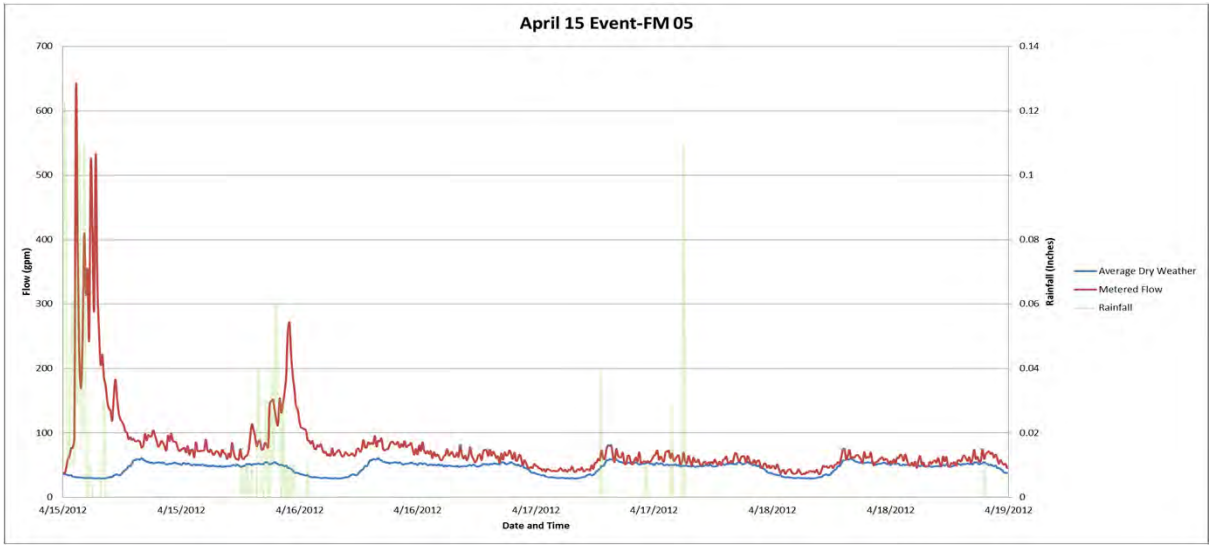
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
0
100
200
300
400
500
600
700
0
0.02
0.04
0.06
0.08
0.1
0.12
0.14
4/15/2012
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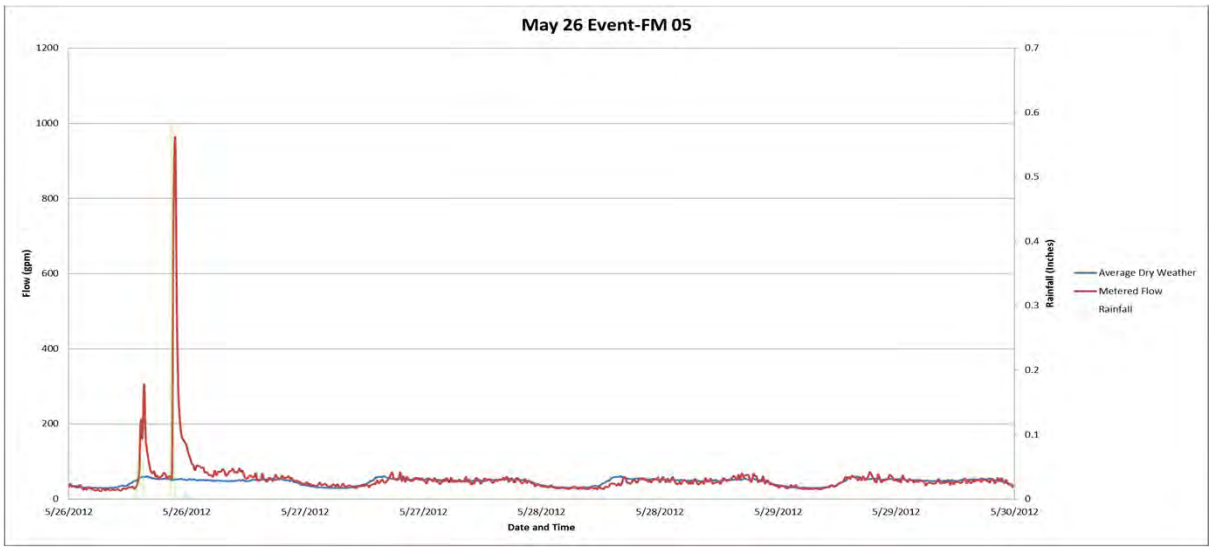
4/18/2012
4/18/2012
4/19/2012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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
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200
400
600
800
1000
1200
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
5/26/2012
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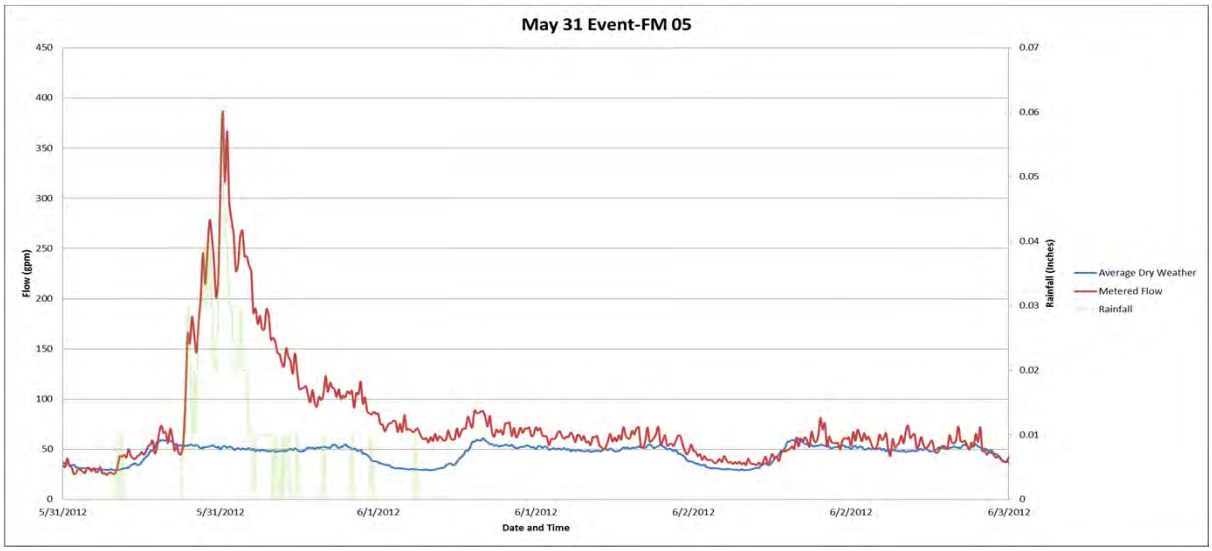
5/30/2012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Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
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100
150
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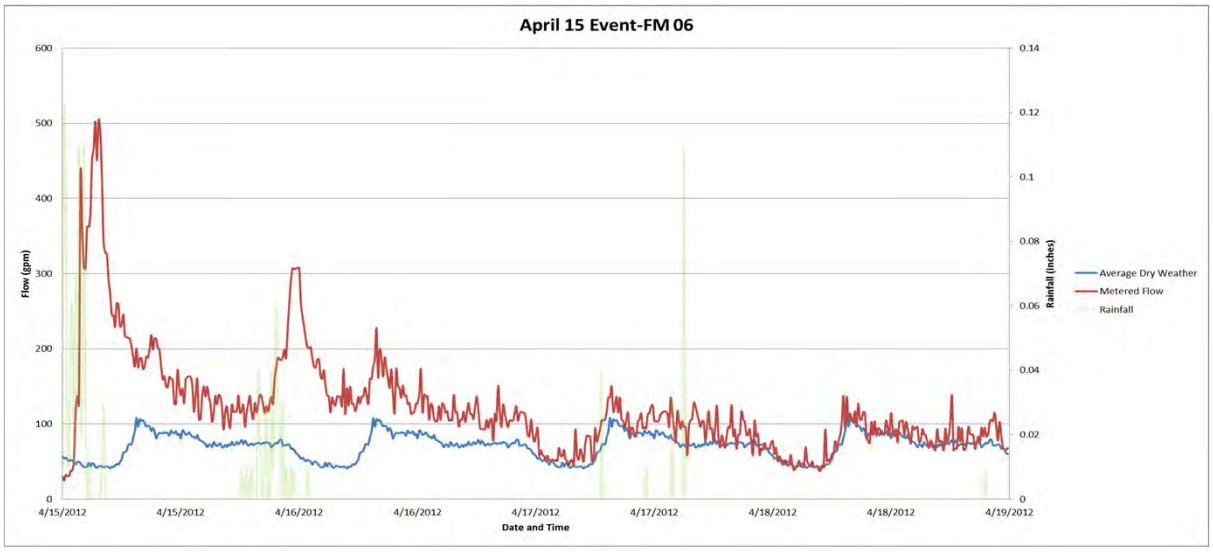
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Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
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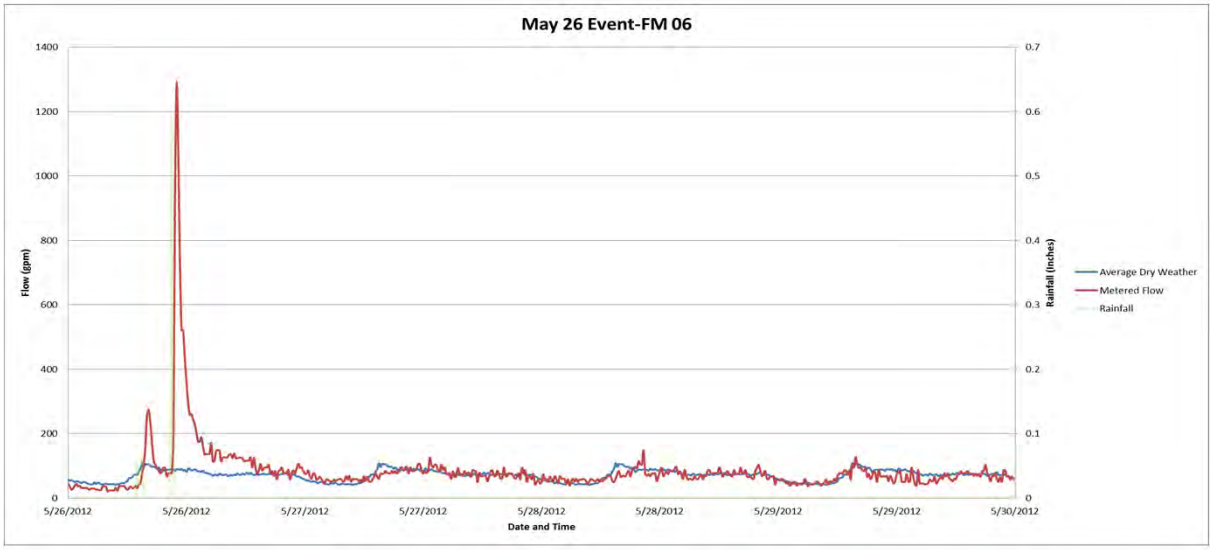
4/18/2012
4/19/2012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Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
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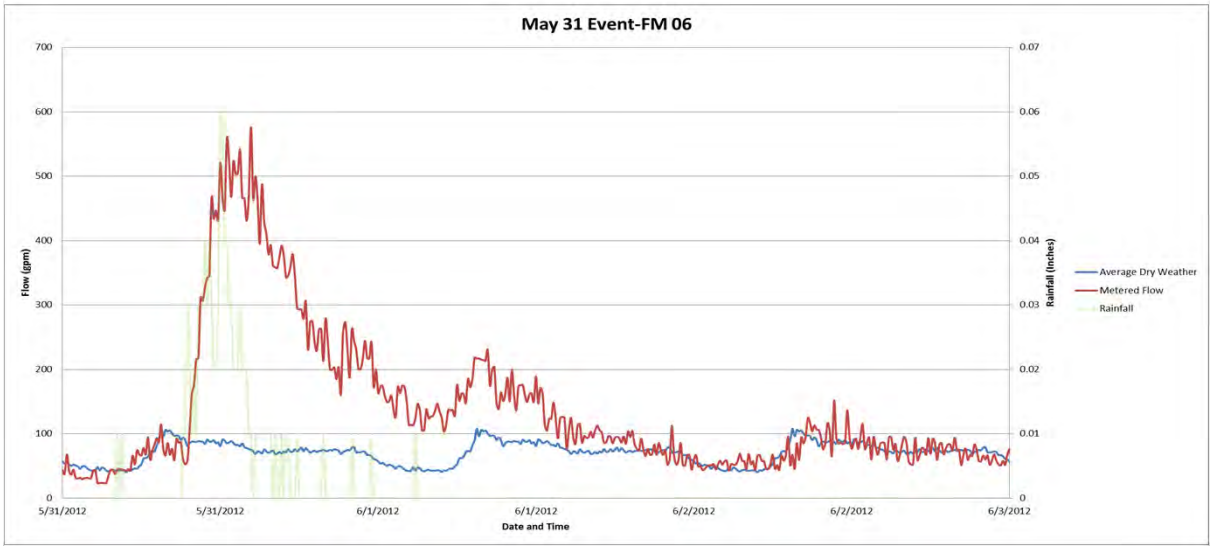
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Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
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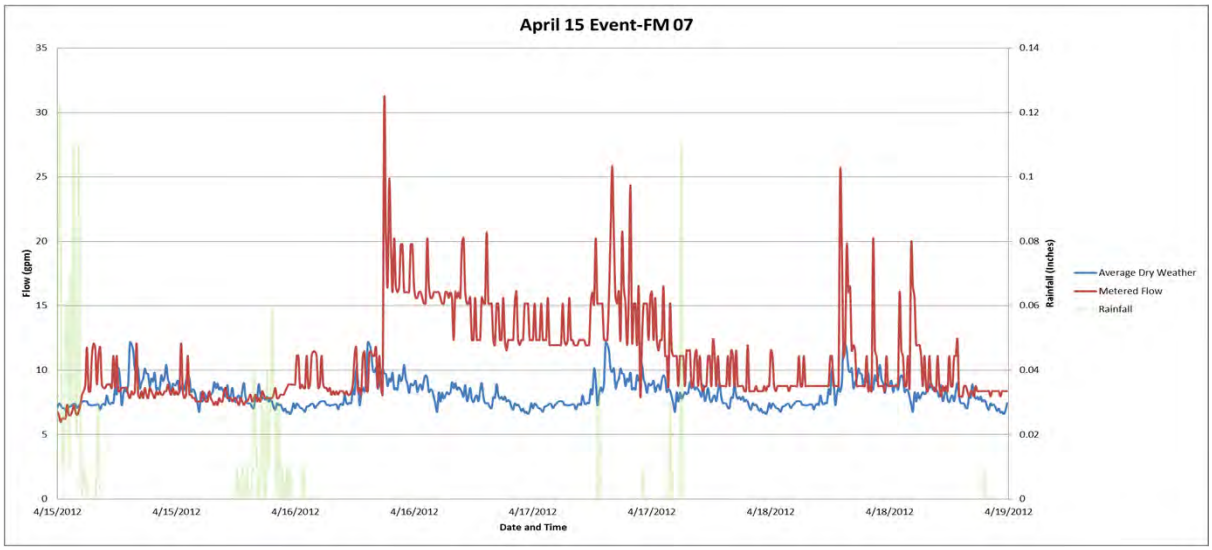
6/2/2012
6/3/2012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Metered Flow
Rainfall
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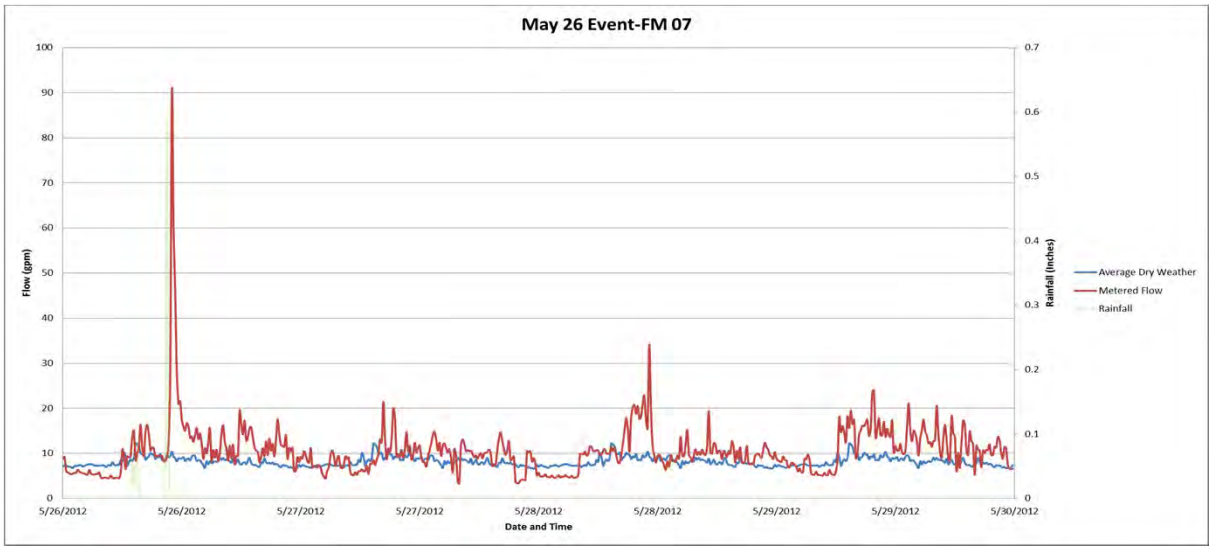
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Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
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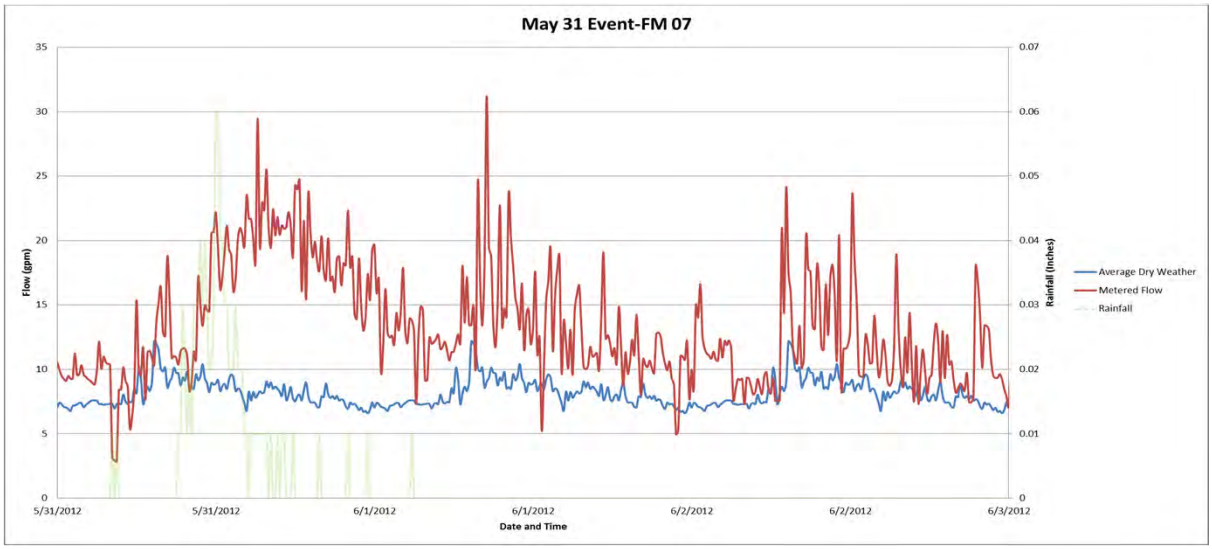
5/30/2012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Rainfall (Inches)
Date and Time
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Metered Flow
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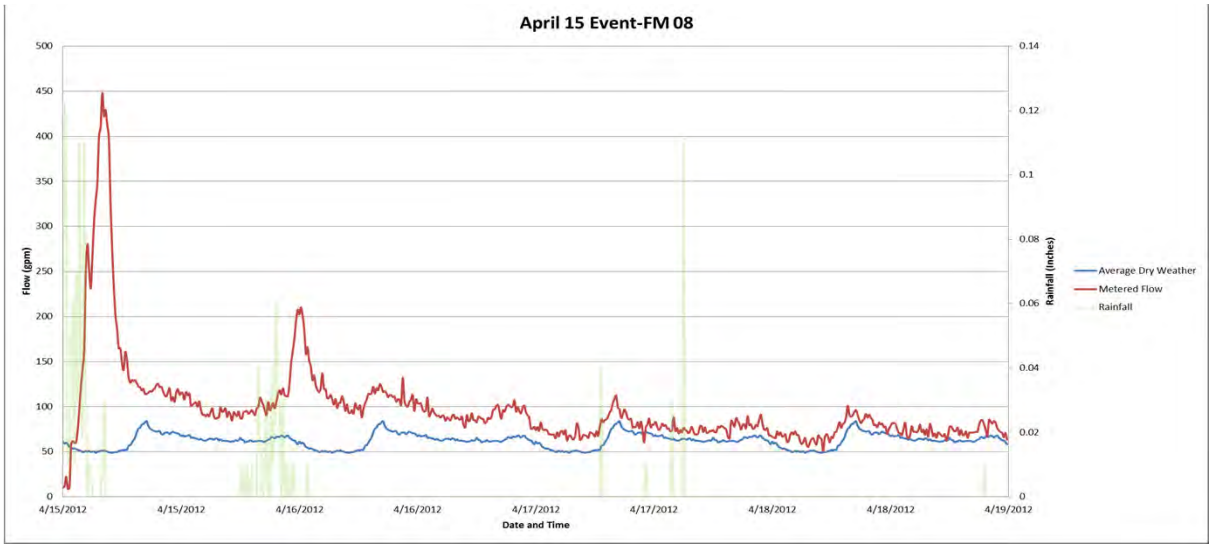
6/2/2012
6/3/2012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Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
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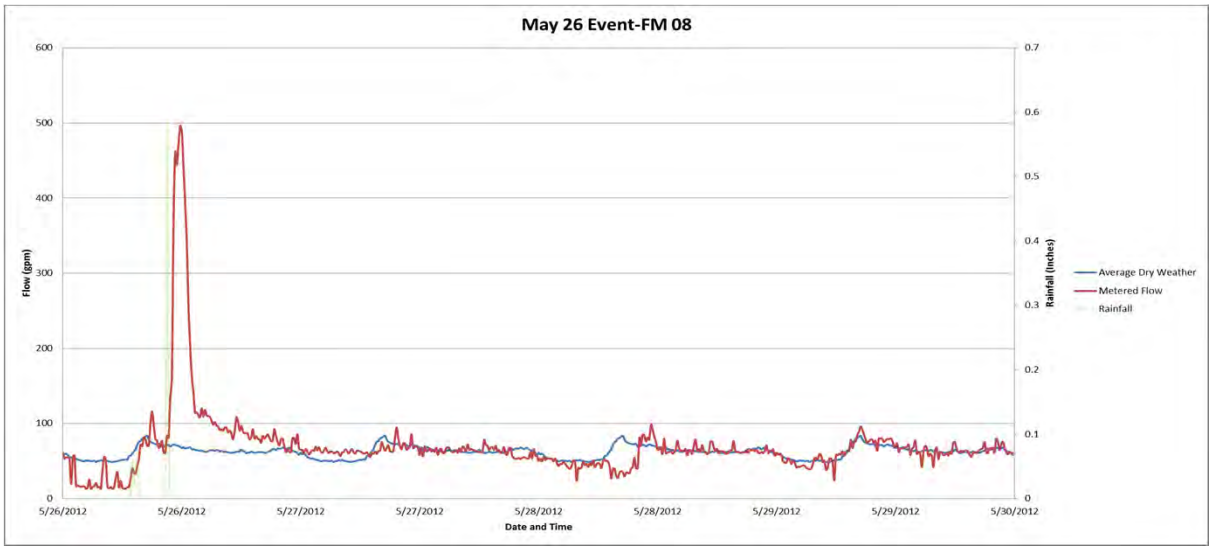
4/19/2012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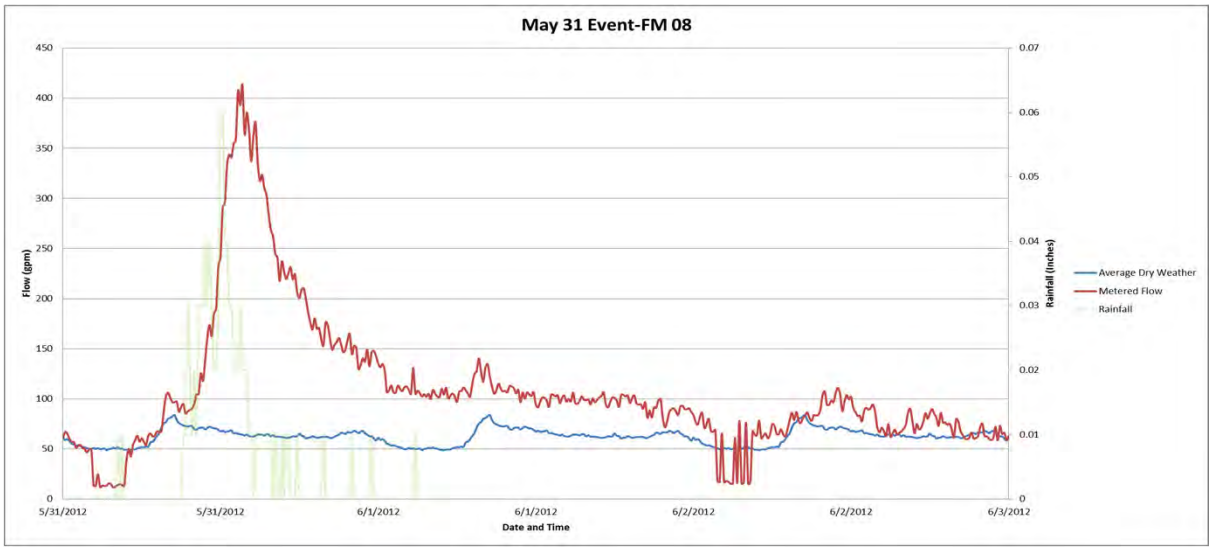
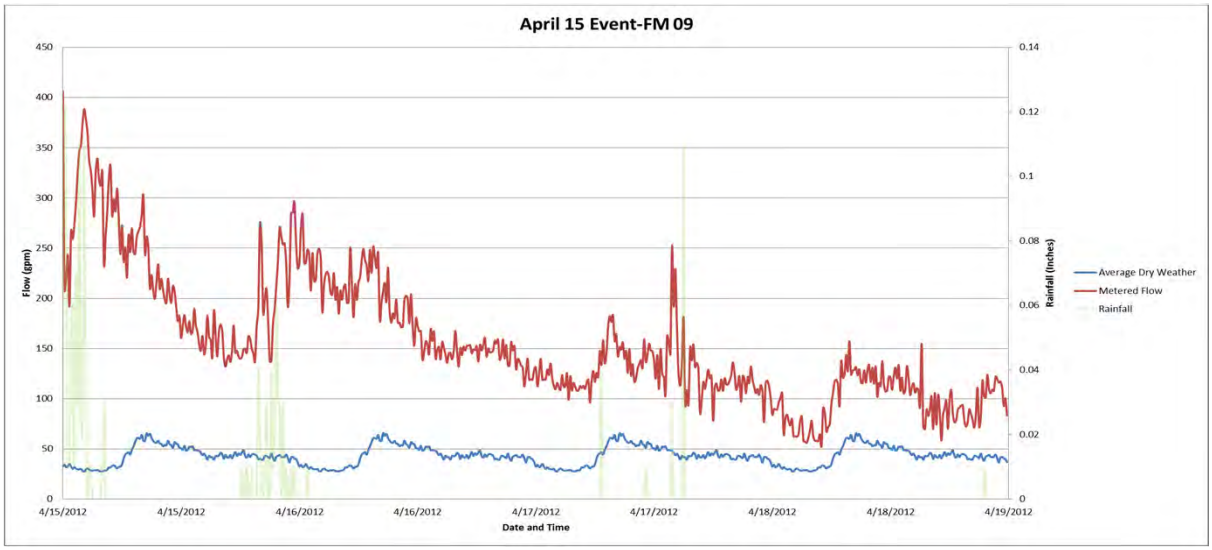
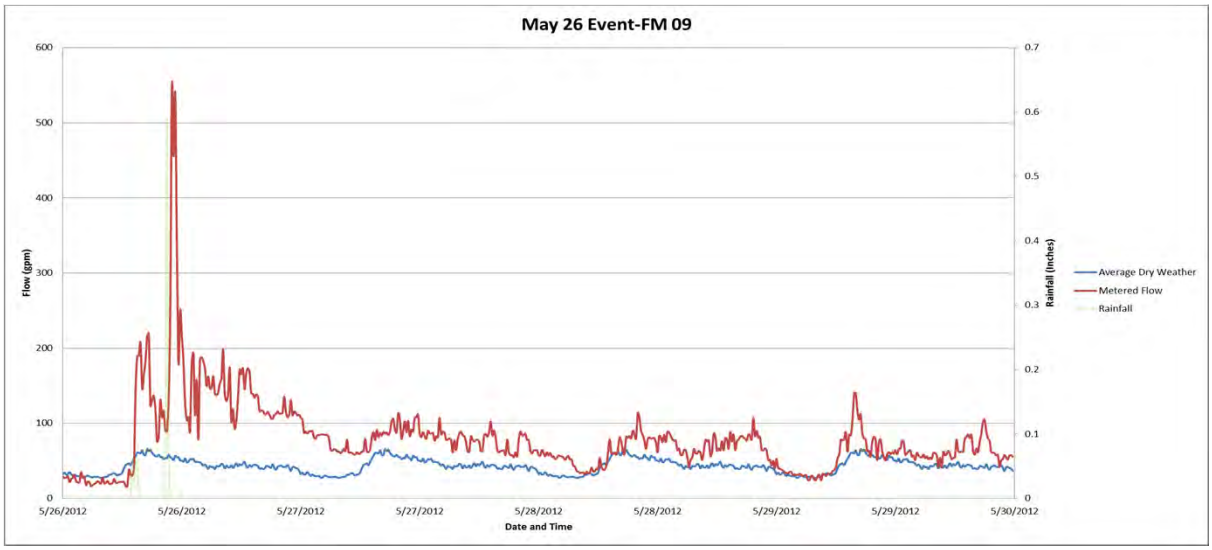
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012


May 31 Event-FM 08
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 09
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012


May 26 Event-FM 09
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
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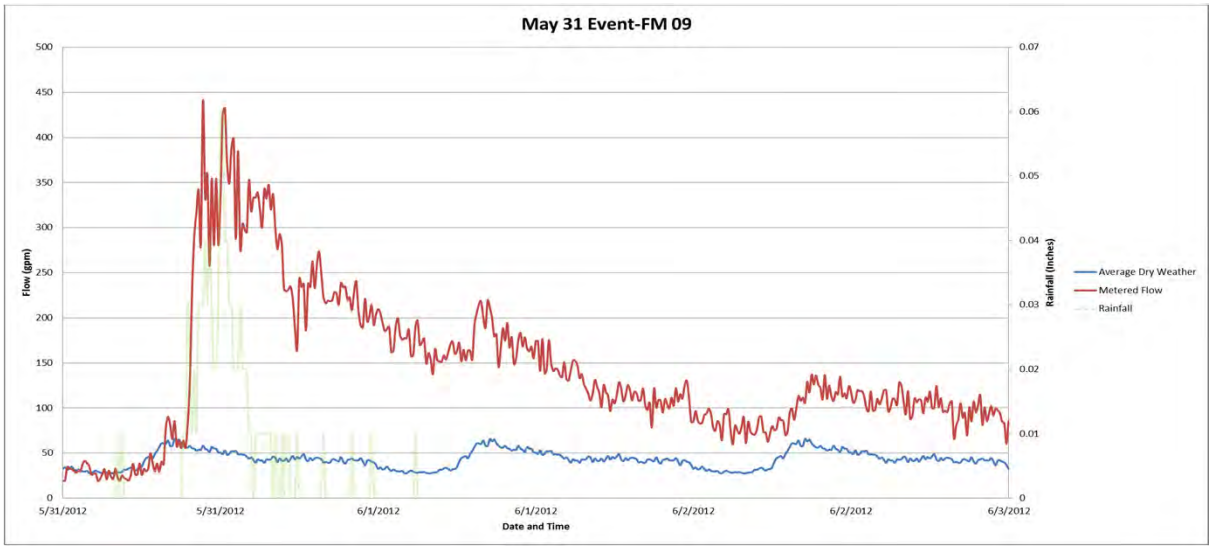
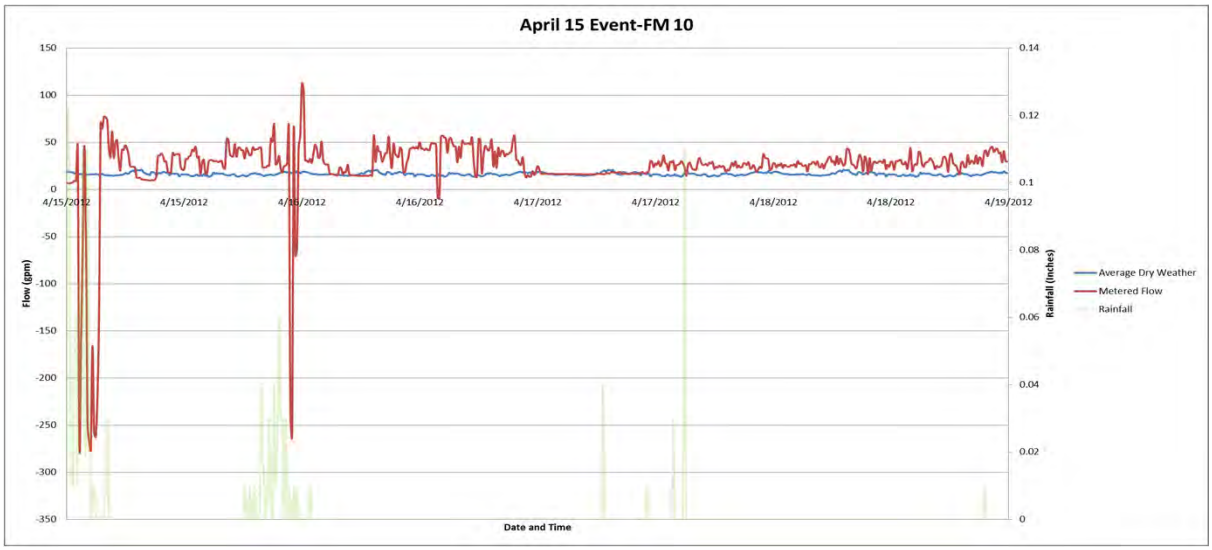
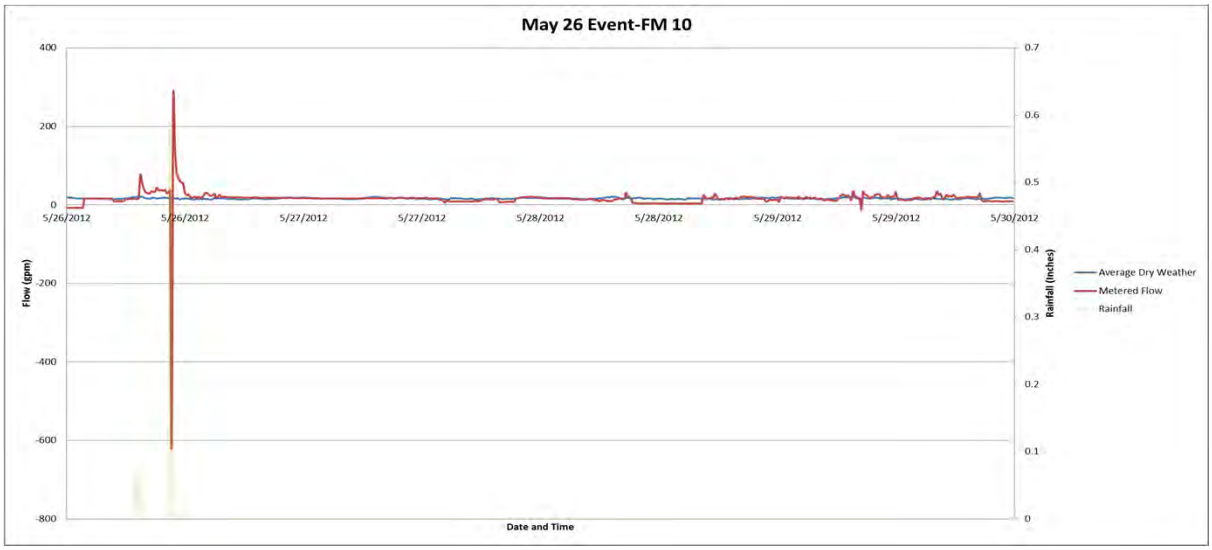
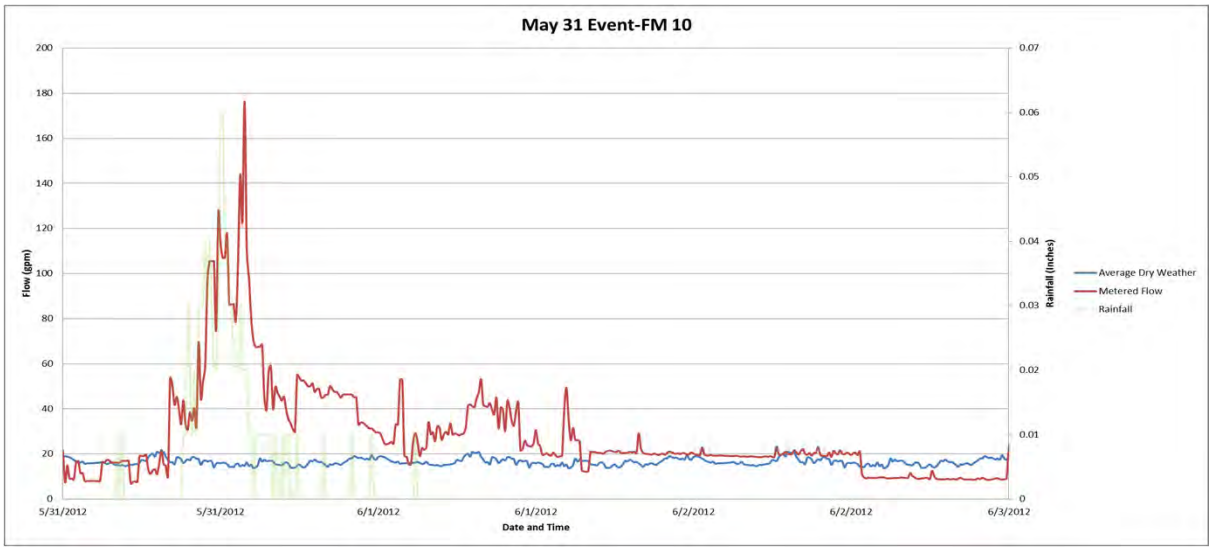
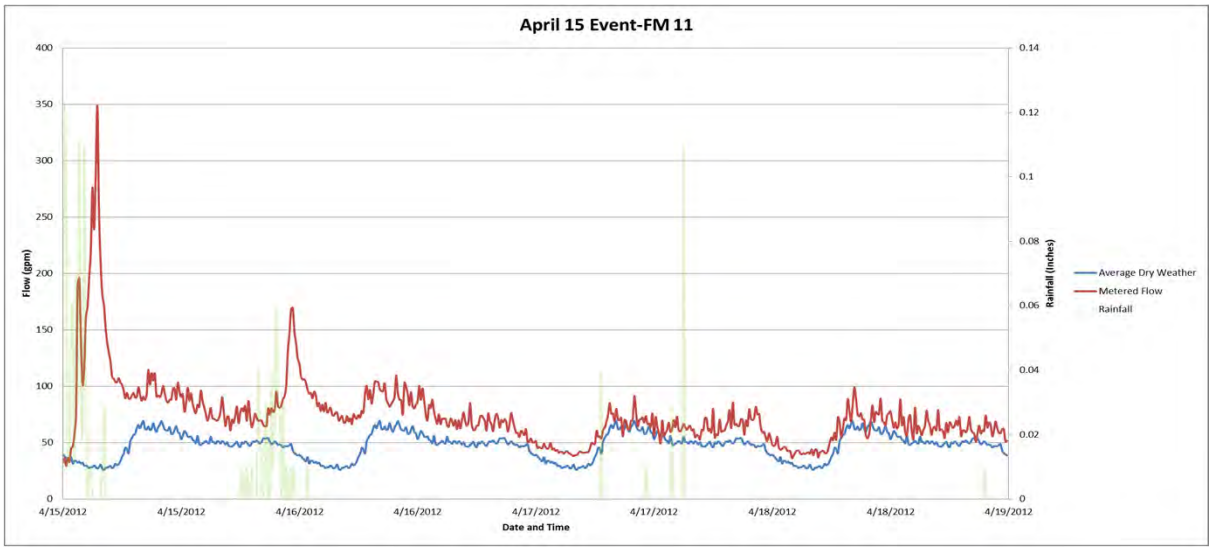
5/29/2012
5/29/2012
5/30/2012

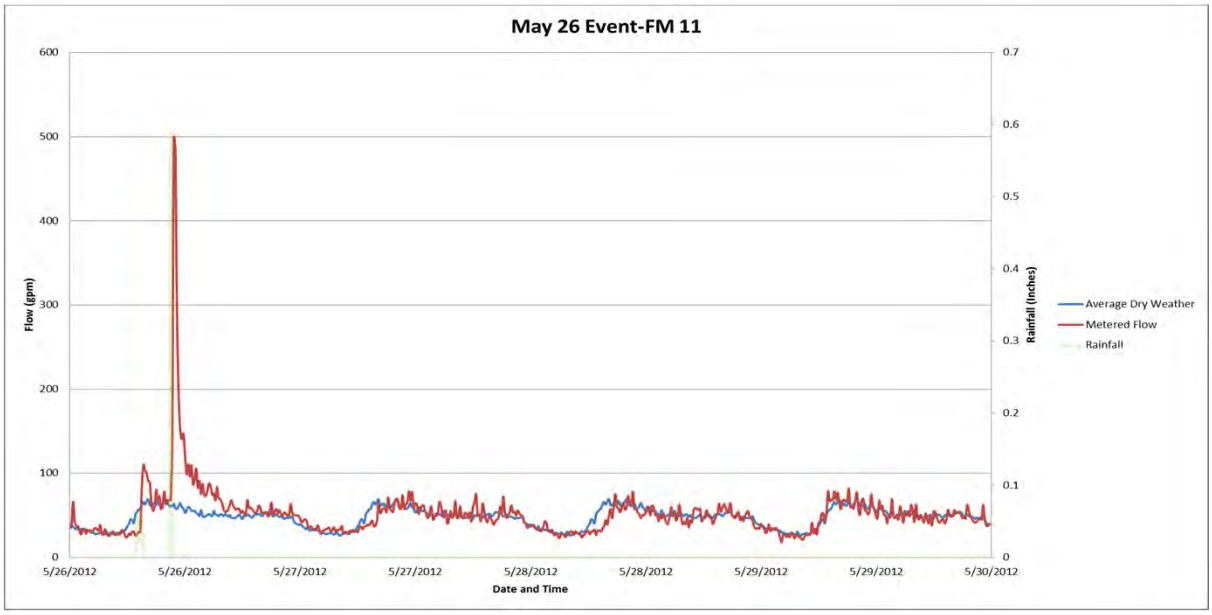

May 31 Event-FM 09
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012

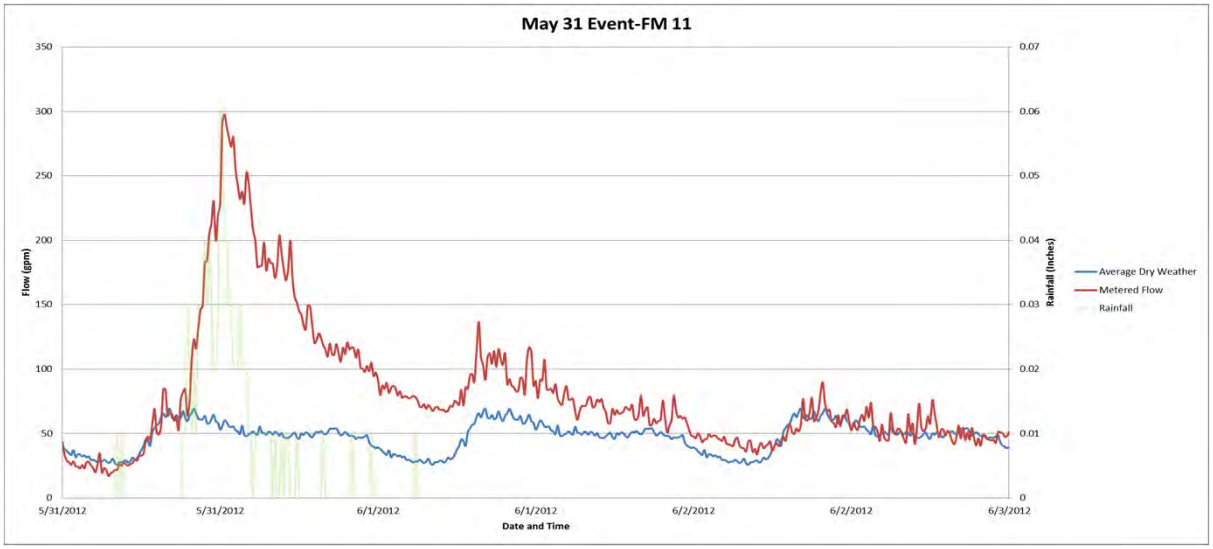

April 15 Event-FM 10
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

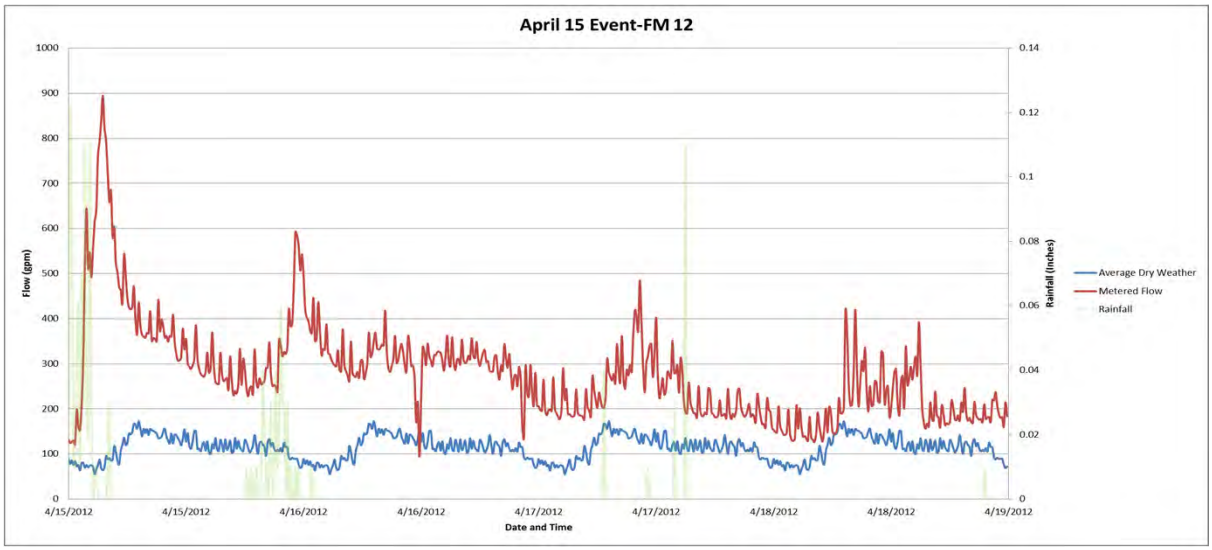

May 26 Event-FM 10
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

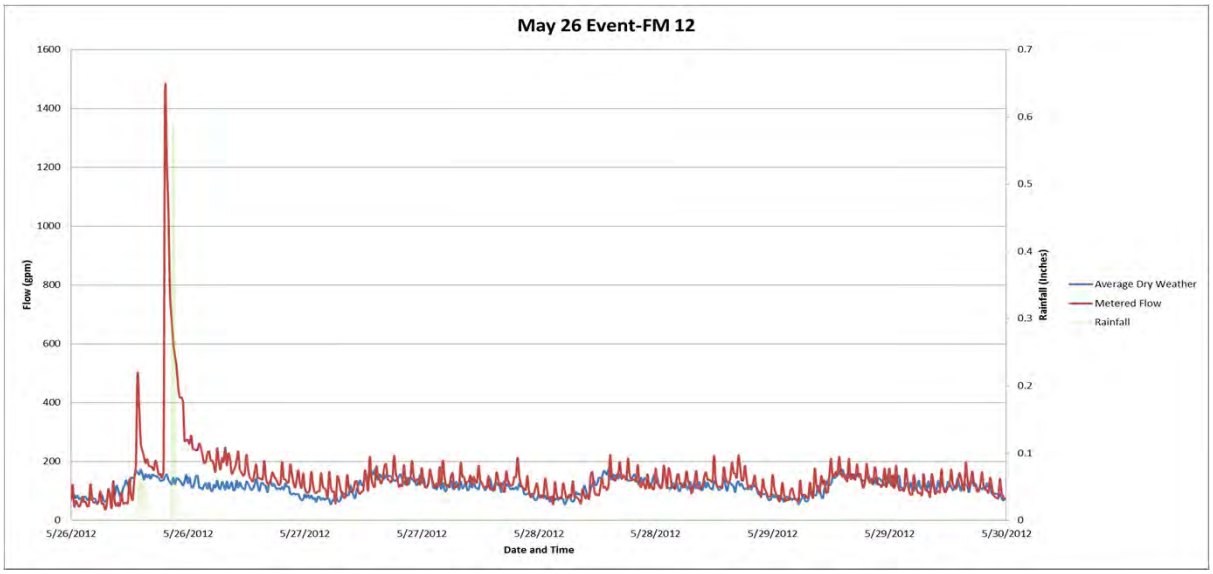

May 31 Event-FM 10
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

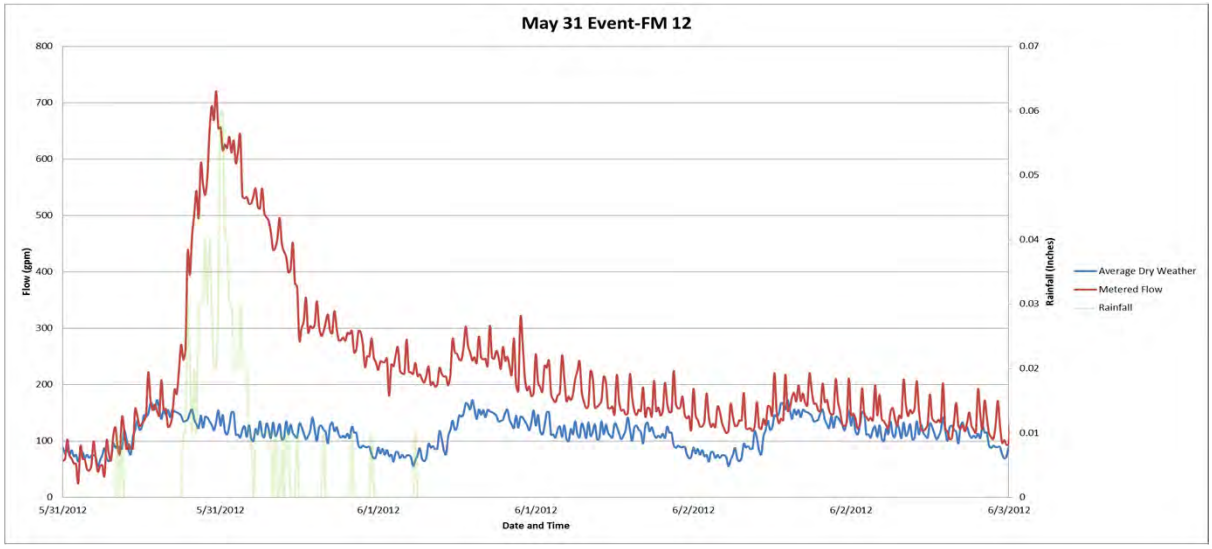

April 15 Event-FM 11
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
400
350
300
250
200
150
100
50
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012

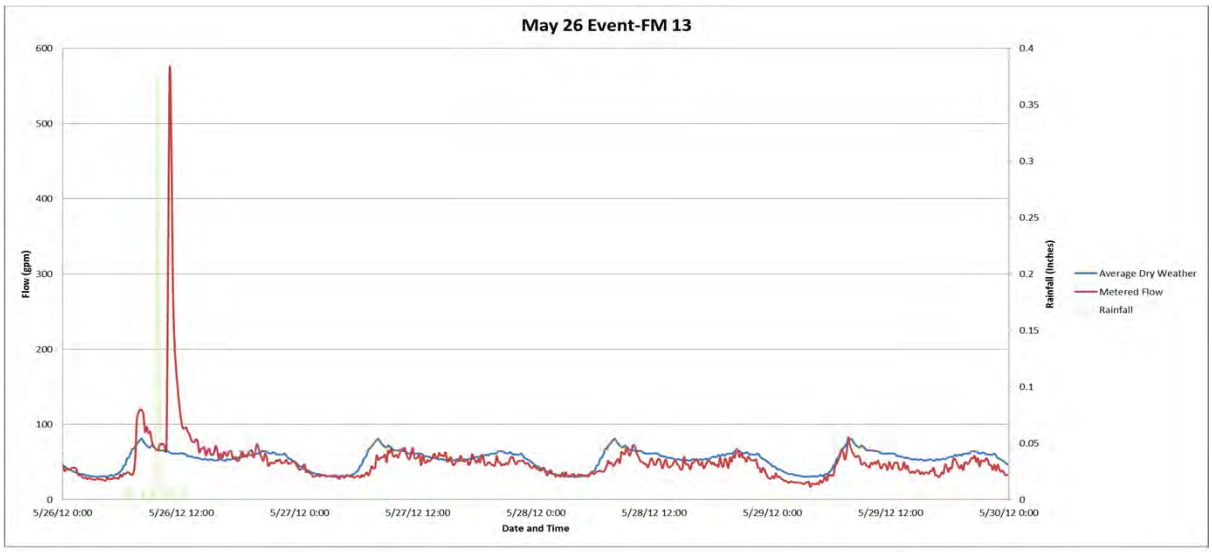

May 26 Event-FM 11
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
600
500
400
300
200
100
0
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012

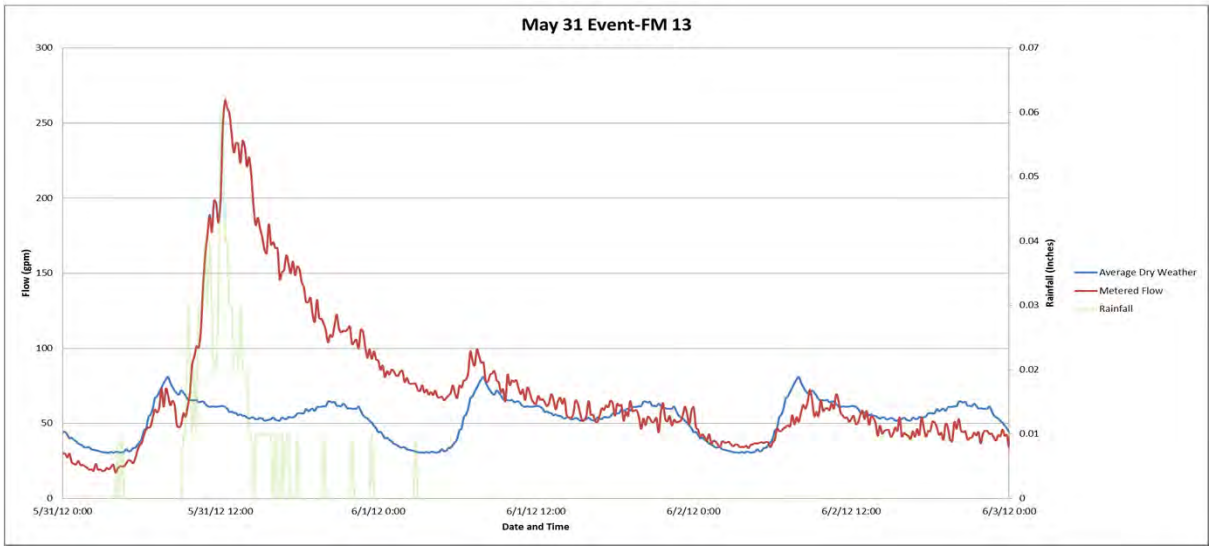

May 31 Event-FM 11
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
350
300
250
200
150
100
50
0
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012

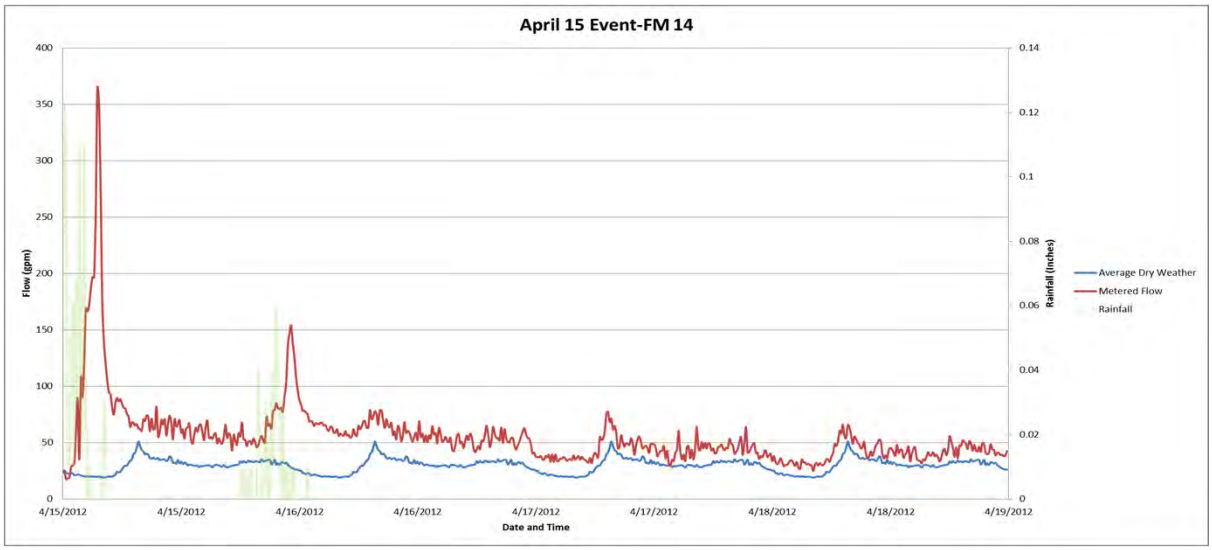

April 15 Event-FM 12
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012

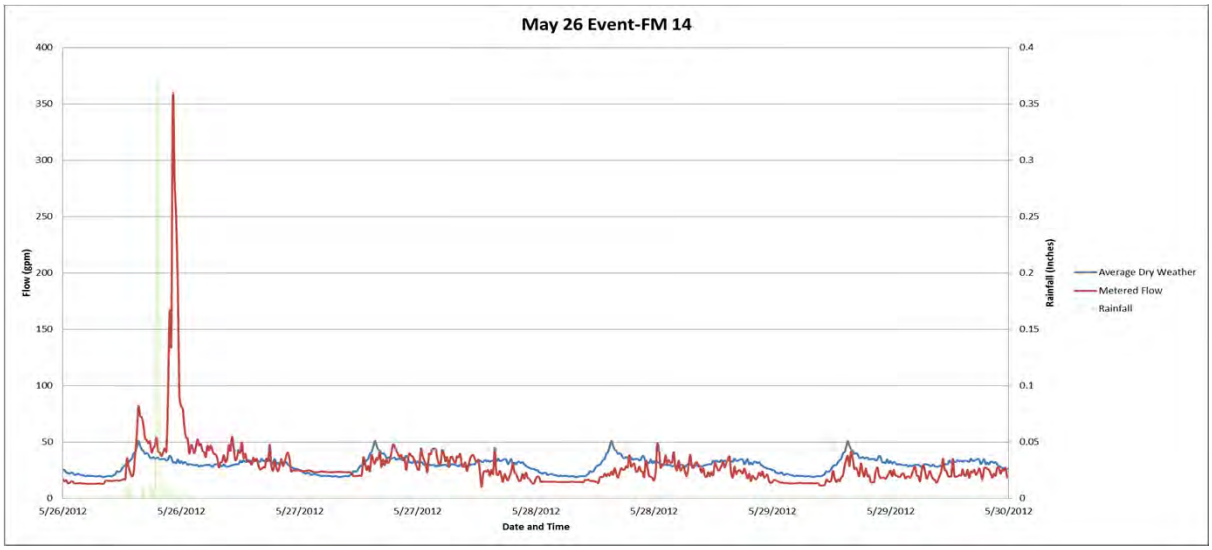

May 26 Event-FM 12
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012

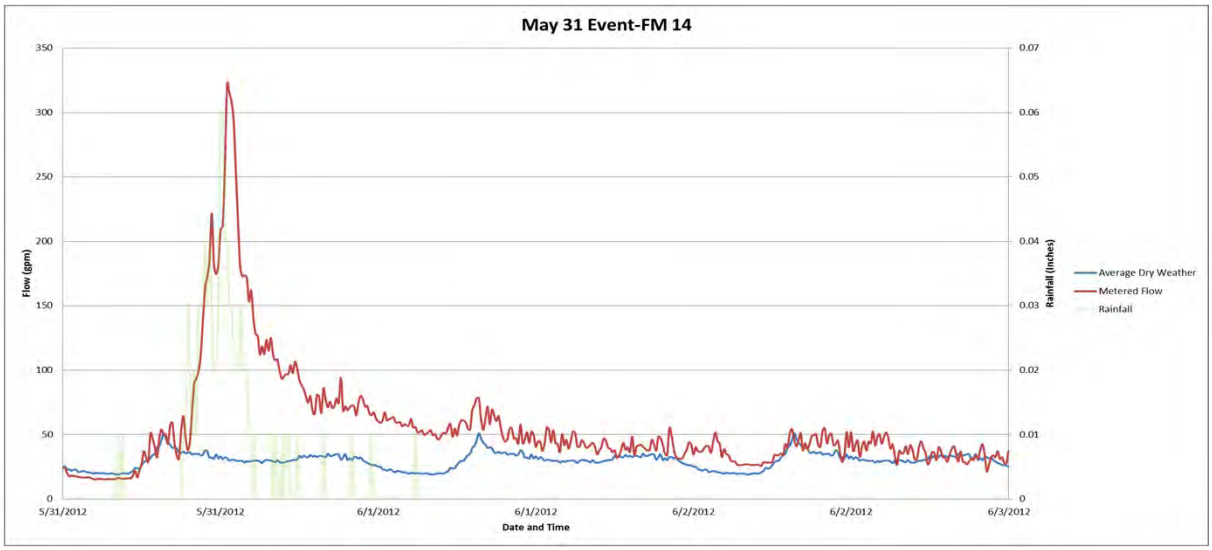

May 31 Event-FM 12
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012

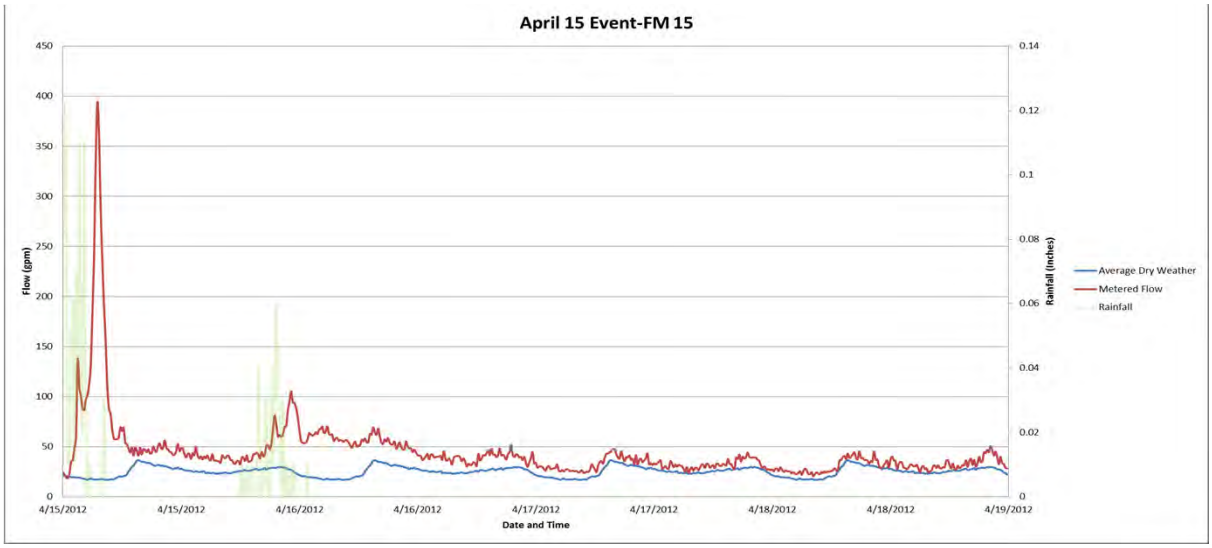

May 26 Event-FM 13
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
0
100
200
300
400
500
600
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
5/26/12 0:00
5/26/12 12:00
5/27/12 0:00
5/27/12 12:00
5/28/12 0:00
5/28/12 12:00
5/29/12 0:00
5/29/12 12:00
5/30/12 0:00

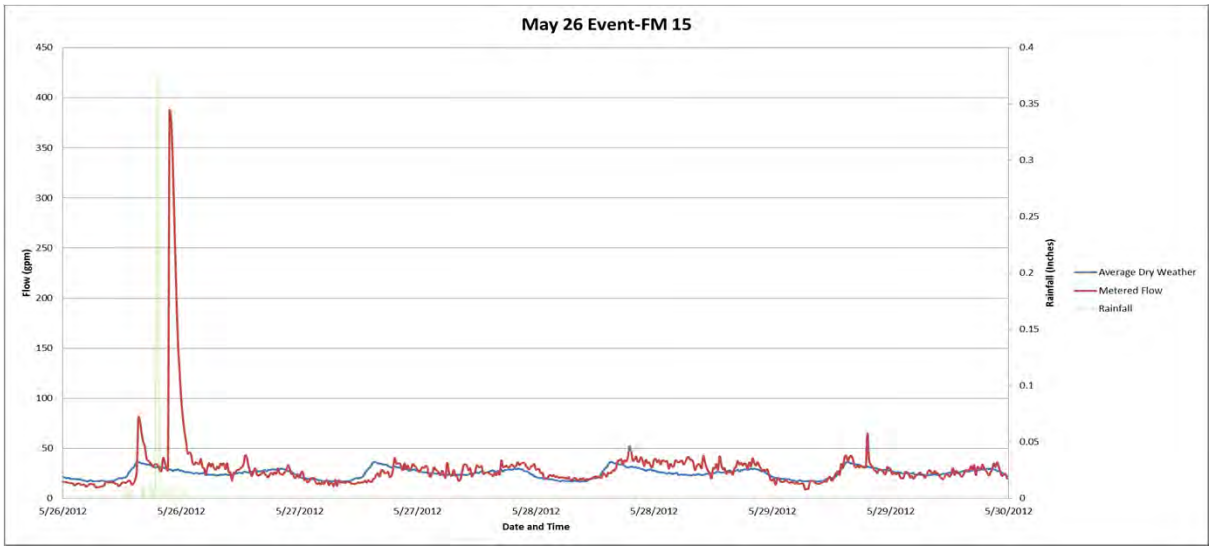

May 31 Event-FM 13
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
0
50
100
150
200
250
300
0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
5/31/12 0:00
5/31/12 12:00
6/1/12 0:00
6/1/12 12:00
6/2/12 0:00
6/2/12 12:00
6/3/12 0:00

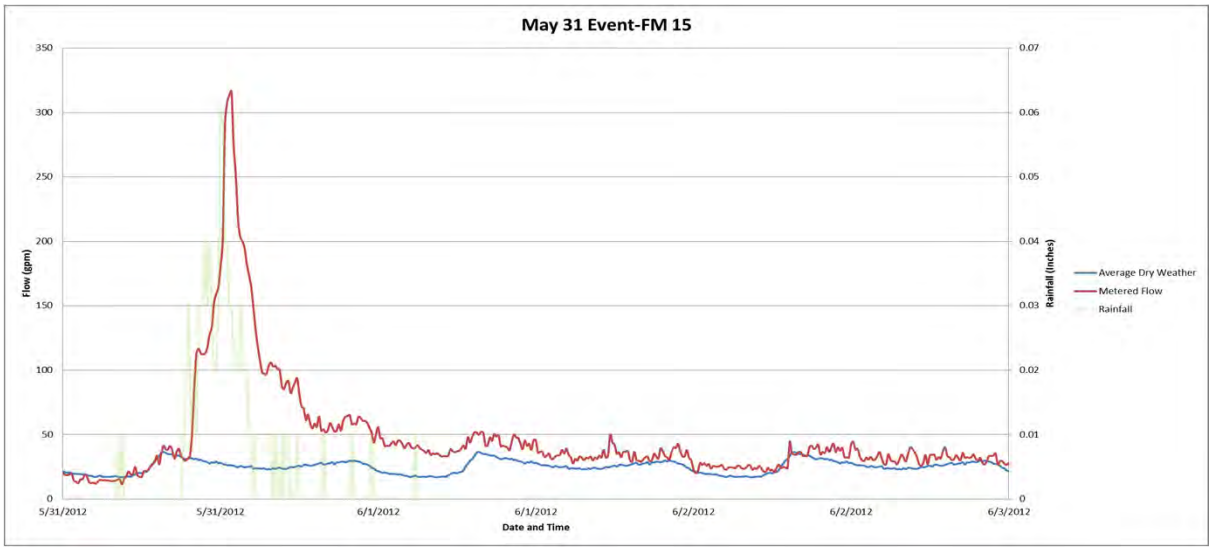

April 15 Event-FM 14
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
400
350
300
250
200
150
100
50
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012

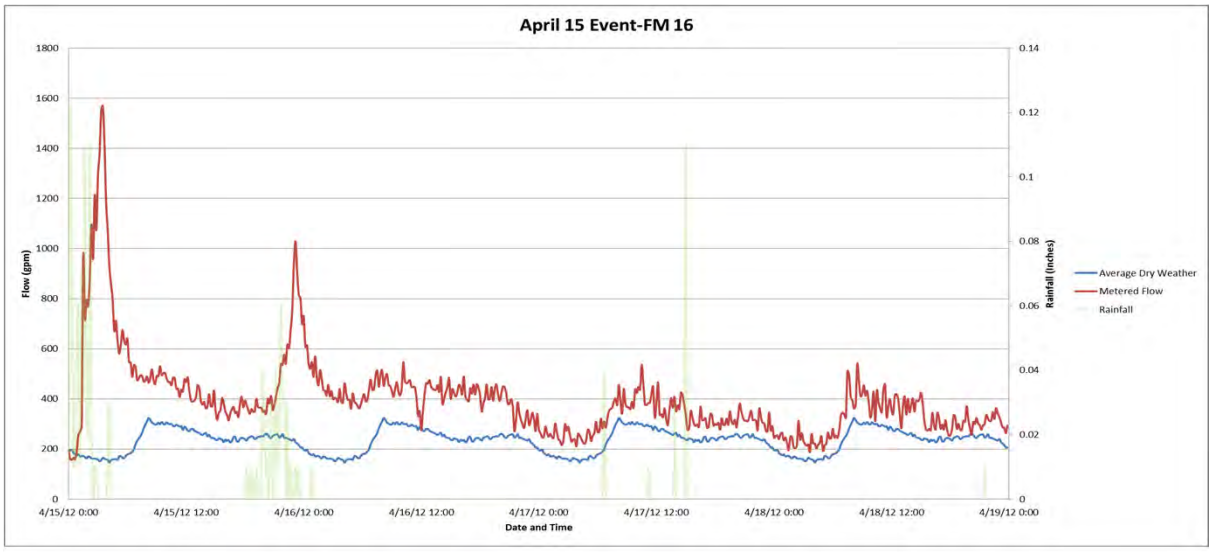

May 26 Event-FM 14
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
400
350
300
250
200
150
100
50
0
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012

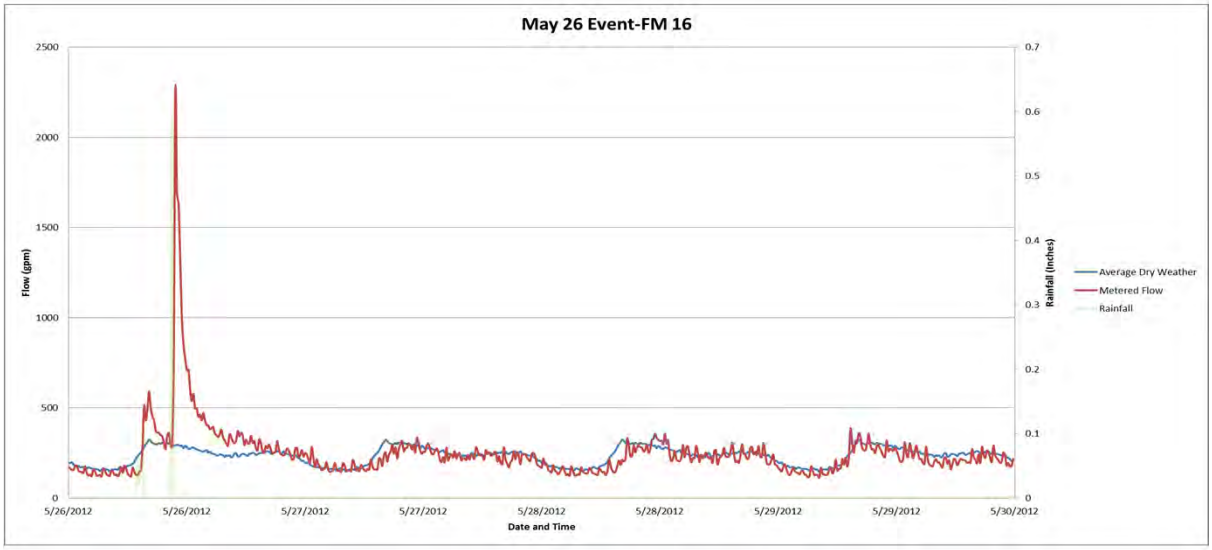

May 31 Event-FM 14
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
350
300
250
200
150
100
50
0
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 15
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012


May 26 Event-FM 15
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012


May 31 Event-FM 15
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 16
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/12 0:00
4/15/12 12:00
4/16/12 0:00
4/16/12 12:00
4/17/12 0:00
4/17/12 12:00
4/18/12 0:00
4/18/12 12:00
4/19/12 0:00


May 26 Event-FM 16
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
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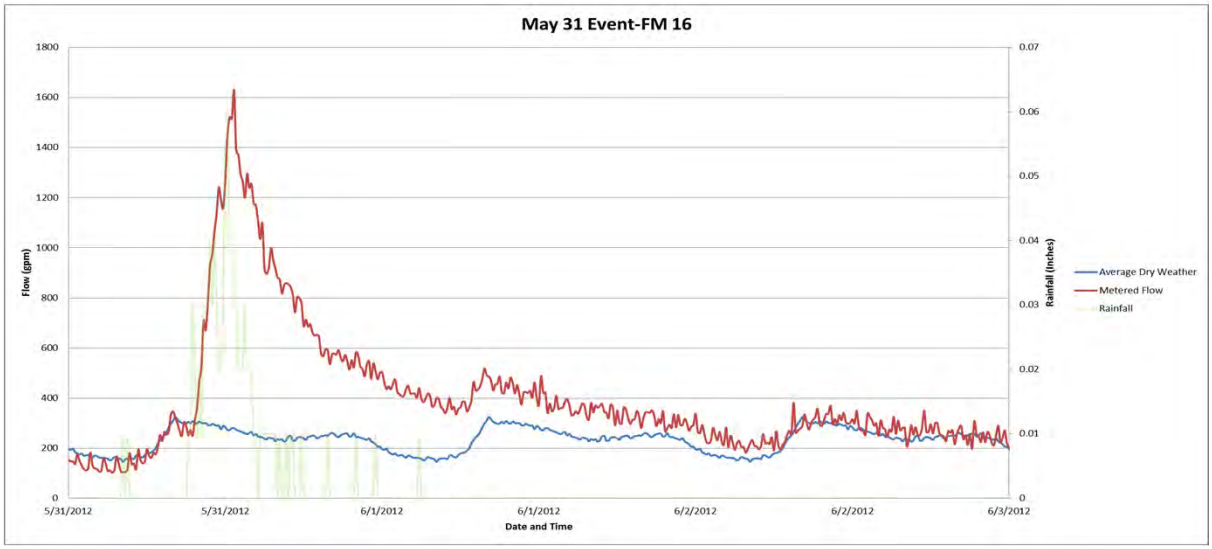
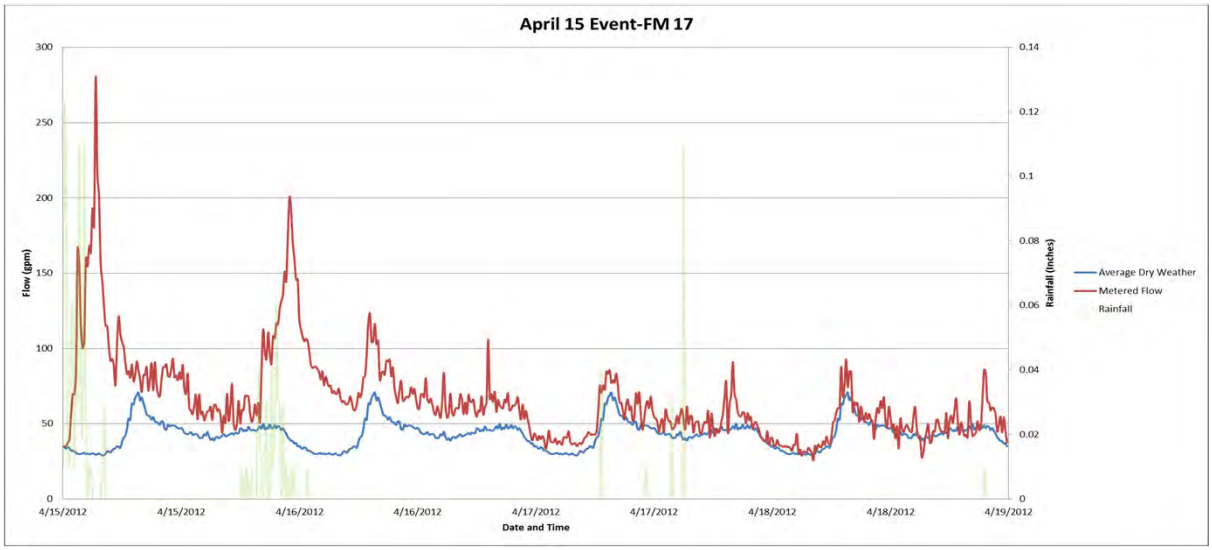
5/29/2012
5/29/2012
5/30/2012


May 31 Event-FM 16
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 17
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
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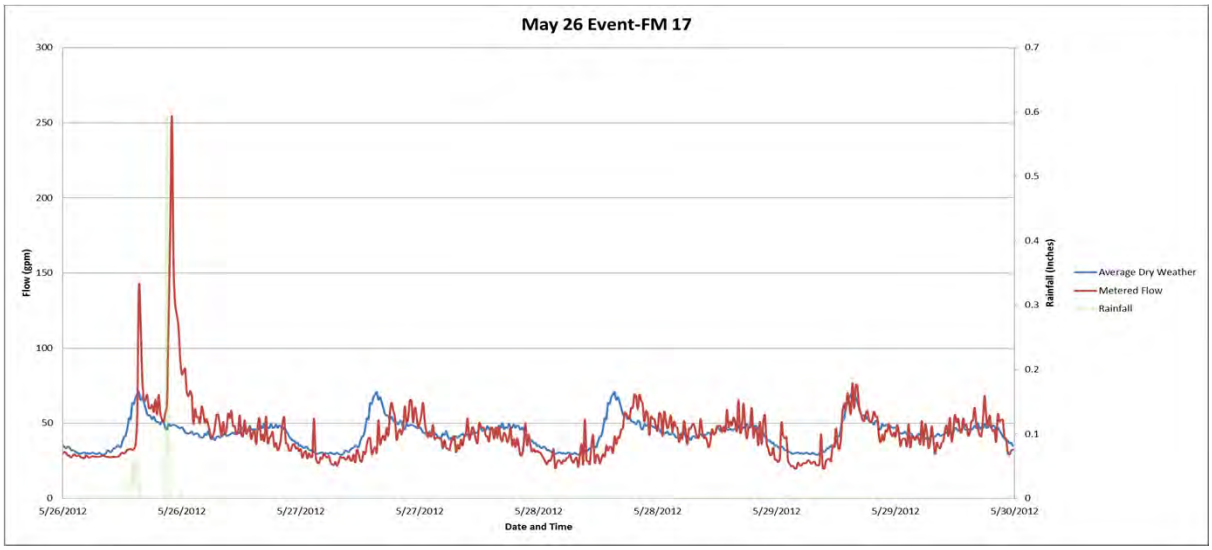
4/18/2012
4/19/2012


May 26 Event-FM 17
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
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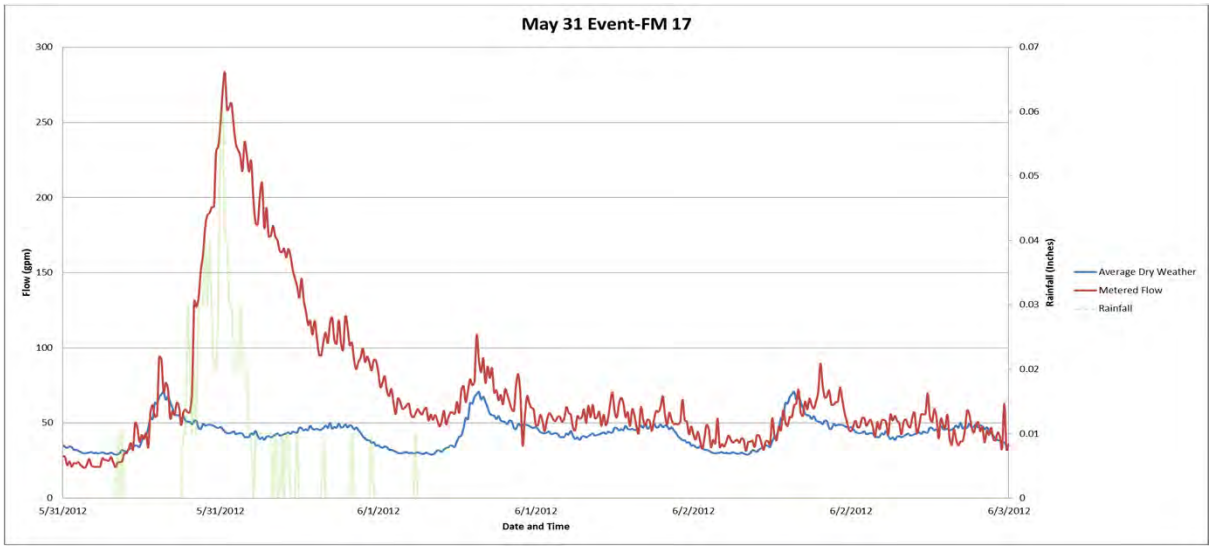
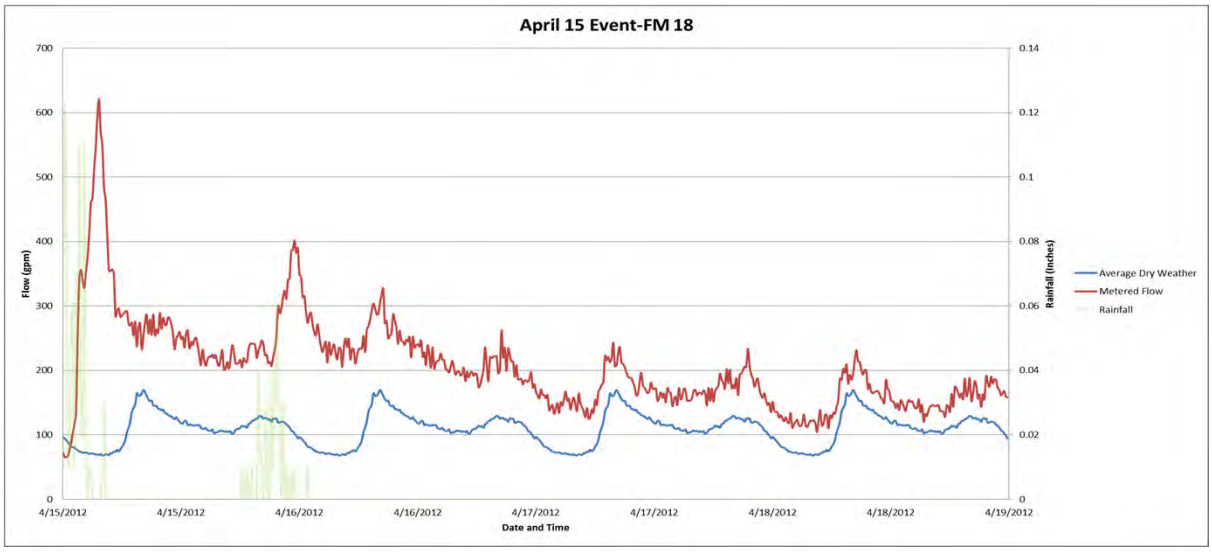
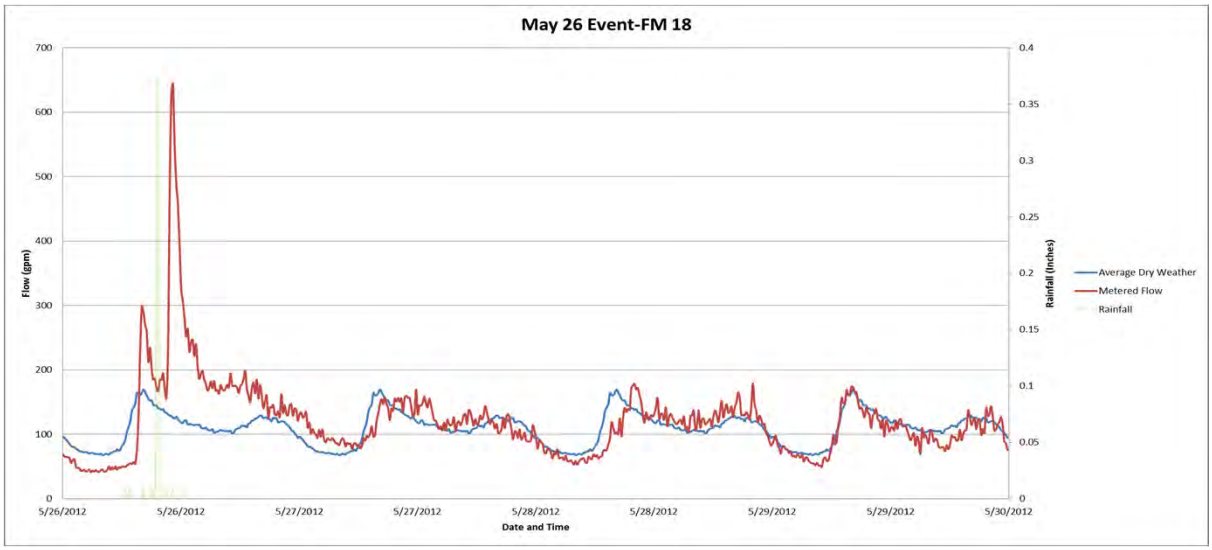
5/29/2012
5/29/2012
5/30/2012


May 31 Event-FM 17
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 18
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012


May 26 Event-FM 18
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
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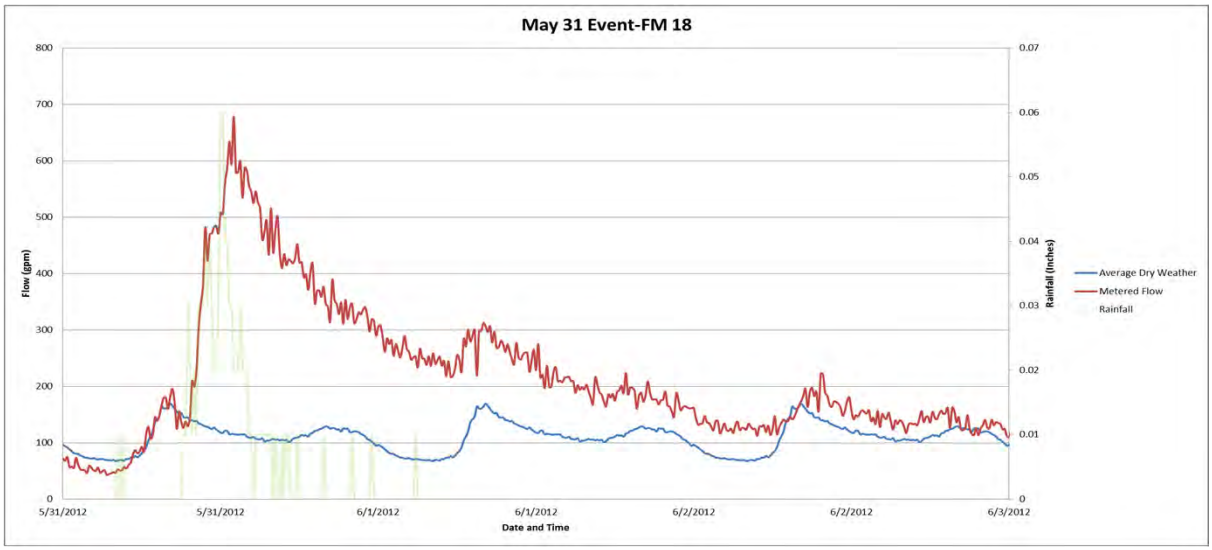
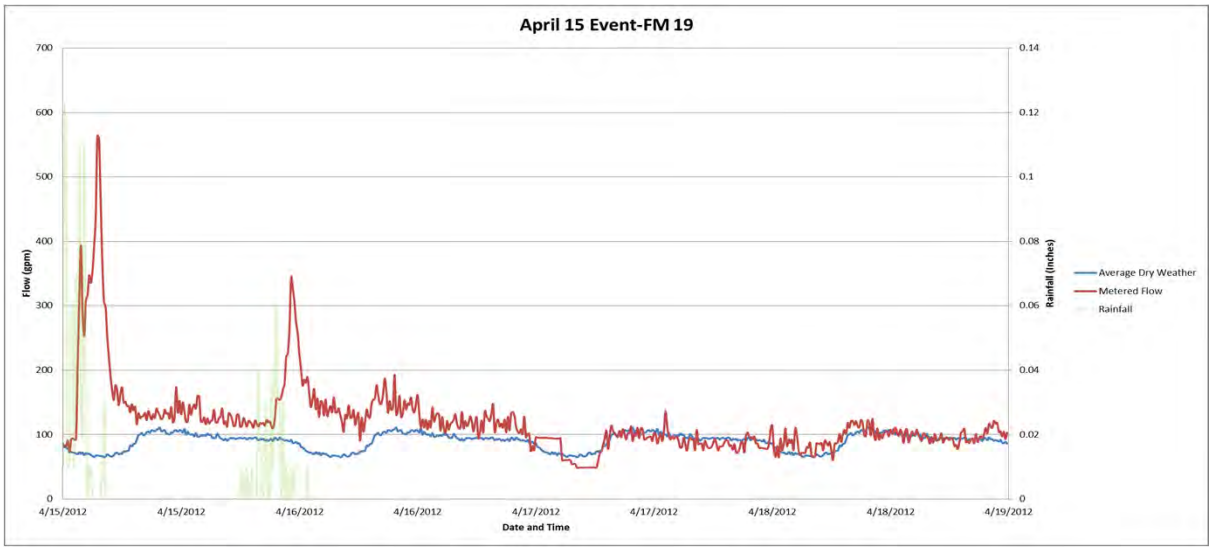
5/29/2012
5/30/2012


May 31 Event-FM 18
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 19
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
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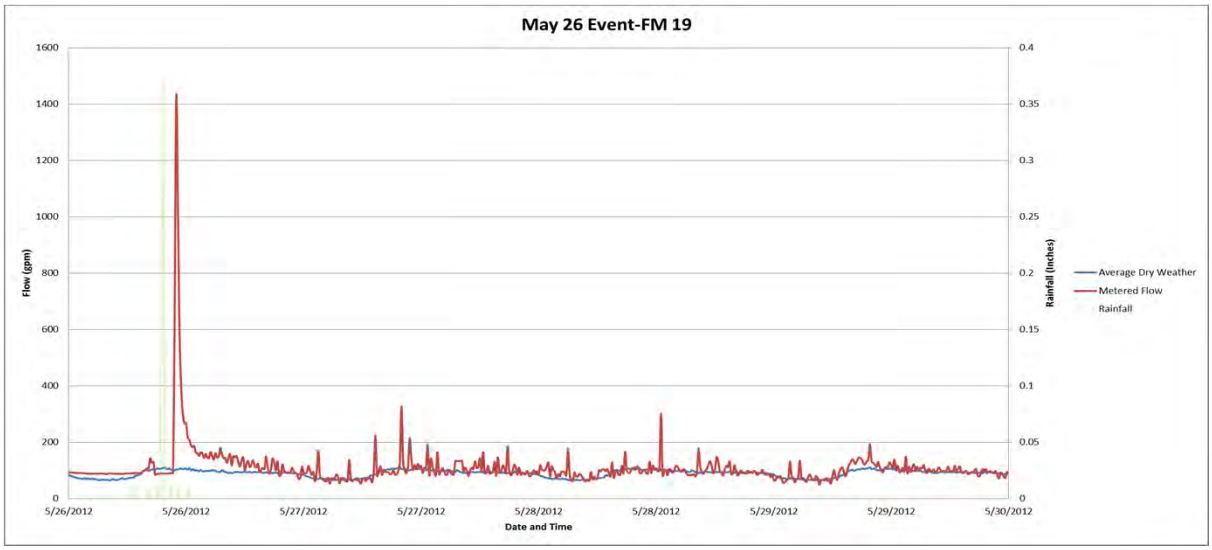
4/18/2012
4/18/2012
4/19/2012


May 26 Event-FM 19
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
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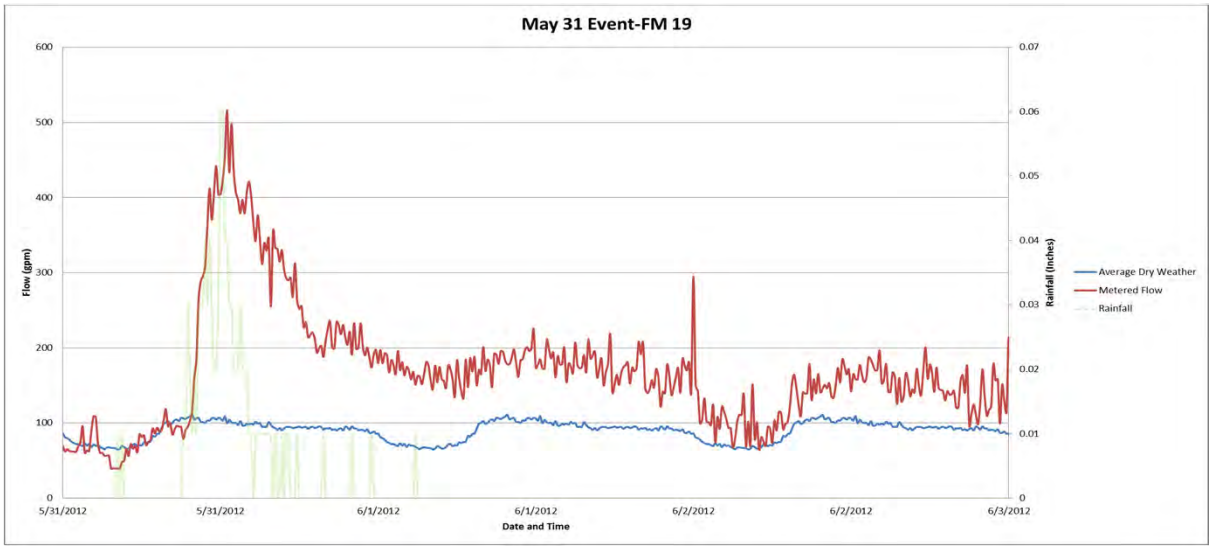
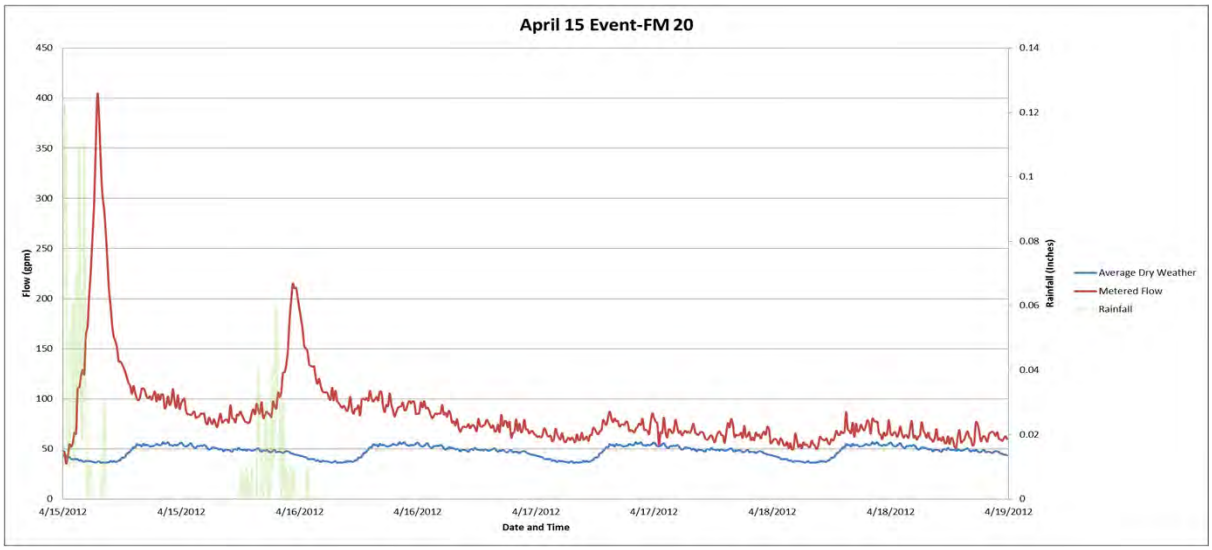
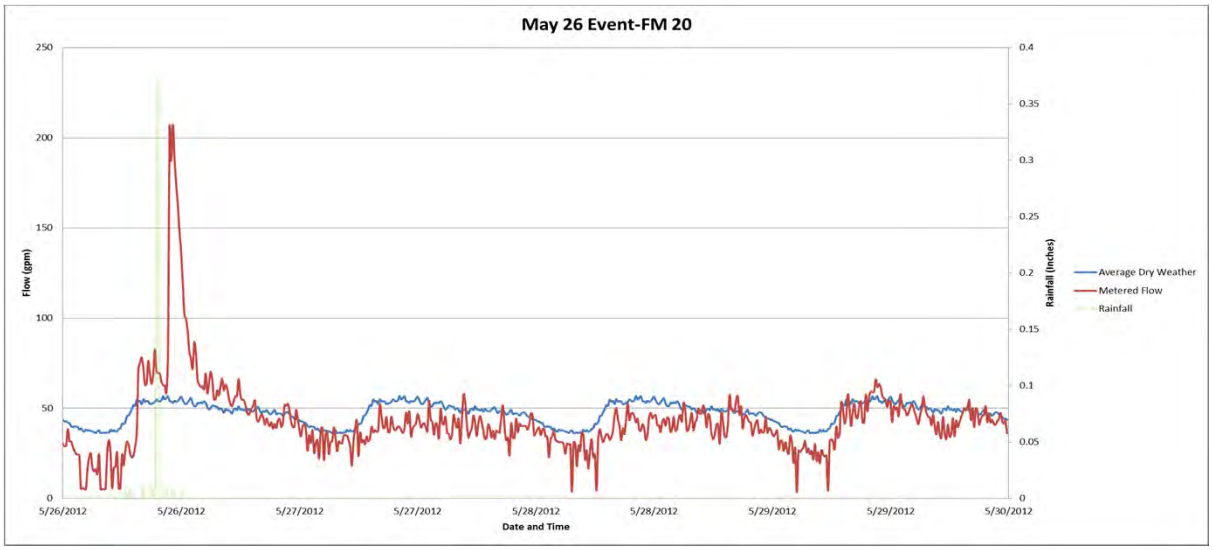
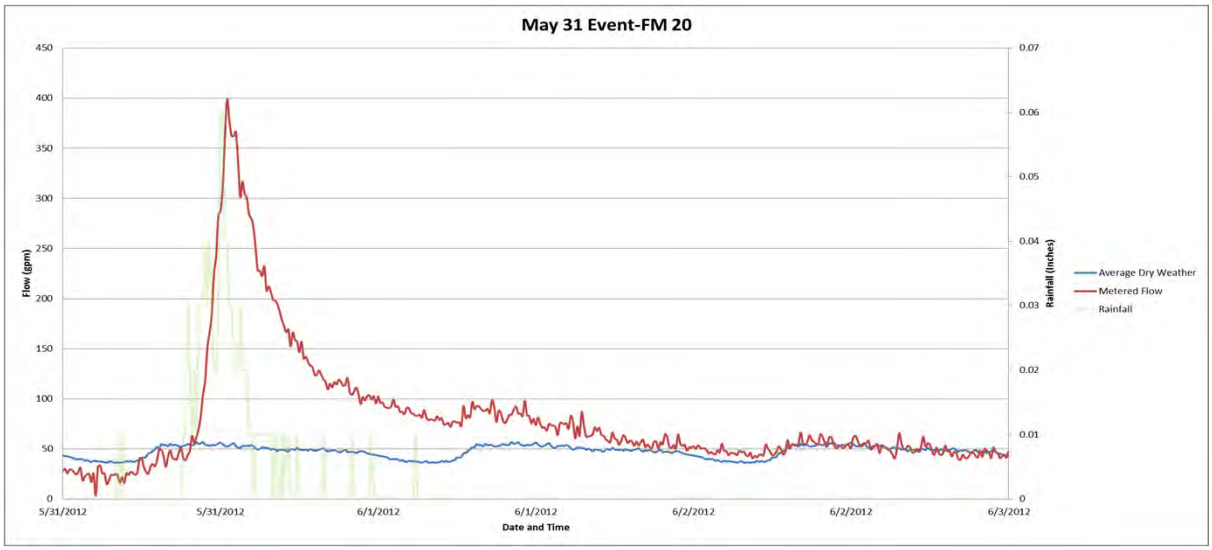
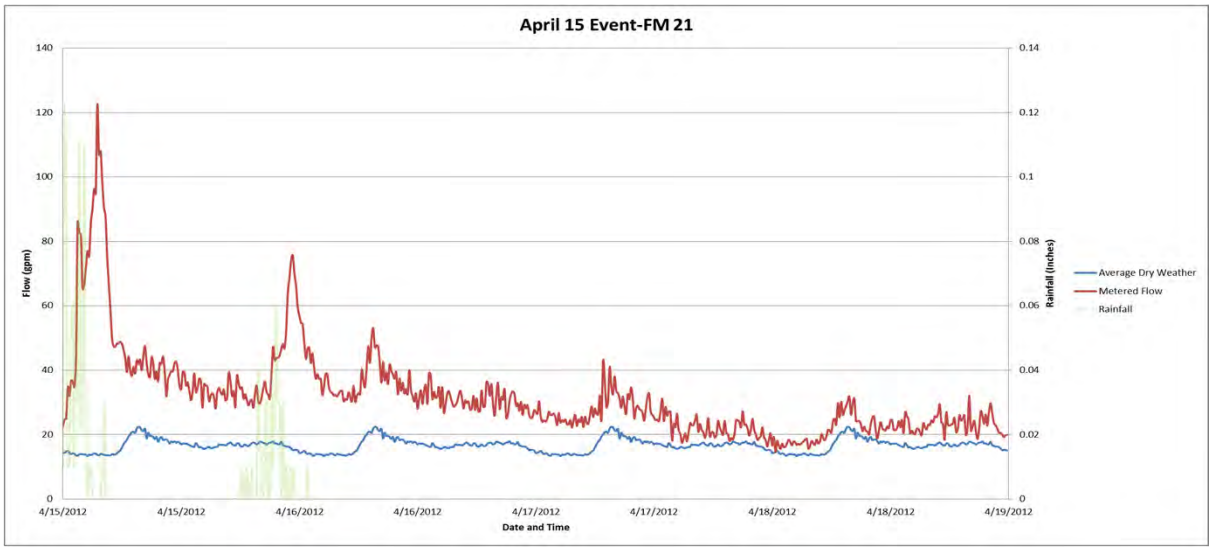
5/29/2012
5/29/2012
5/30/2012

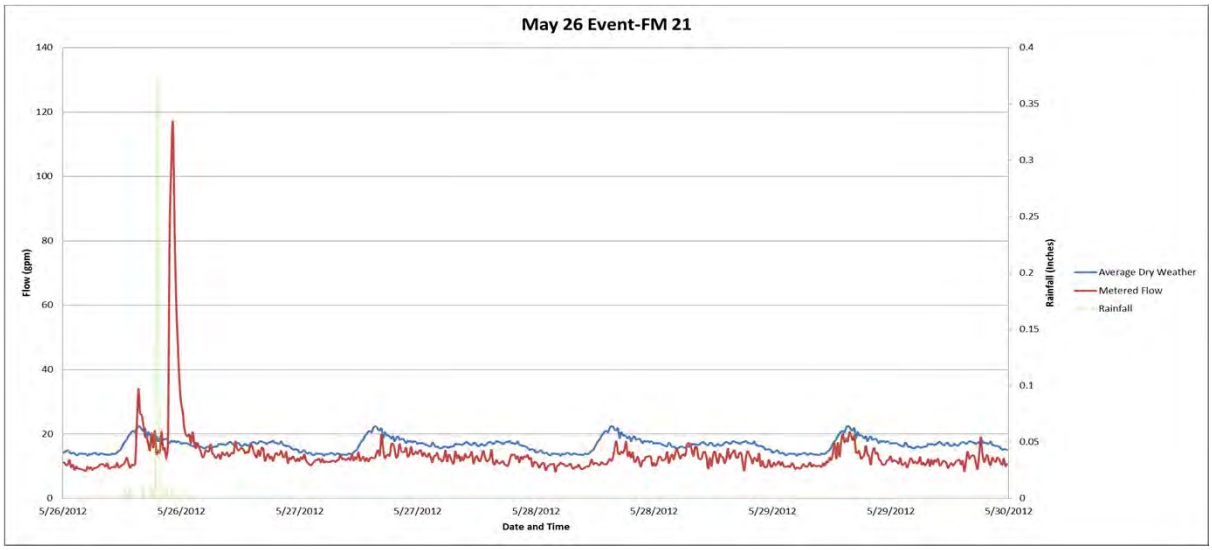

May 31 Event-FM 19
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012

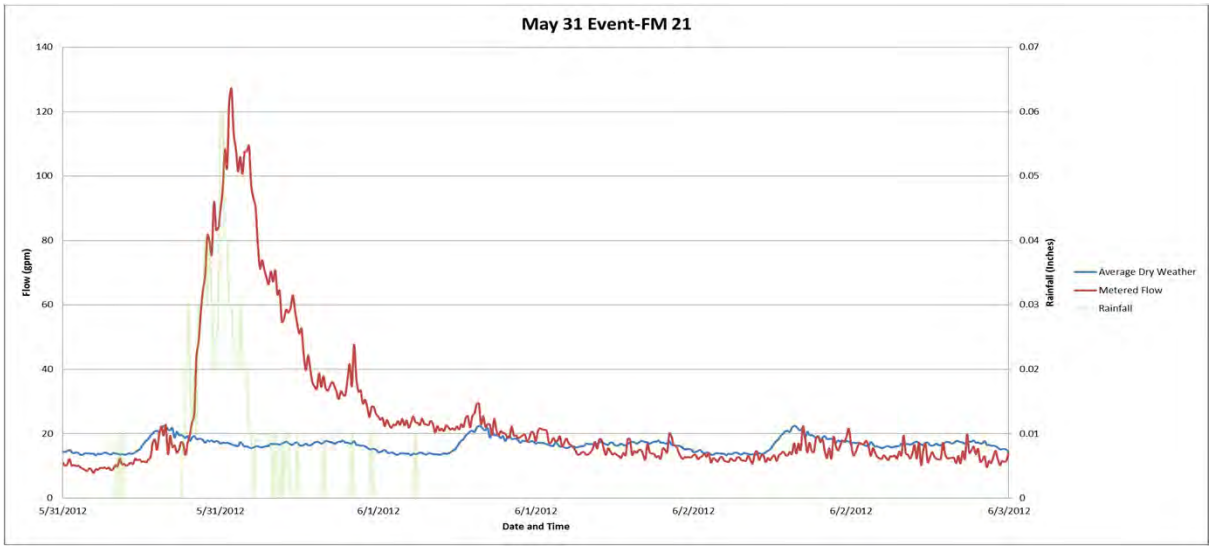

April 15 Event-FM 20
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012

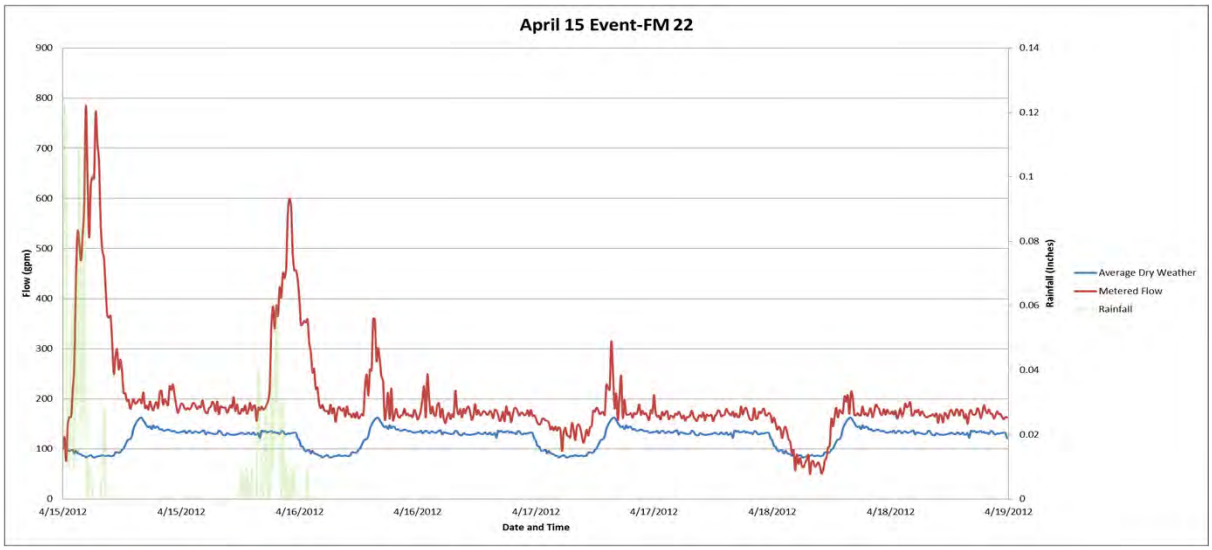

May 26 Event-FM 20
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012

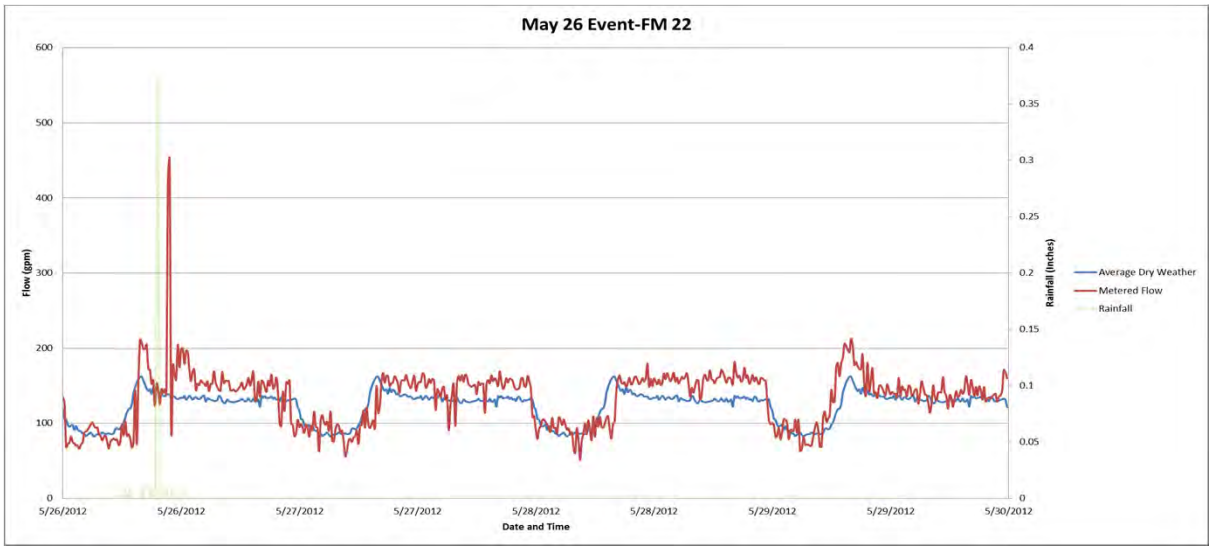

May 31 Event-FM 20
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012

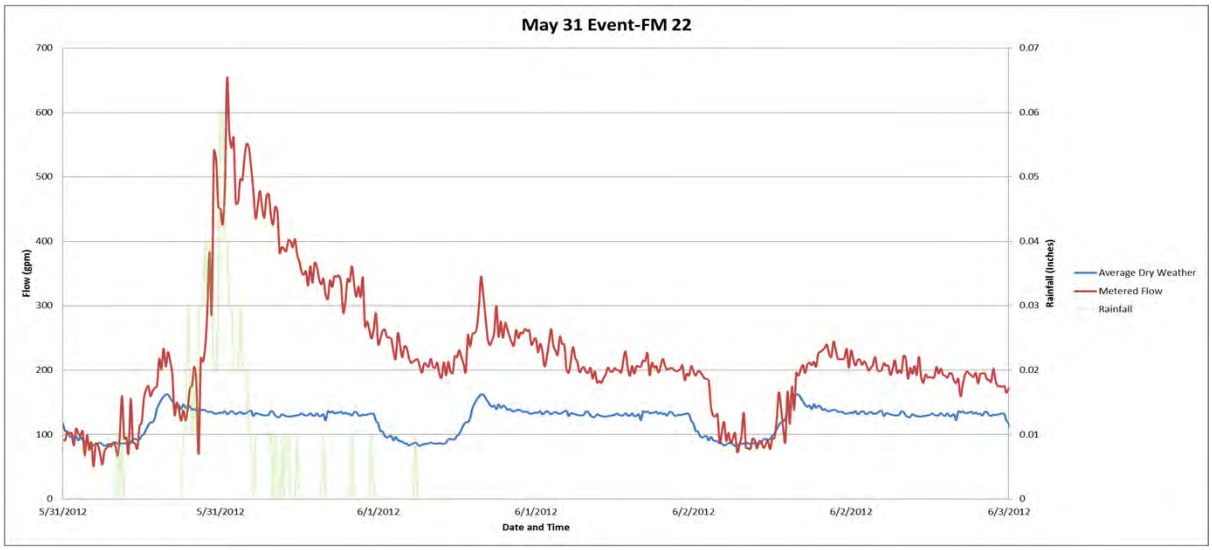

April 15 Event-FM 21
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
140
120
100
80
60
40
20
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012

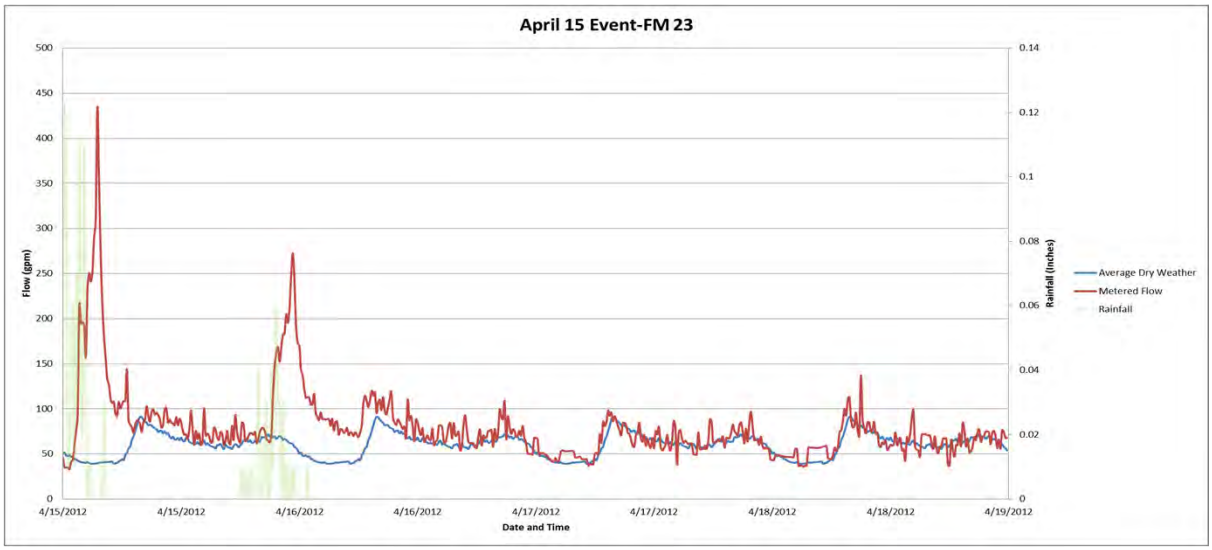

May 26 Event-FM 21
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
140
120
100
80
60
40
20
0
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012

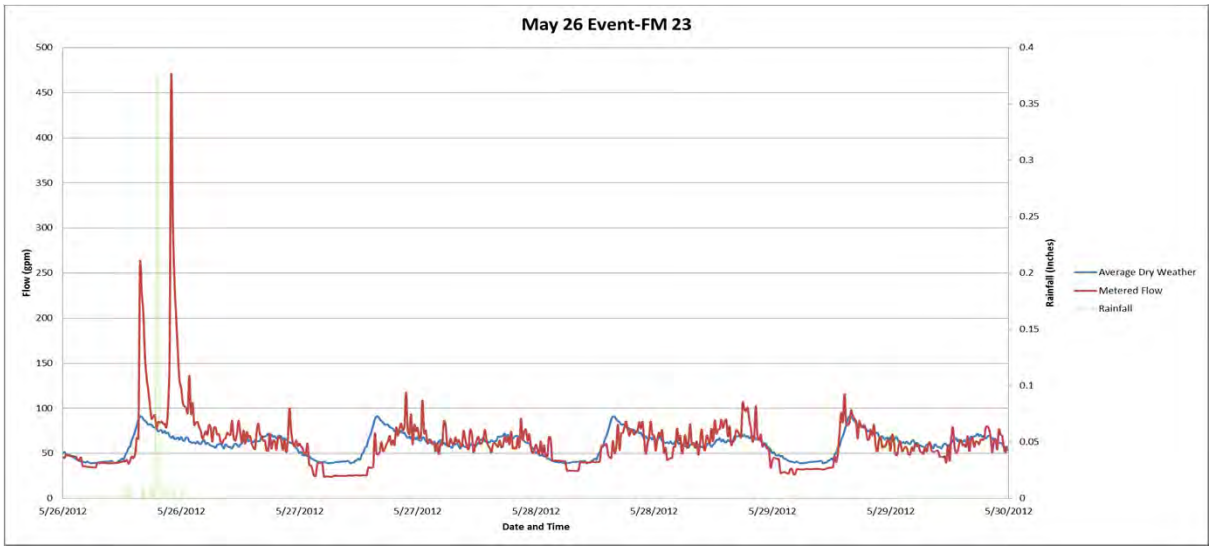

May 31 Event-FM 21
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
140
120
100
80
60
40
20
0
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012

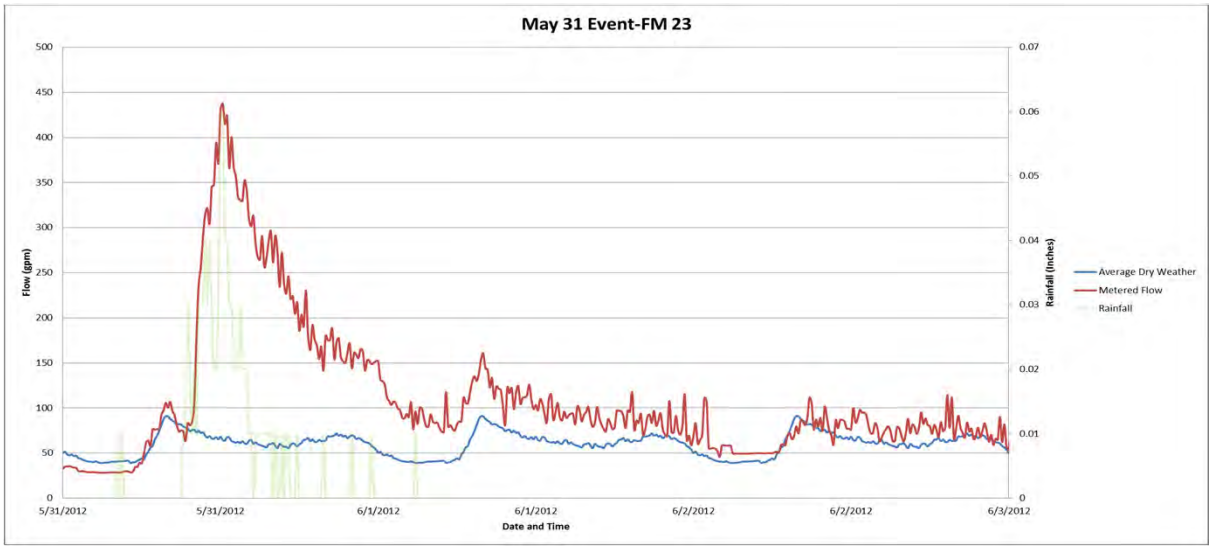

April 15 Event-FM 22
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

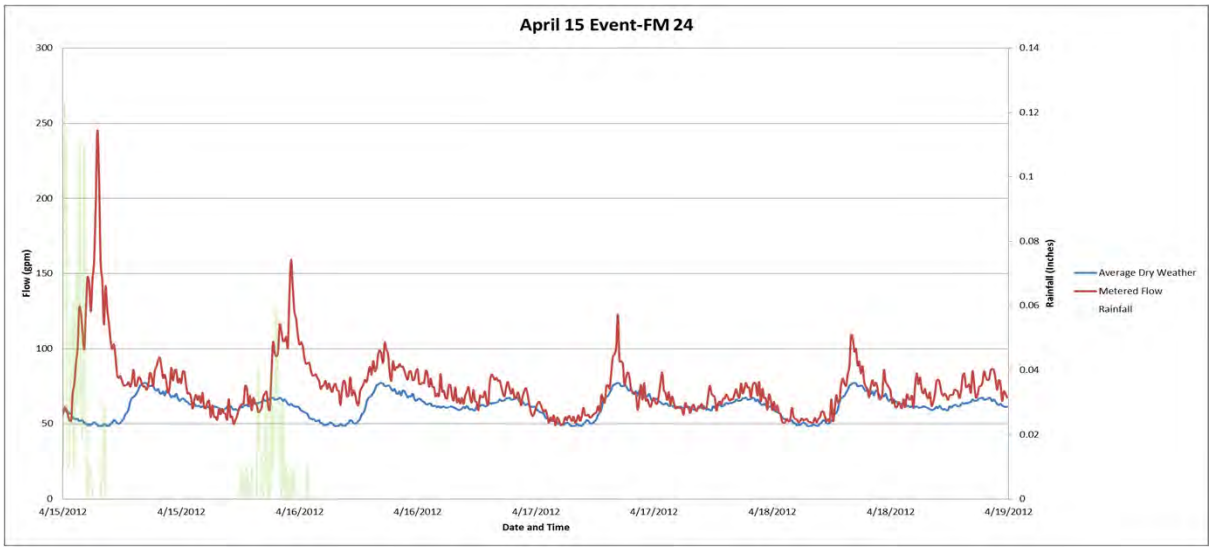

May 26 Event-FM 22
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

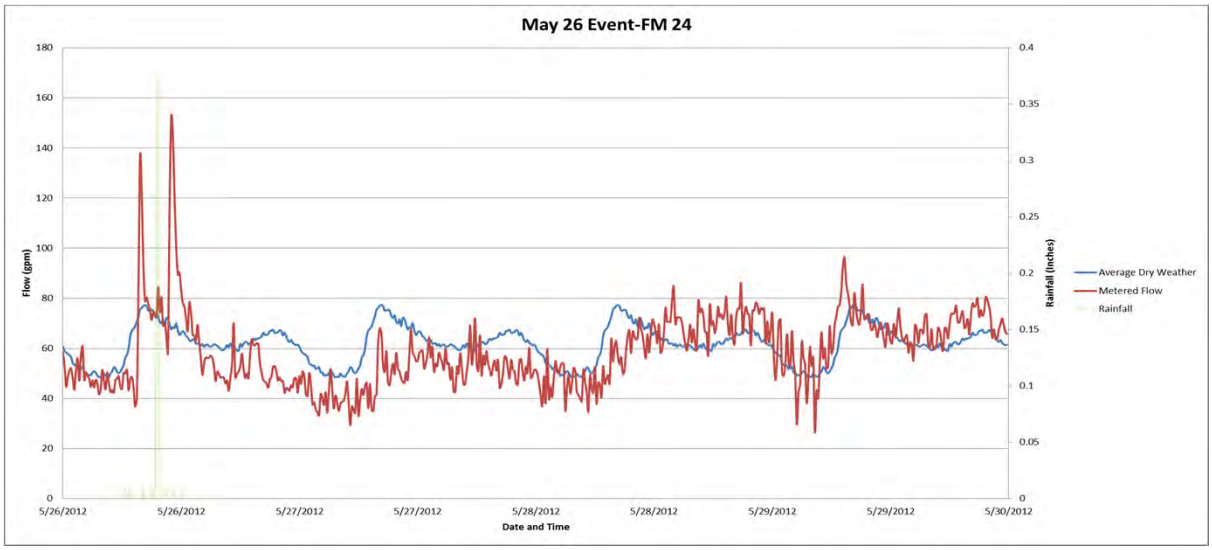

May 31 Event-FM 22
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

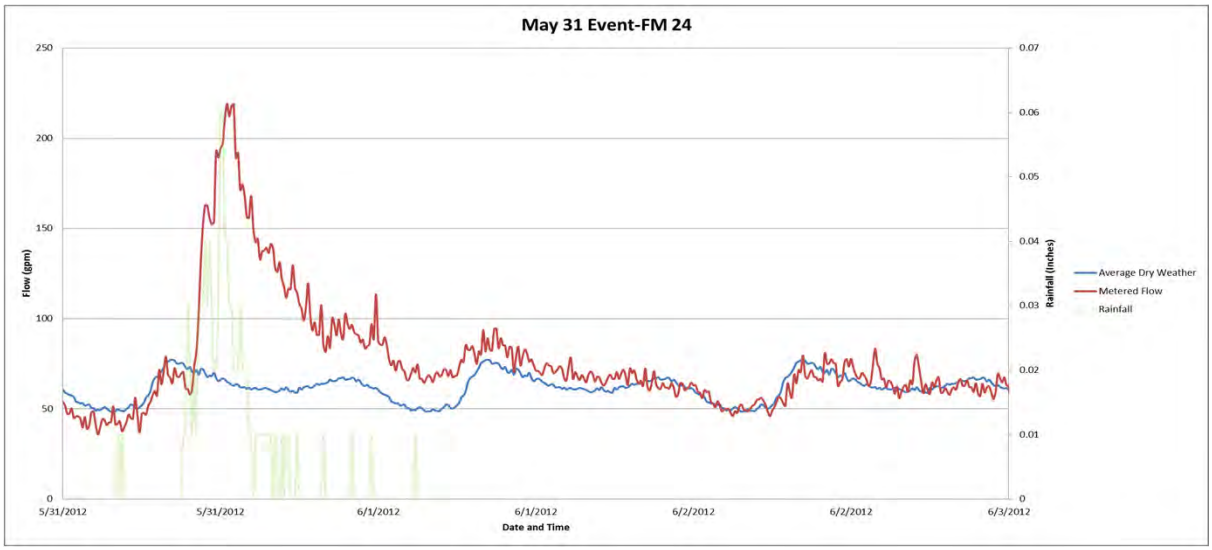

April 15 Event-FM 23
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012

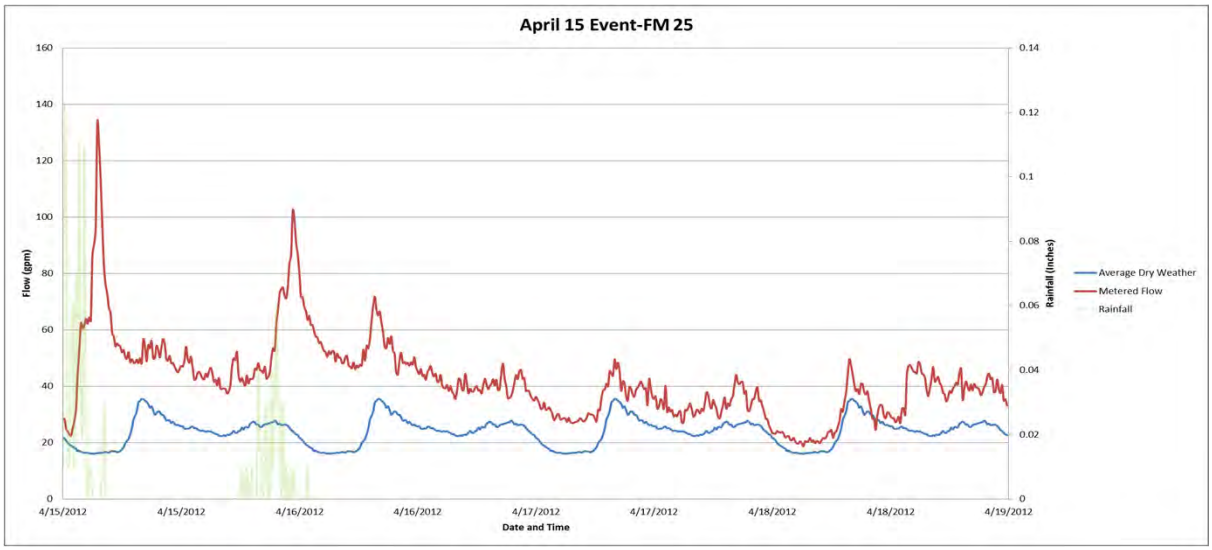

May 26 Event-FM 23
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012

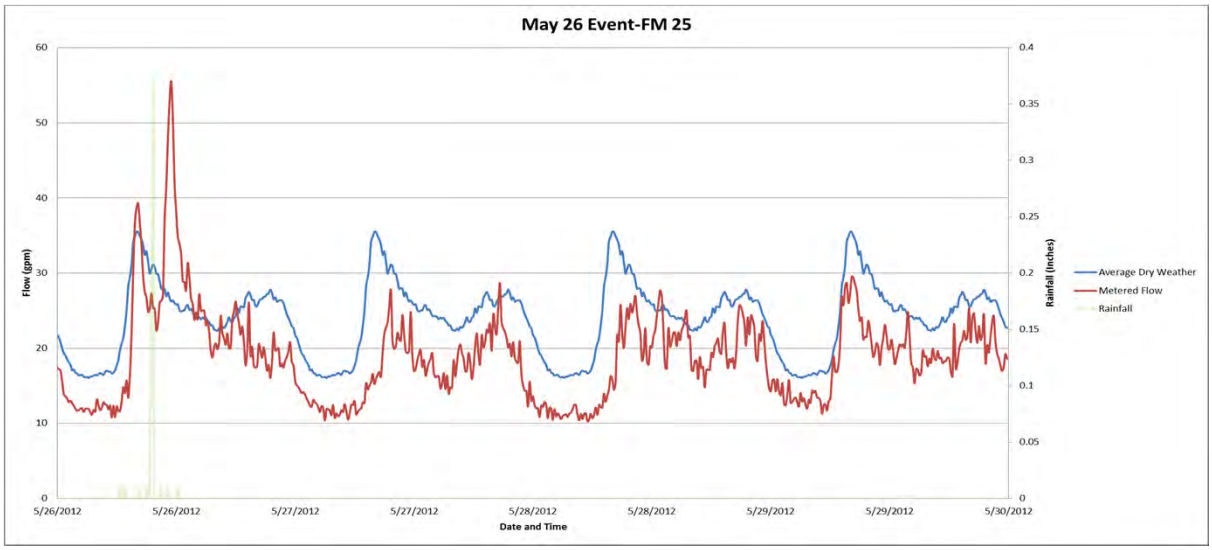

May 31 Event-FM 23
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012

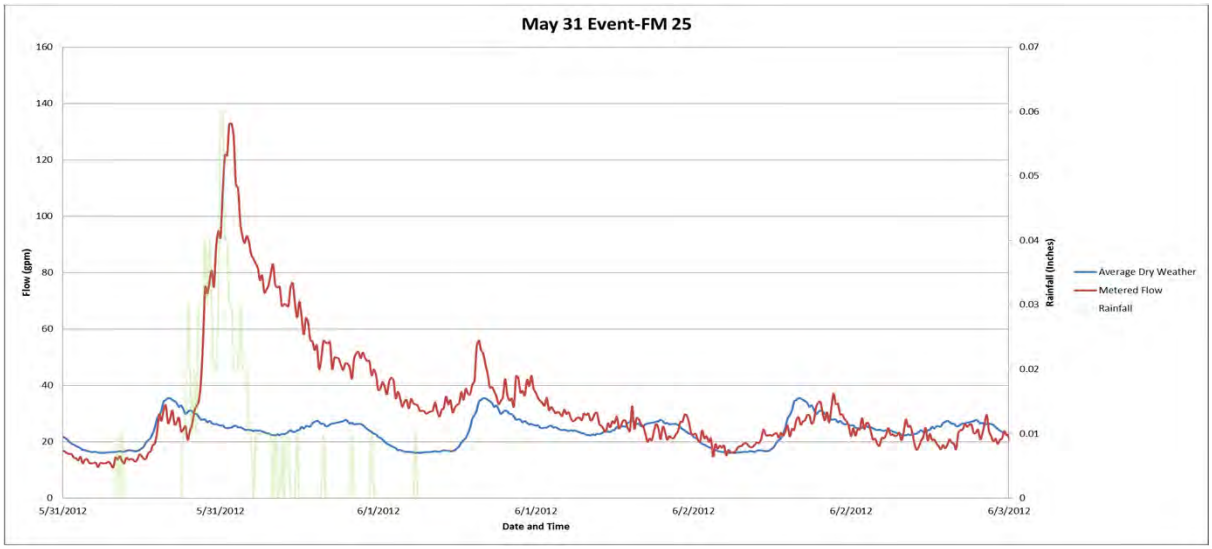

April 15 Event-FM 24
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
300
250
200
150
100
50
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012

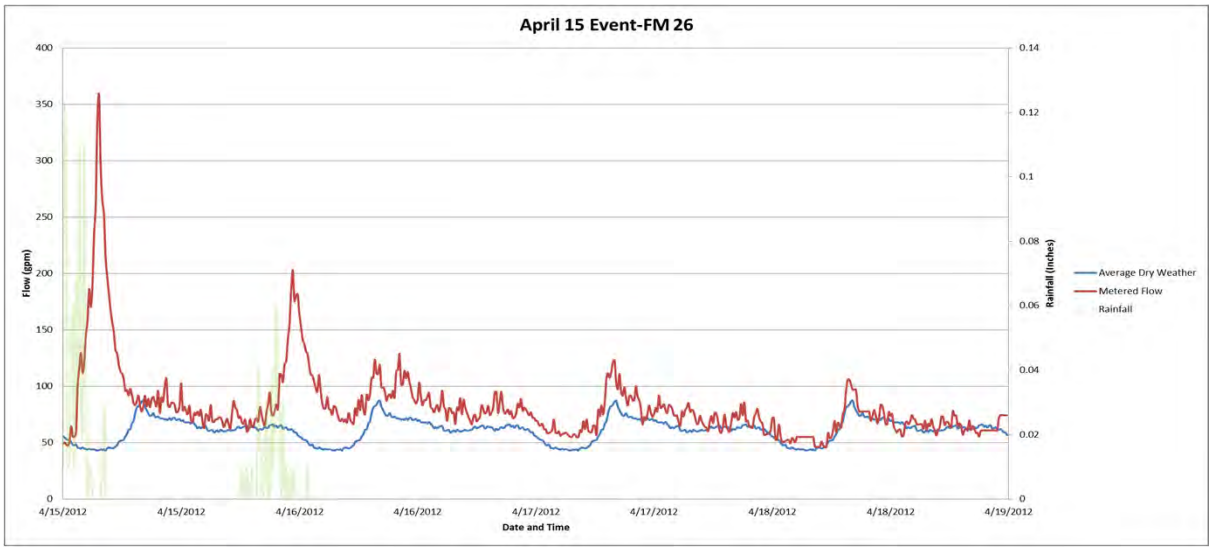

May 26 Event-FM 24
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
180
160
140
120
100
80
60
40
20
0
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012

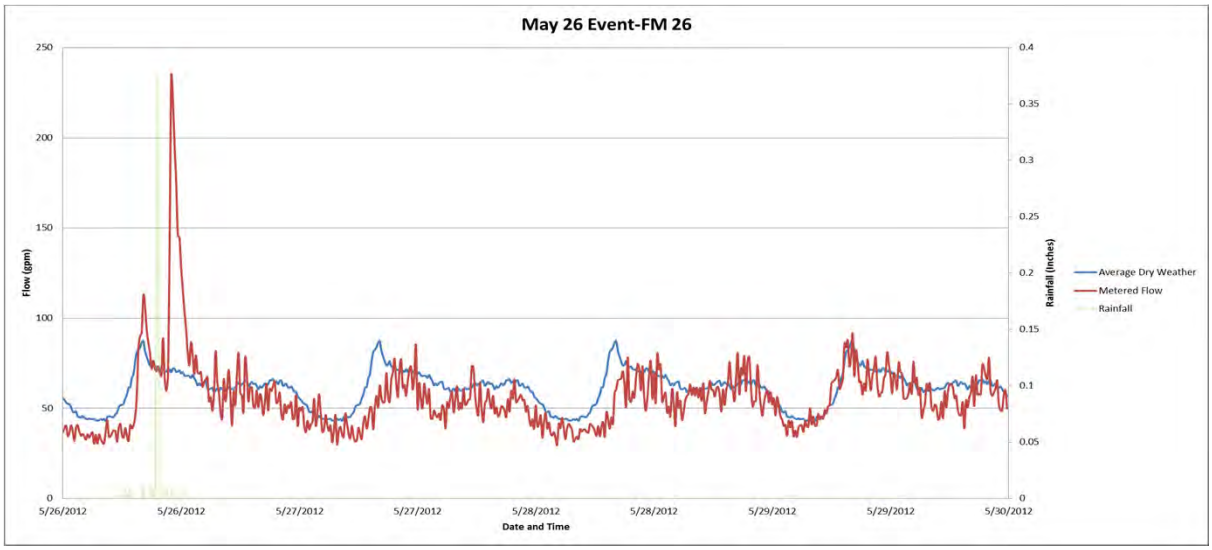

May 31 Event-FM 24
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
250
200
150
100
50
0
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012

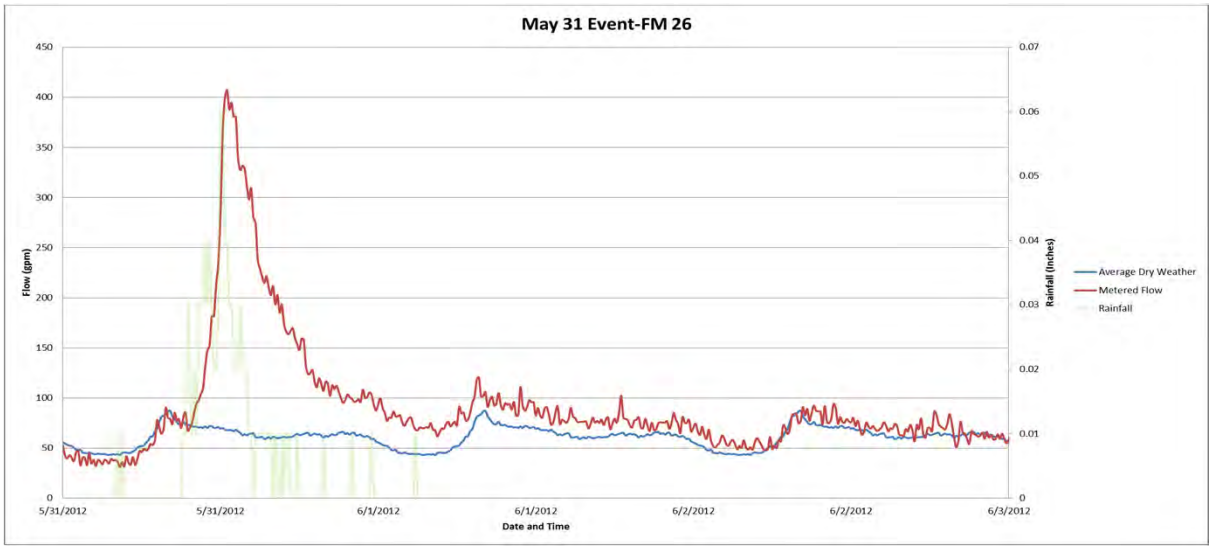

April 15 Event-FM 25
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012

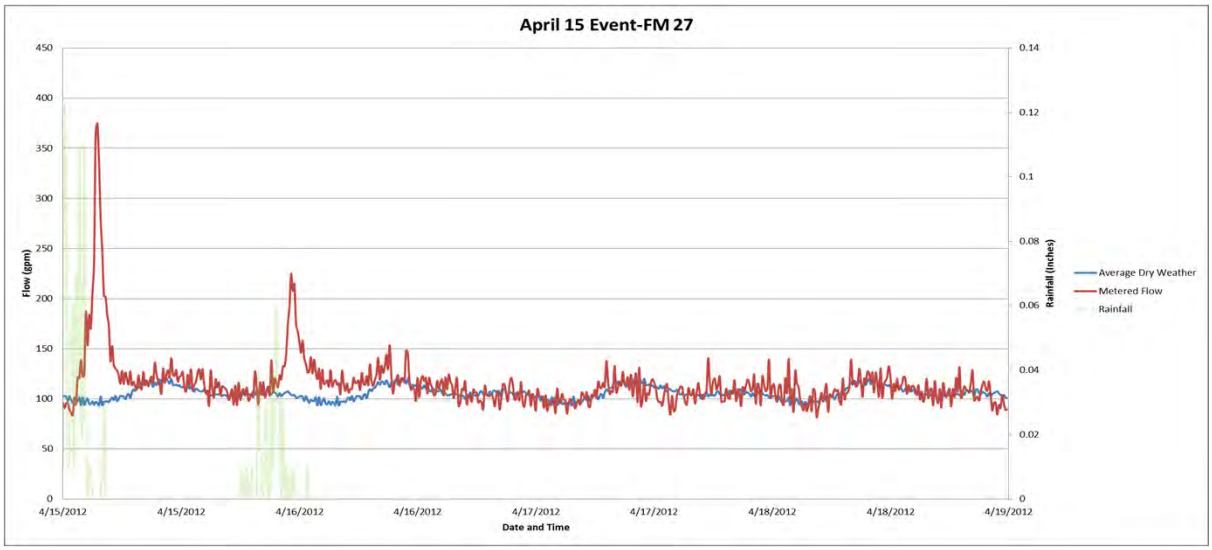

May 26 Event-FM 25
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012

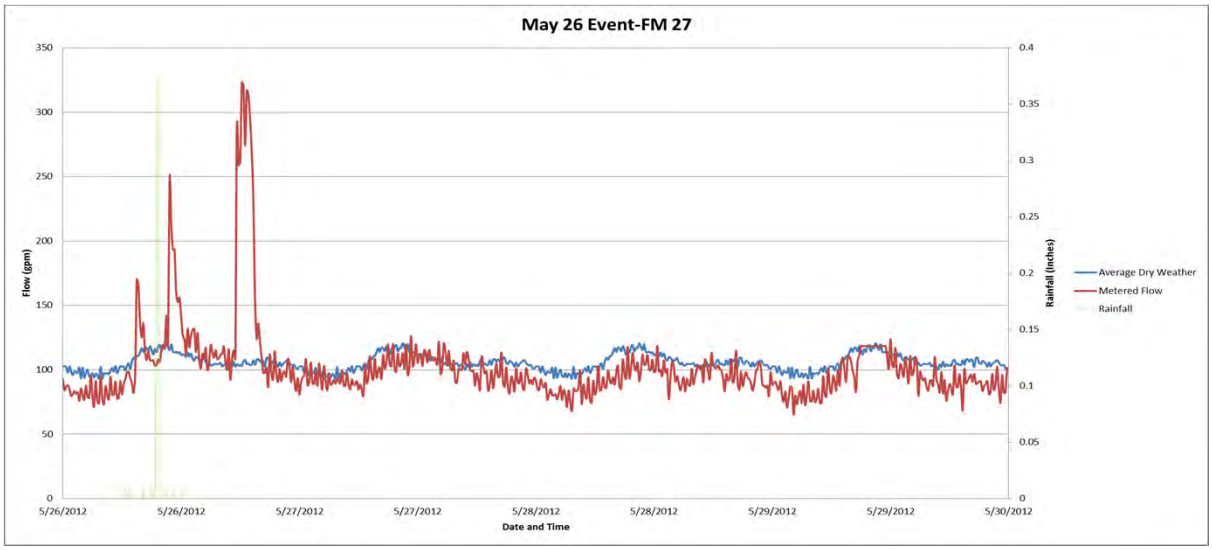

May 31 Event-FM 25
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012

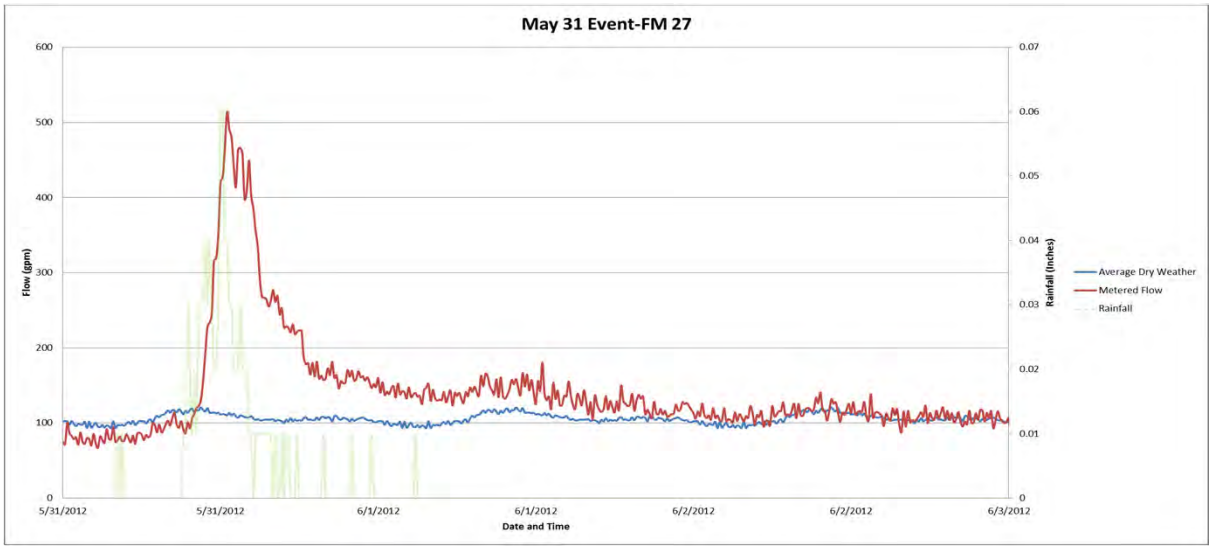

April 15 Event-FM 26
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
400
350
300
250
200
150
100
50
0
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012

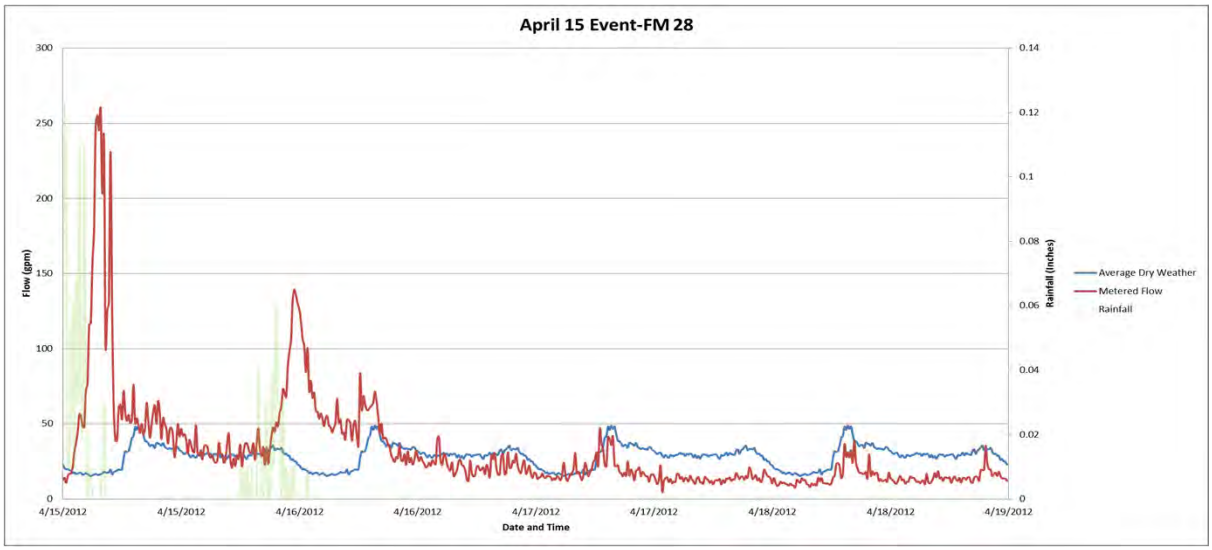

May 26 Event-FM 26
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
250
200
150
100
50
0
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012

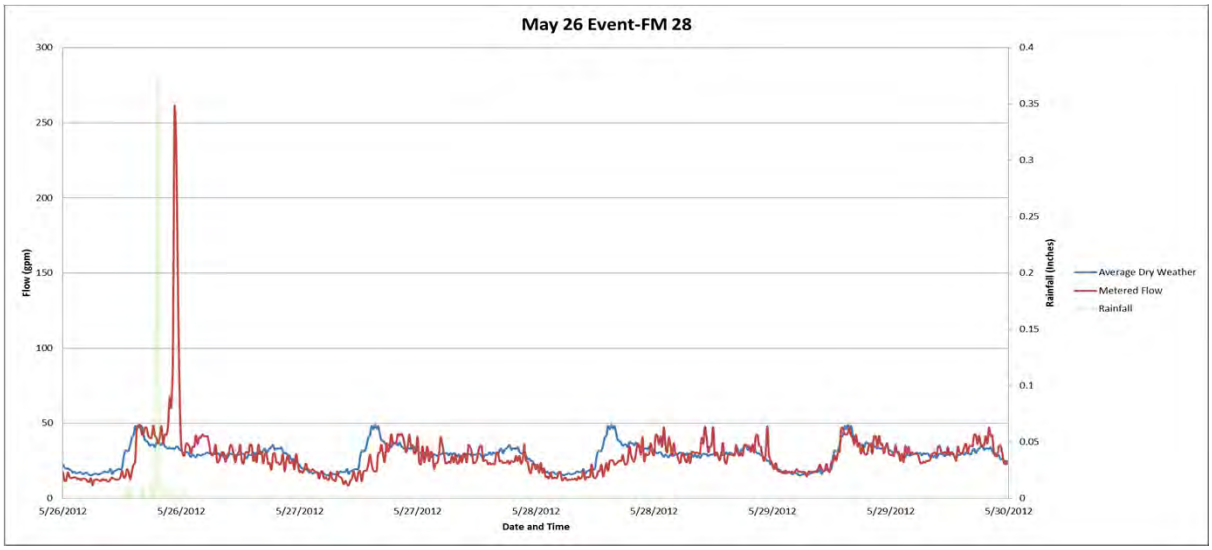

May 31 Event-FM 26
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
450
400
350
300
250
200
150
100
50
0
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 27
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012


May 26 Event-FM 27
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012


May 31 Event-FM 27
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 28
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012


May 26 Event-FM 28
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
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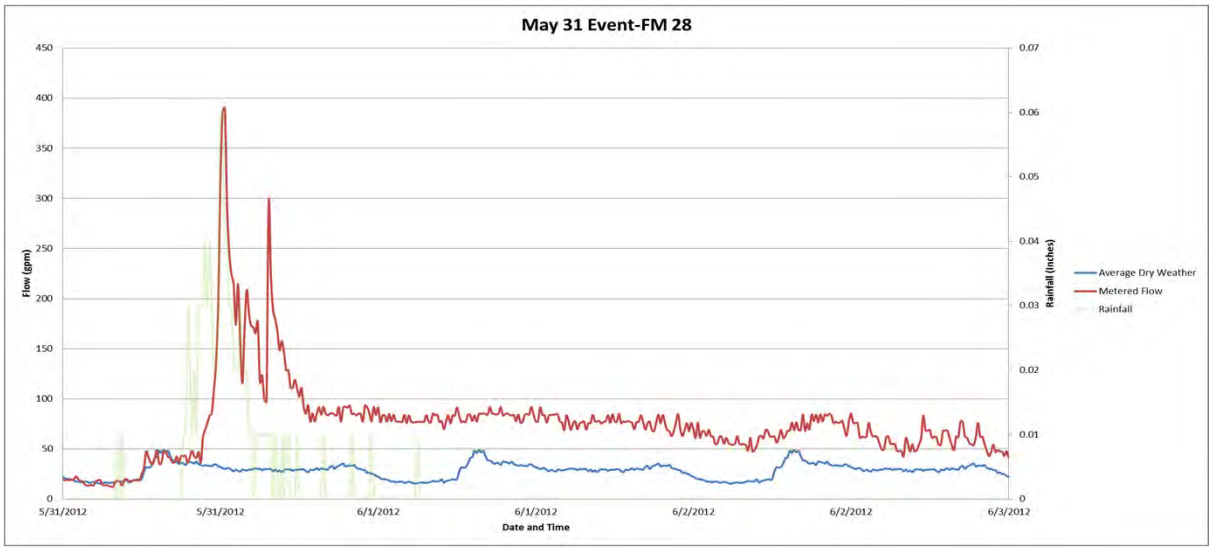
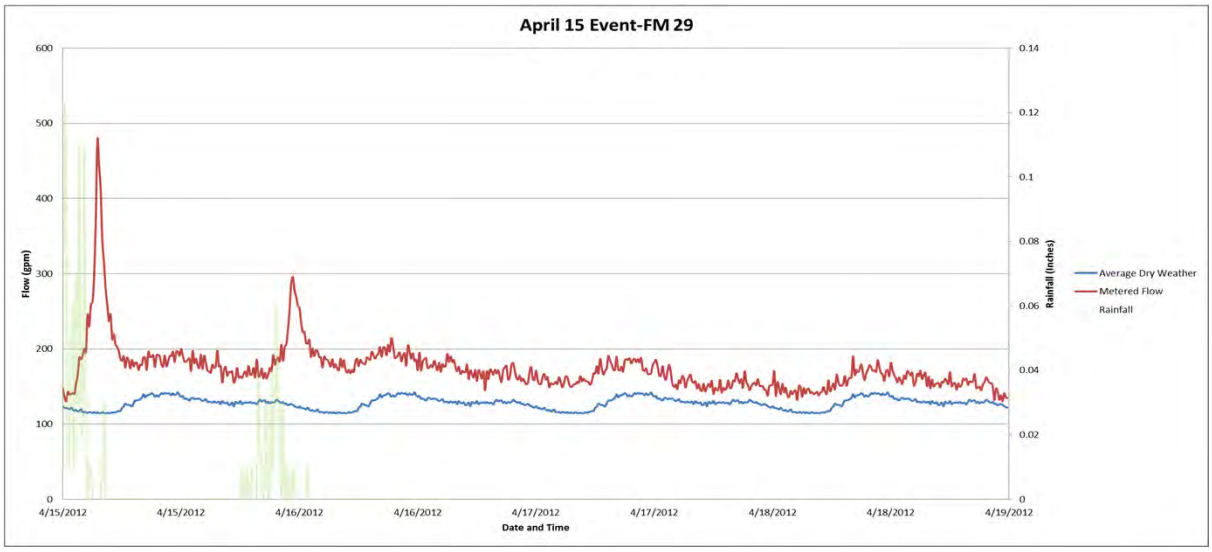
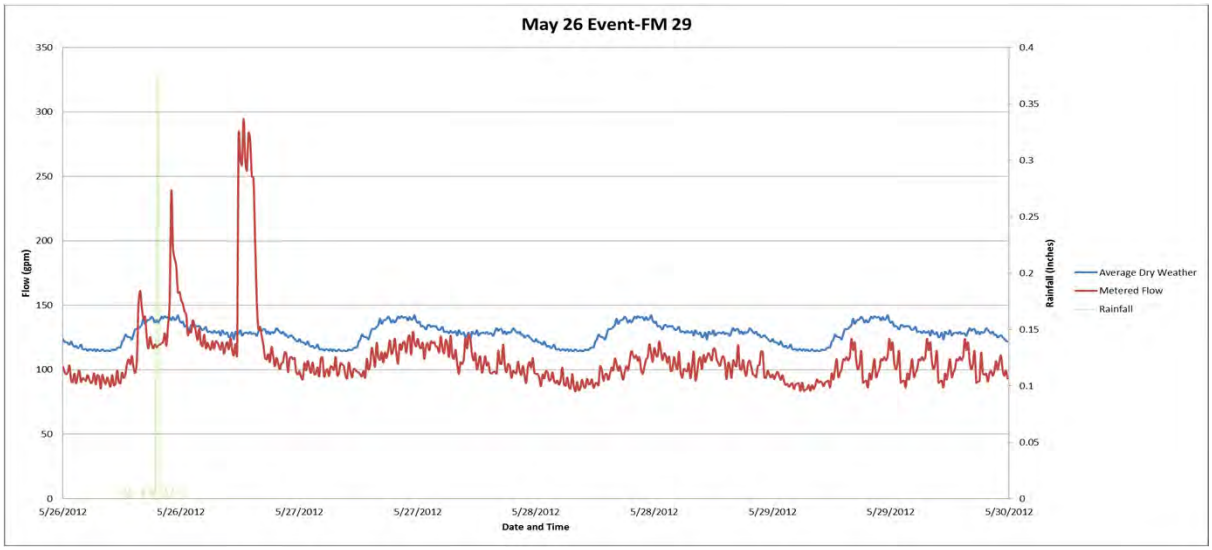
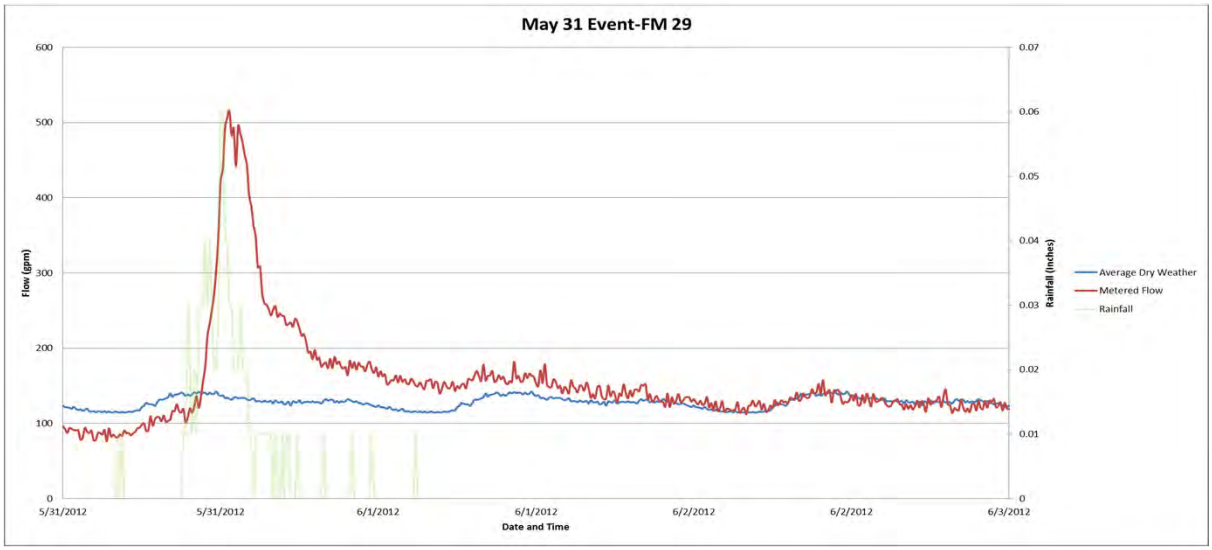
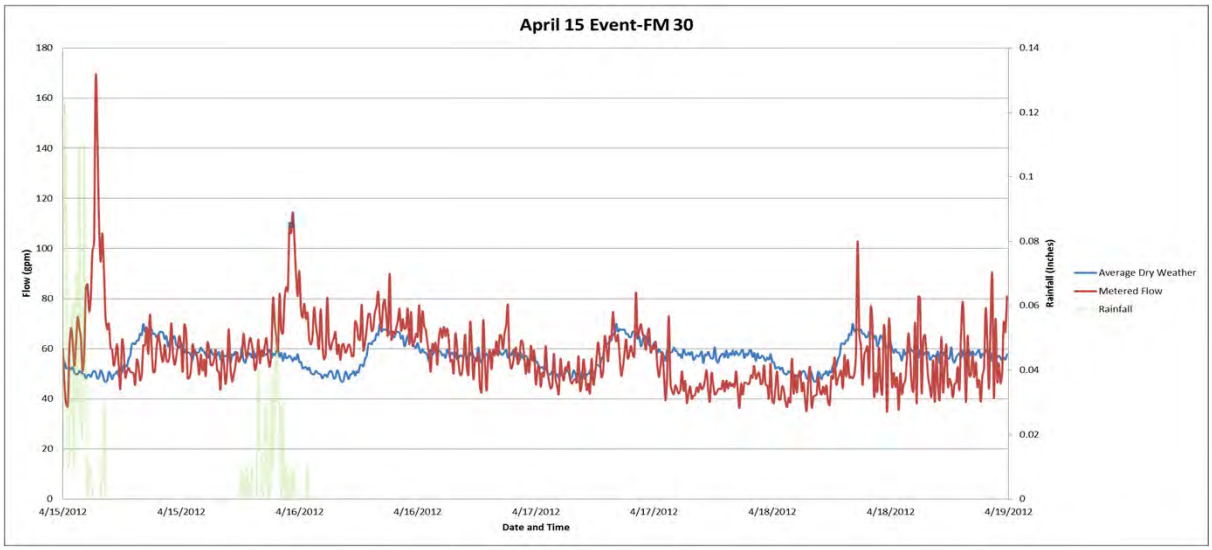
5/29/2012
5/30/2012

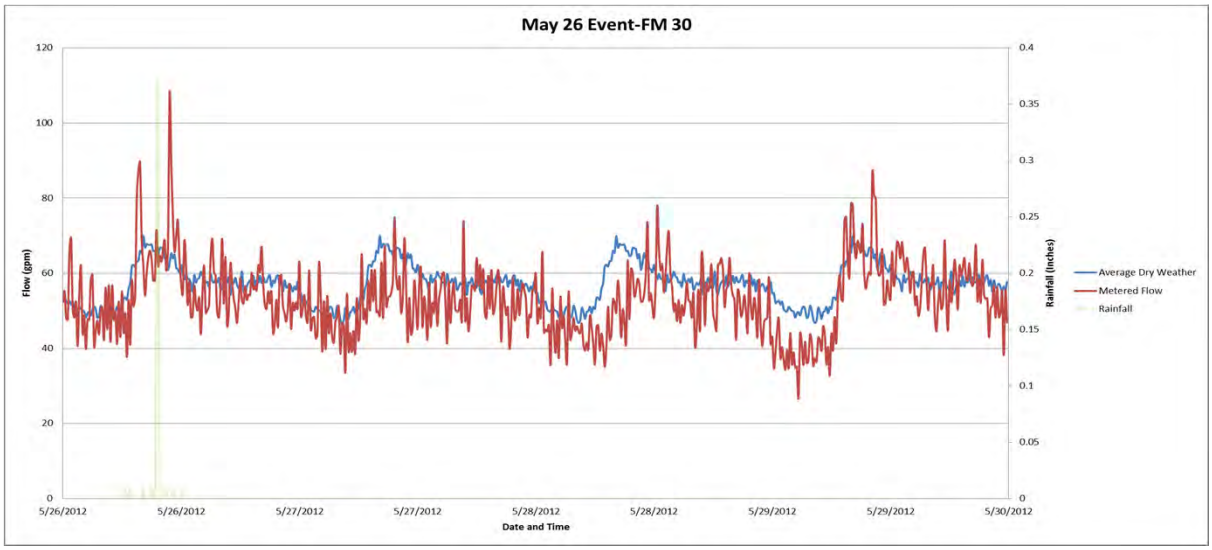

May 31 Event-FM 28
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 29
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012


May 26 Event-FM 29
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
5/28/2012
5/29/2012
5/29/2012
5/30/2012


May 31 Event-FM 29
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 30
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
4/15/2012
4/15/2012
4/16/2012
4/16/2012
4/17/2012
4/17/2012
4/18/2012
4/18/2012
4/19/2012


May 26 Event-FM 30
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/26/2012
5/26/2012
5/27/2012
5/27/2012
5/28/2012
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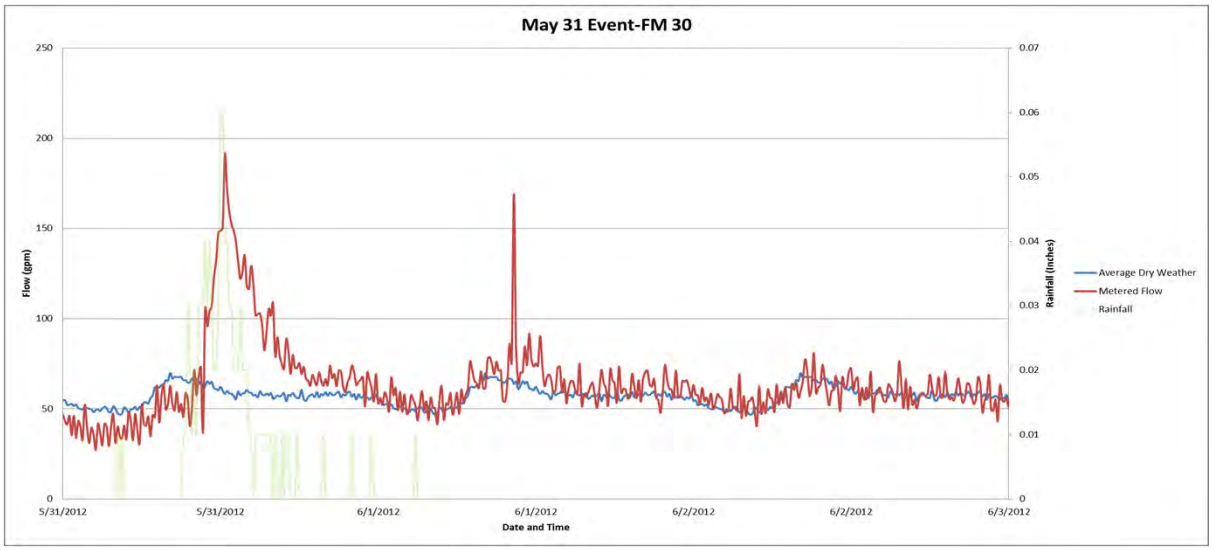
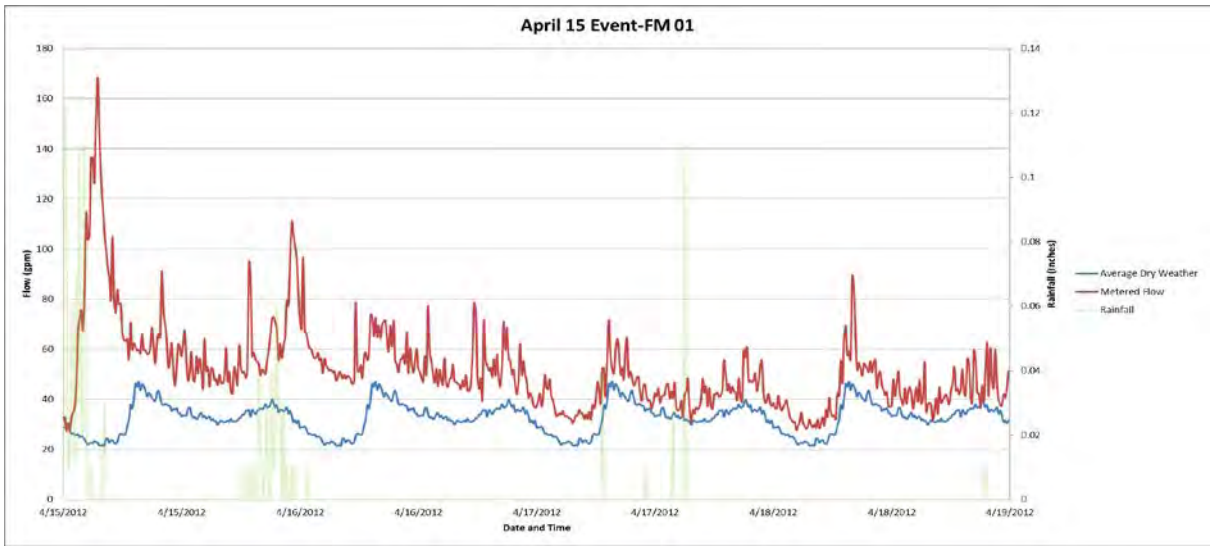
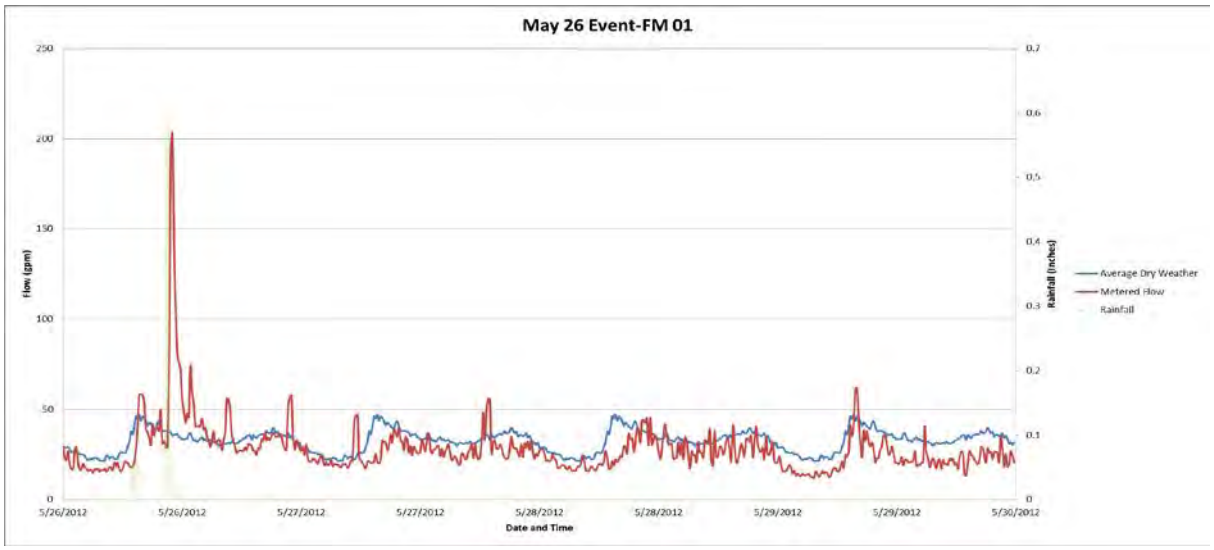
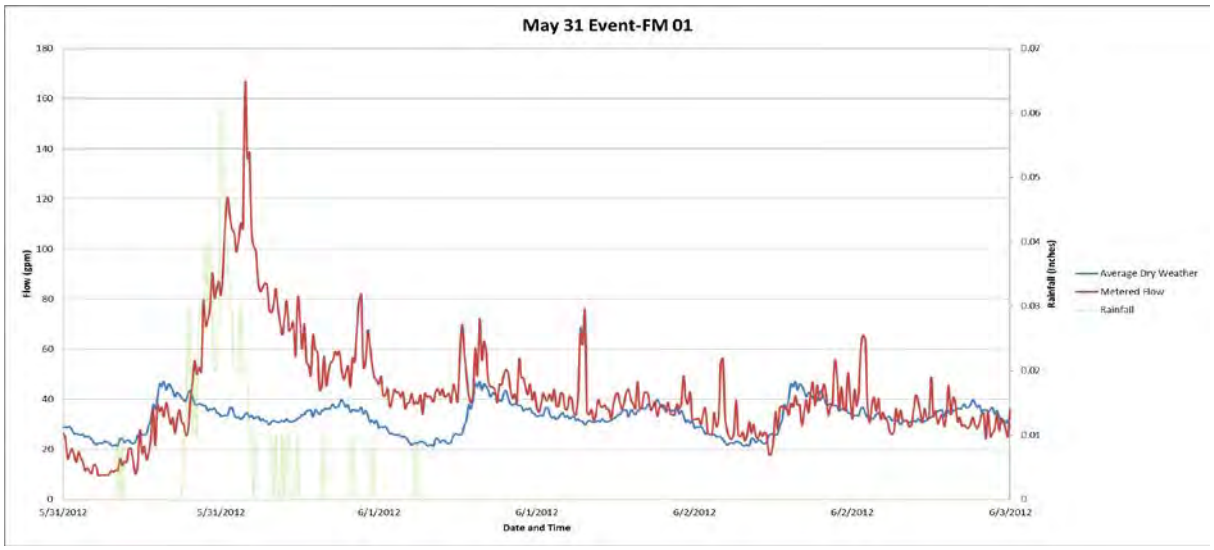
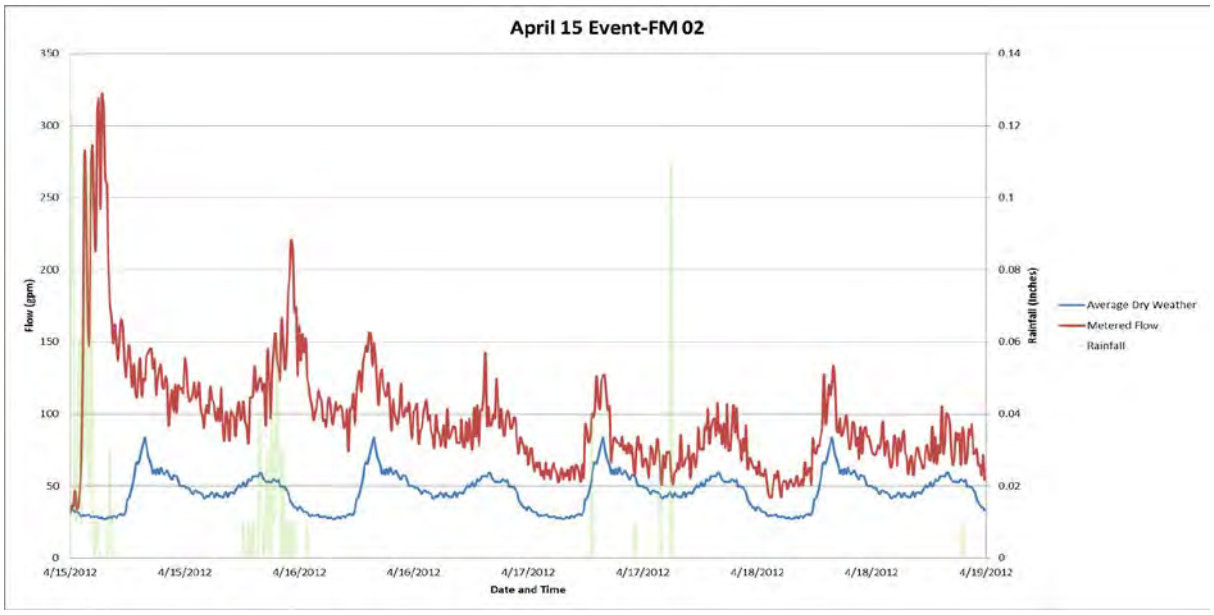
5/29/2012
5/29/2012
5/30/2012


May 31 Event-FM 30
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall
5/31/2012
5/31/2012
6/1/2012
6/1/2012
6/2/2012
6/2/2012
6/3/2012


April 15 Event-FM 01
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


May 26 Event-FM 01
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


May 31 Event-FM 01
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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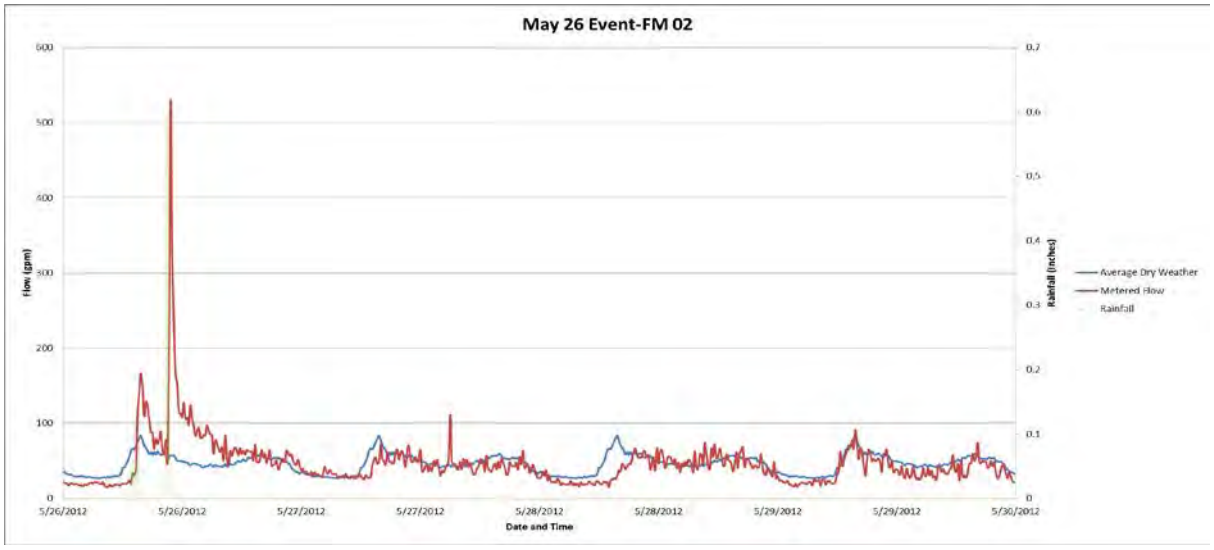
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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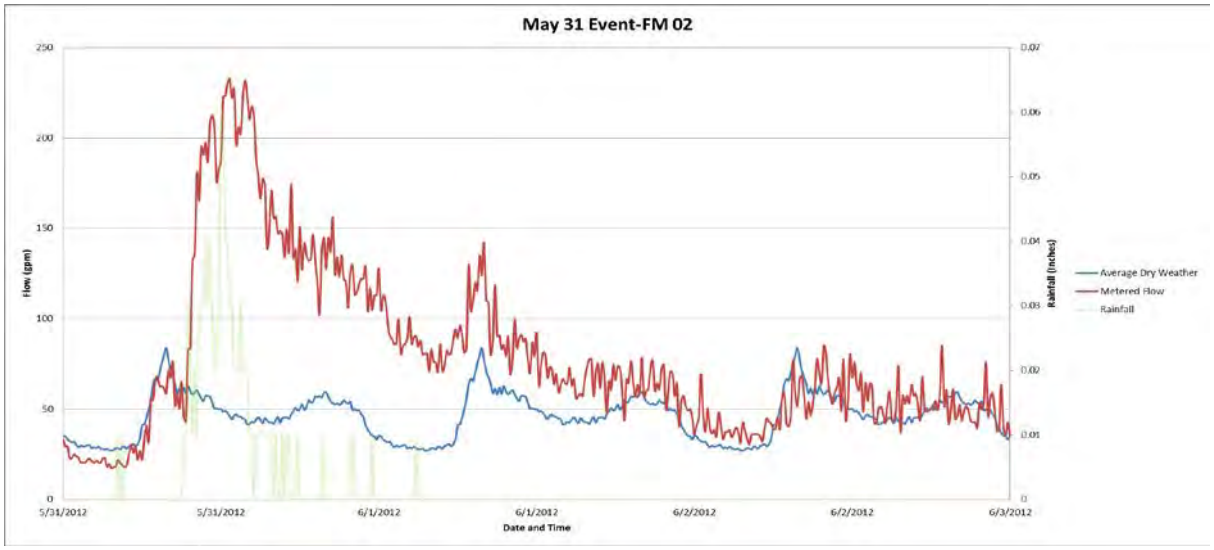
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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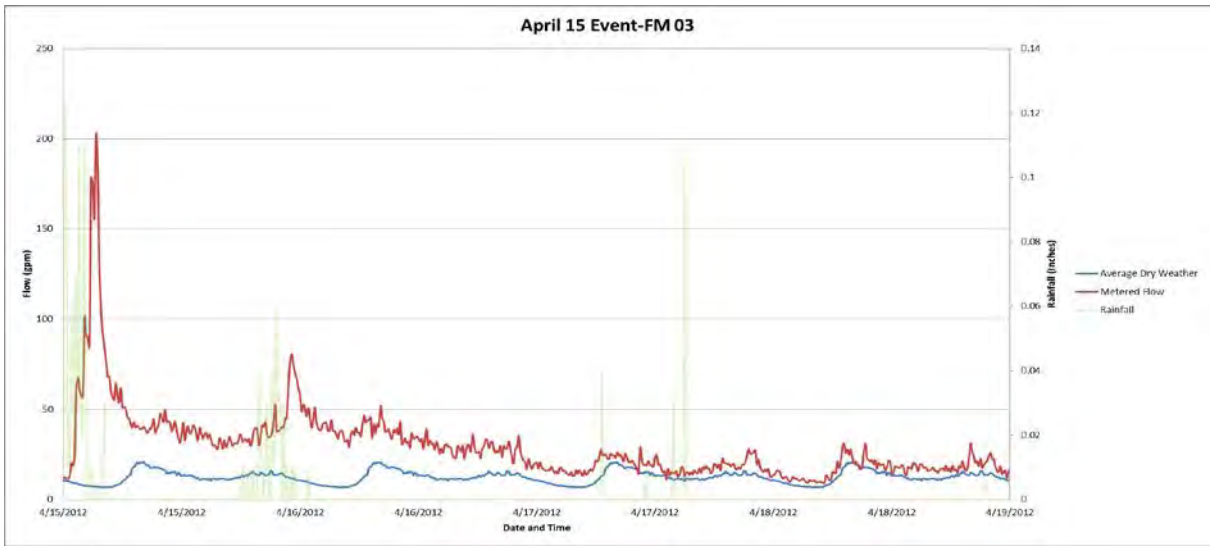
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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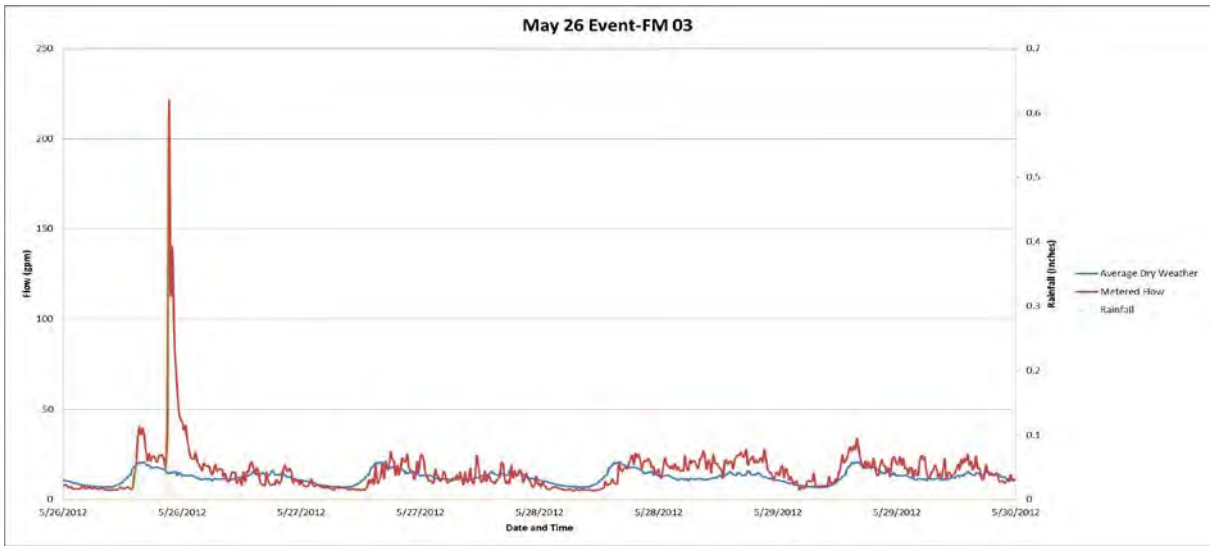
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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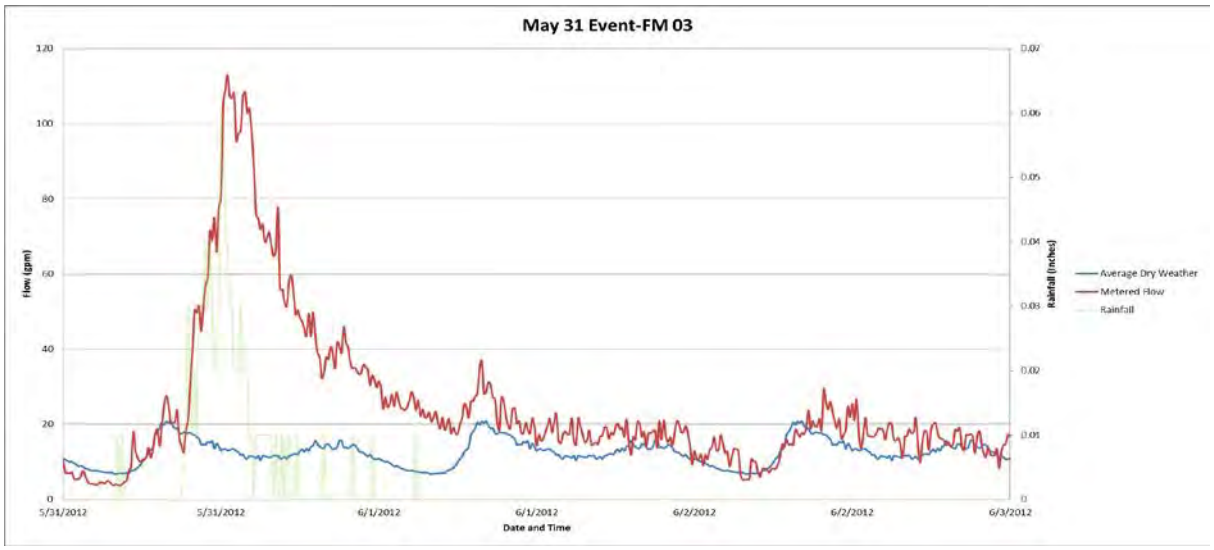
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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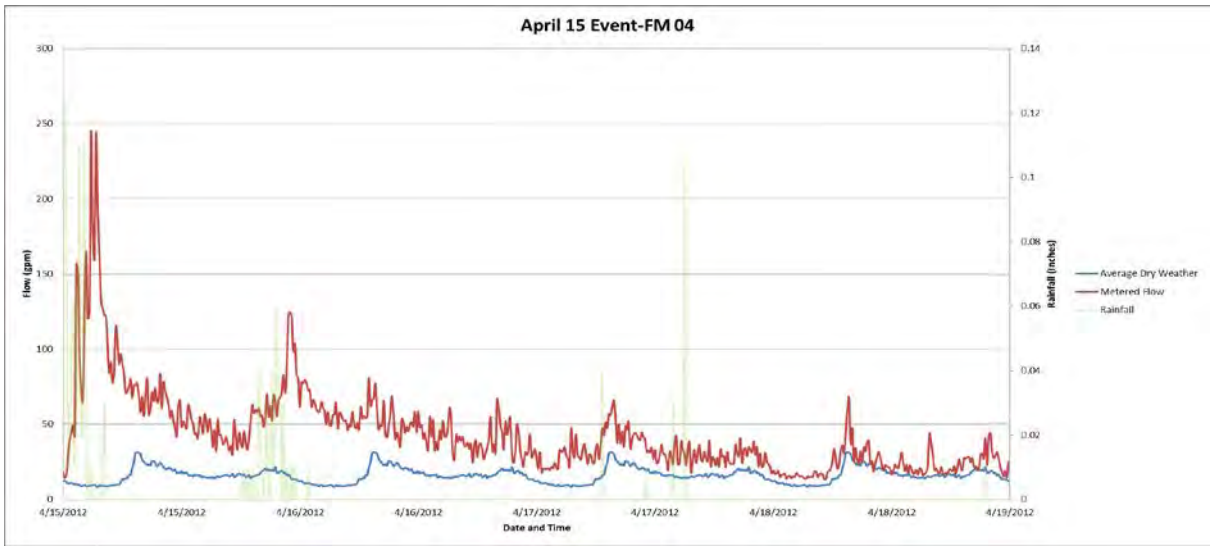
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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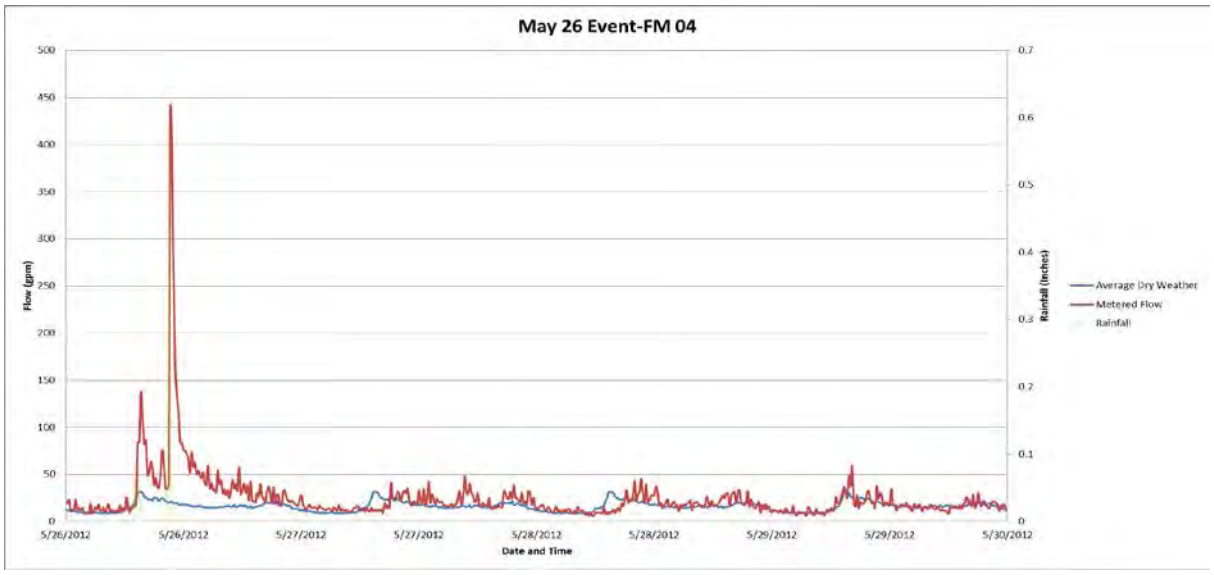
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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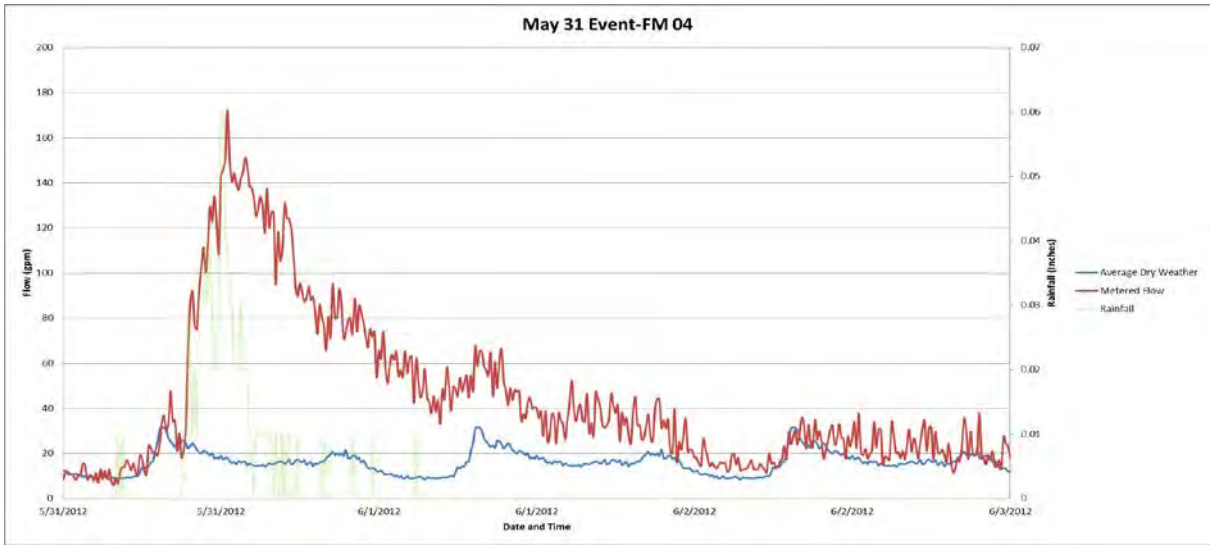
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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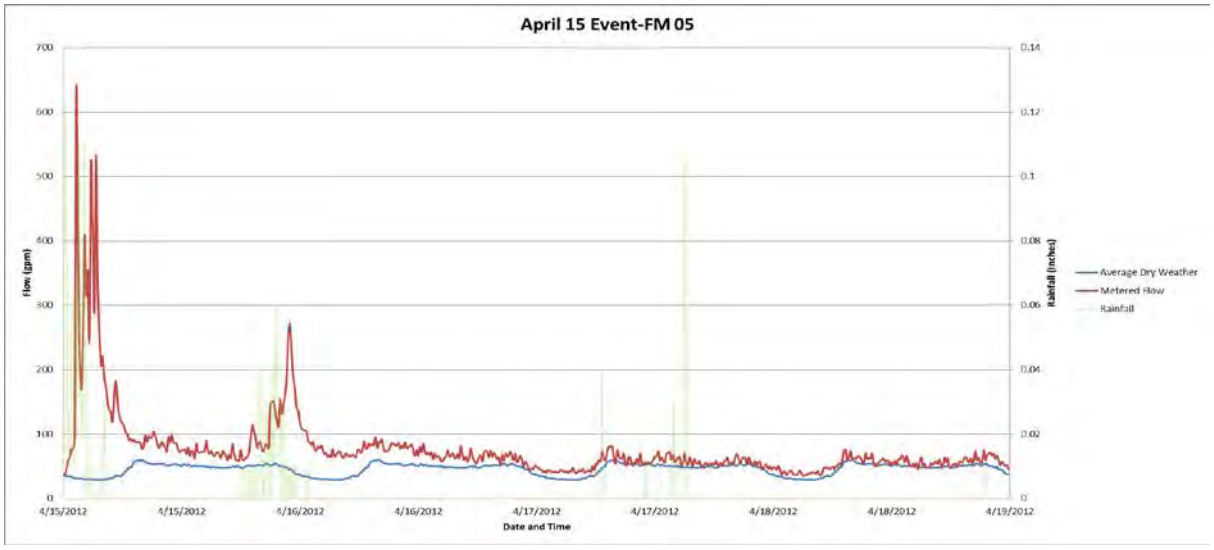
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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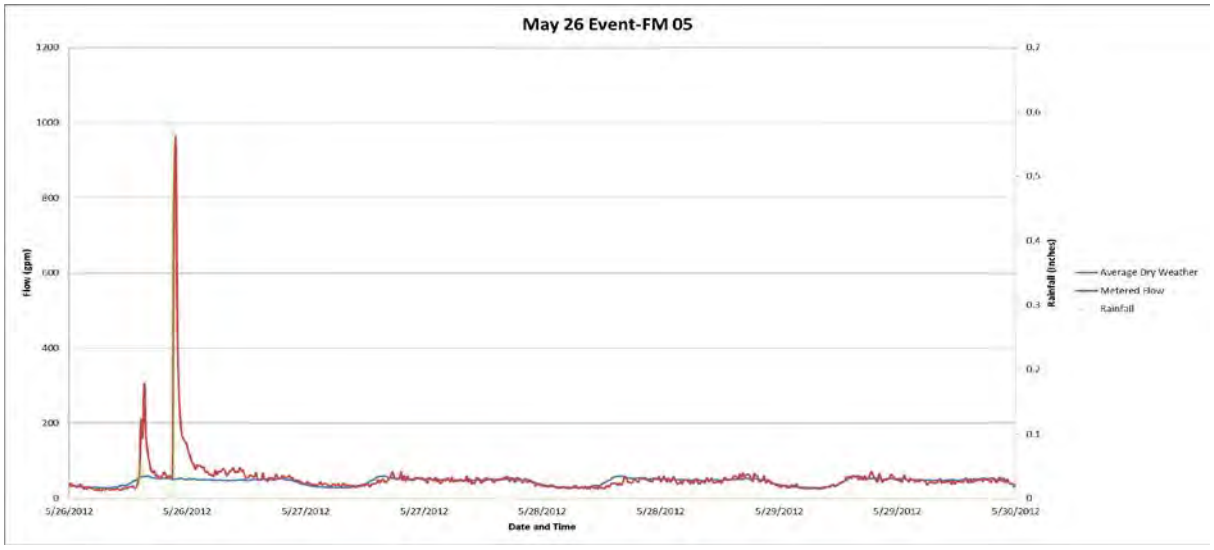
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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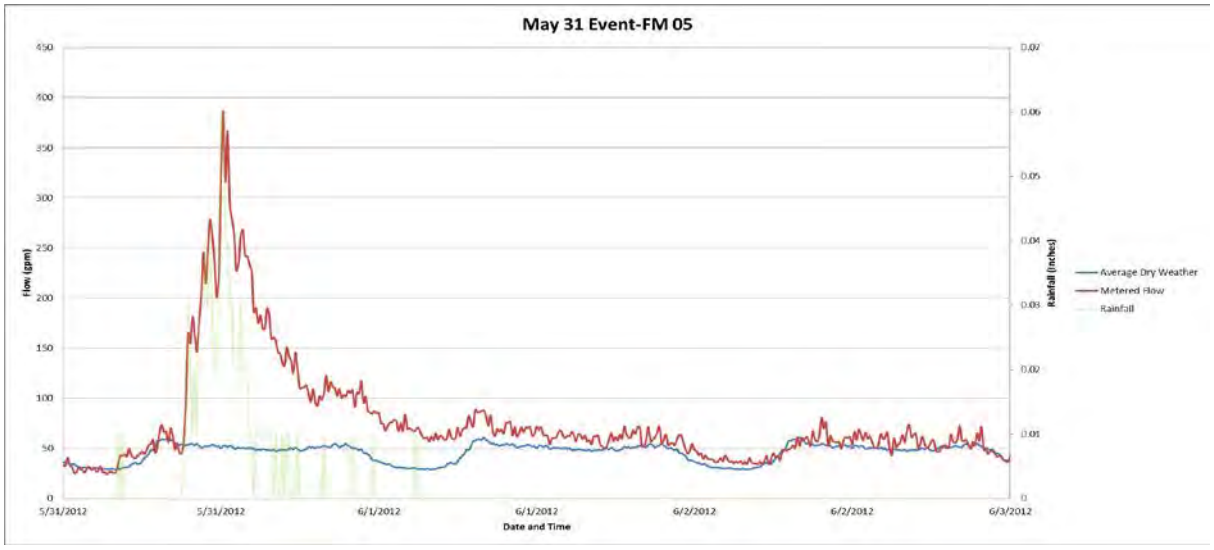
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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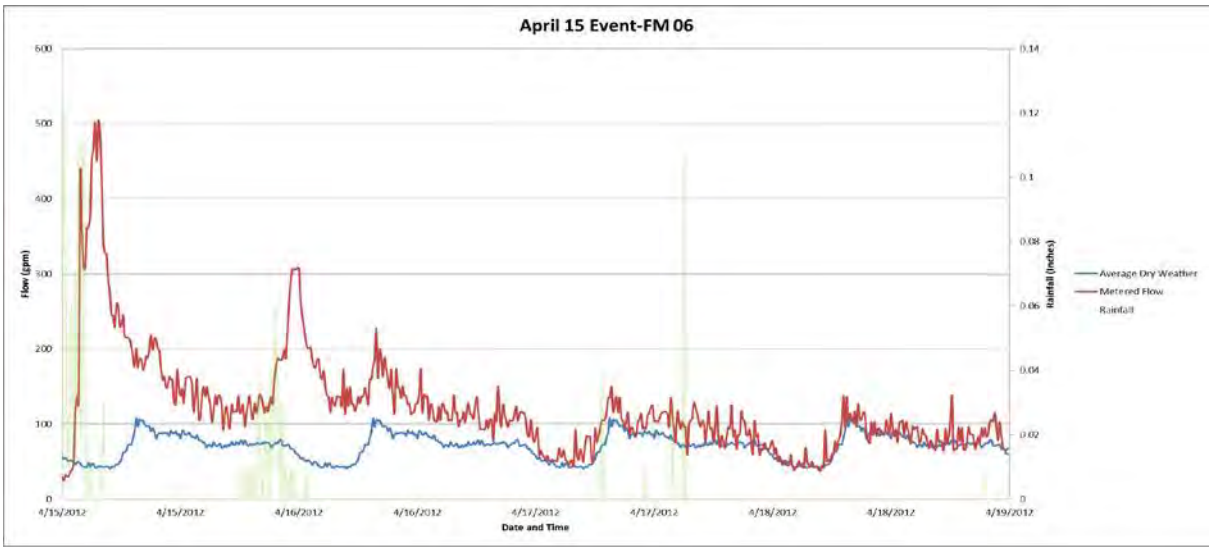
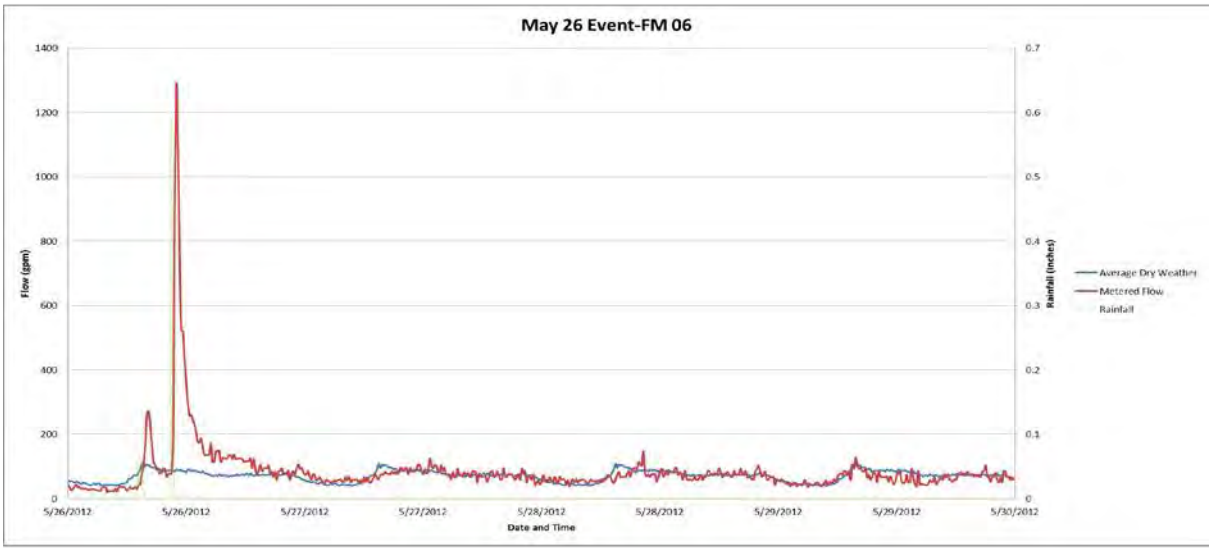
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


April 15 Event-FM 06
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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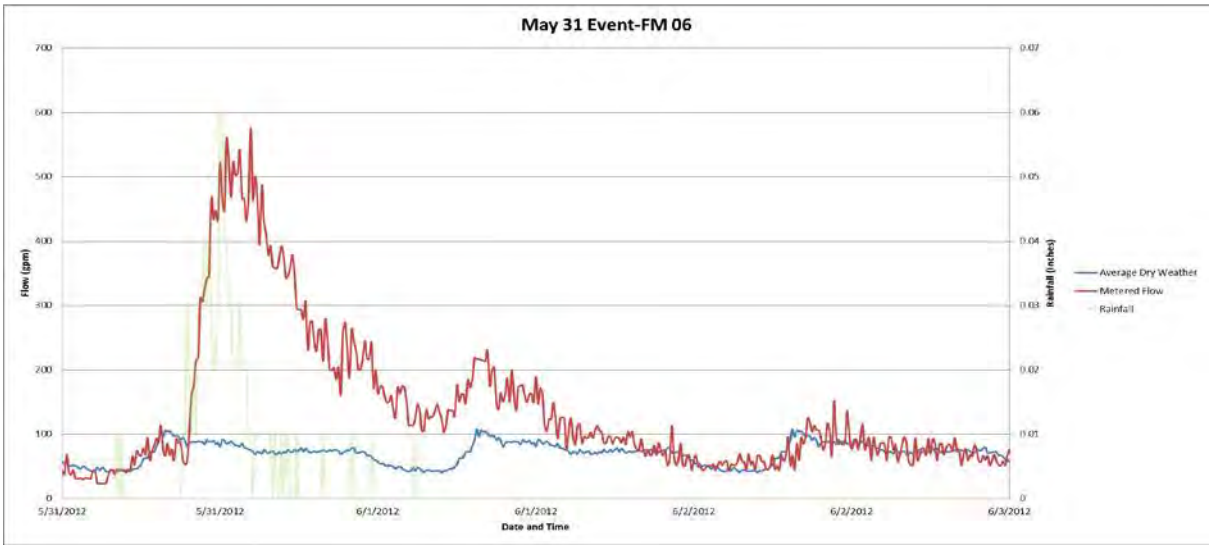
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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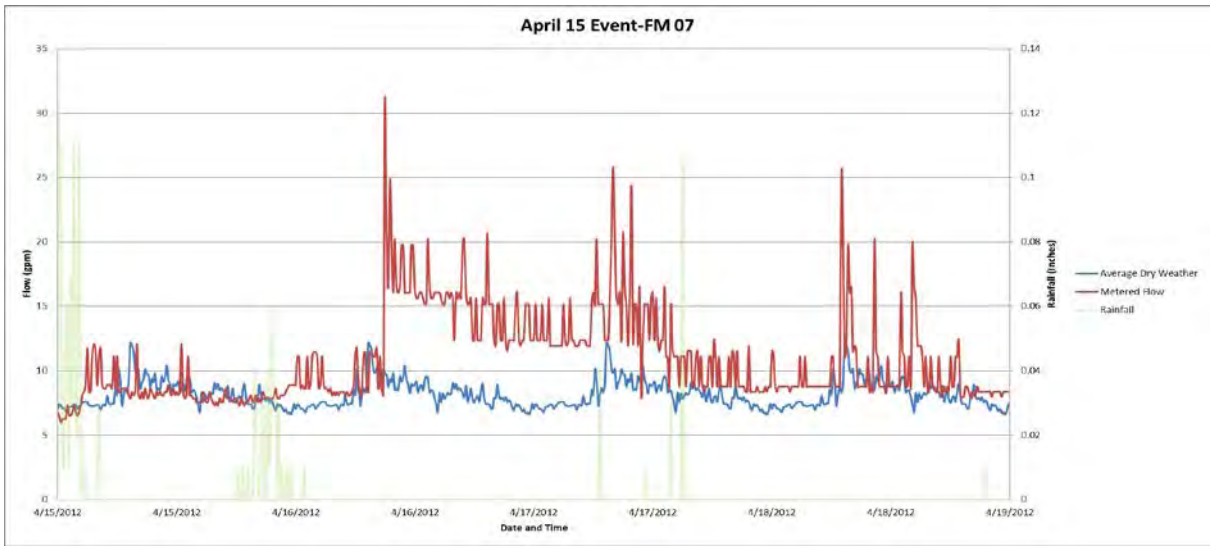
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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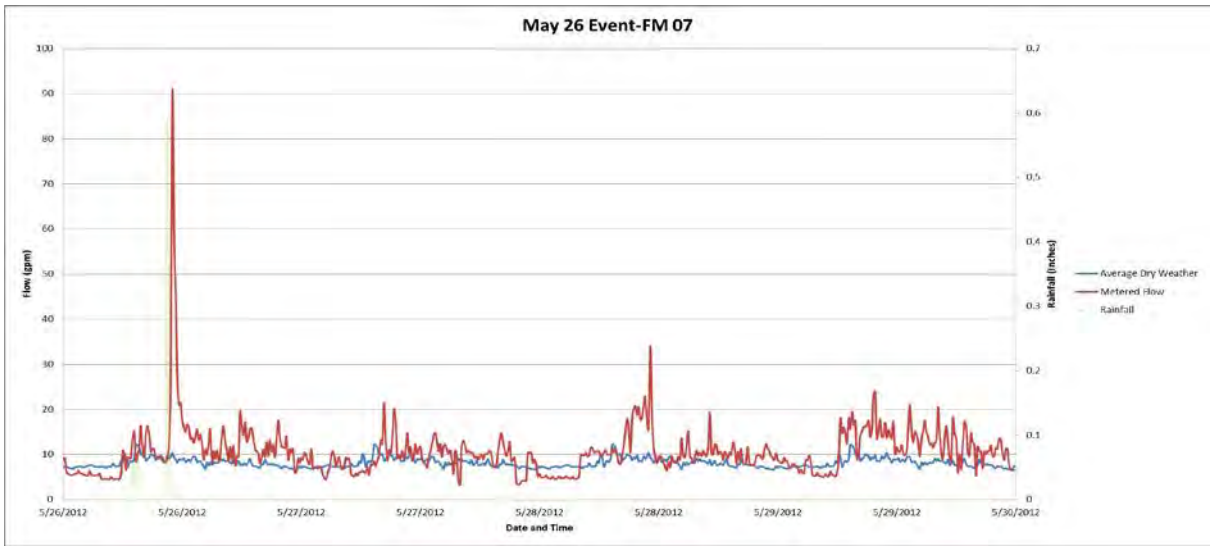
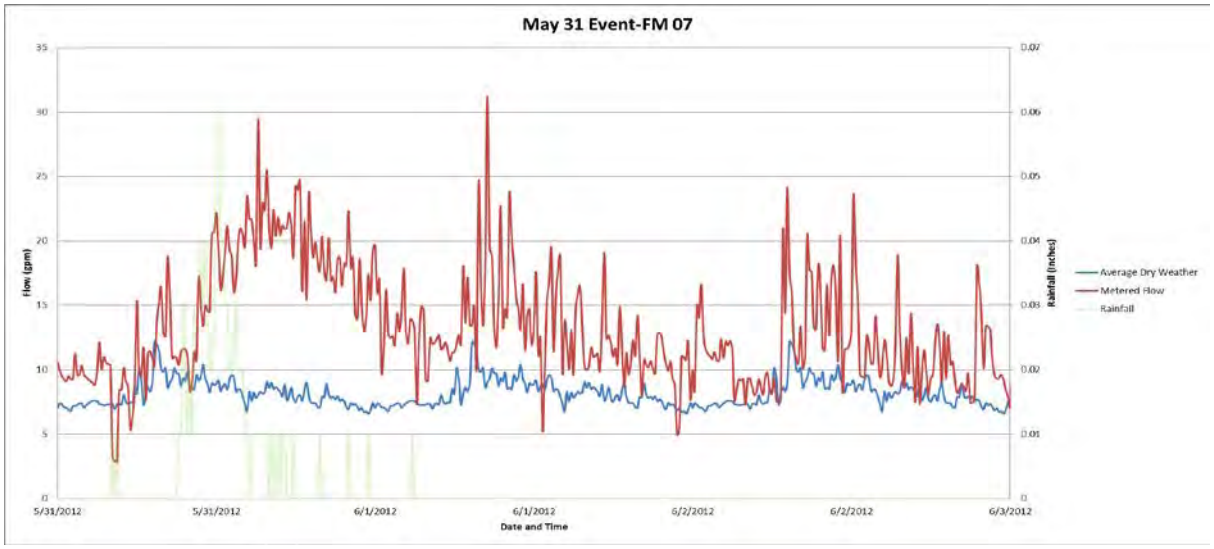
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


May 26 Event-FM 07
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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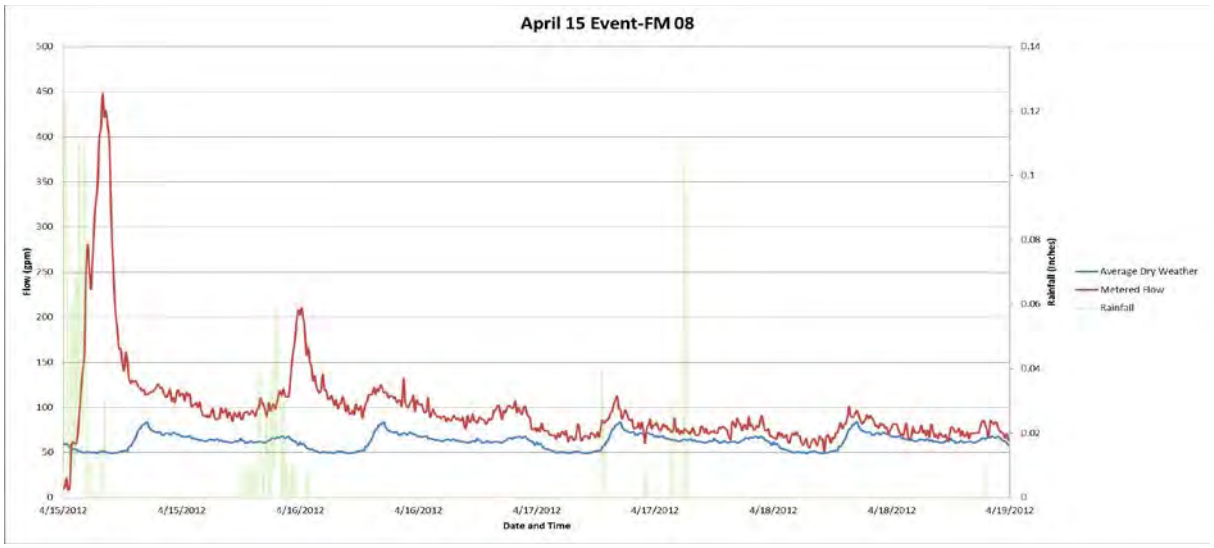
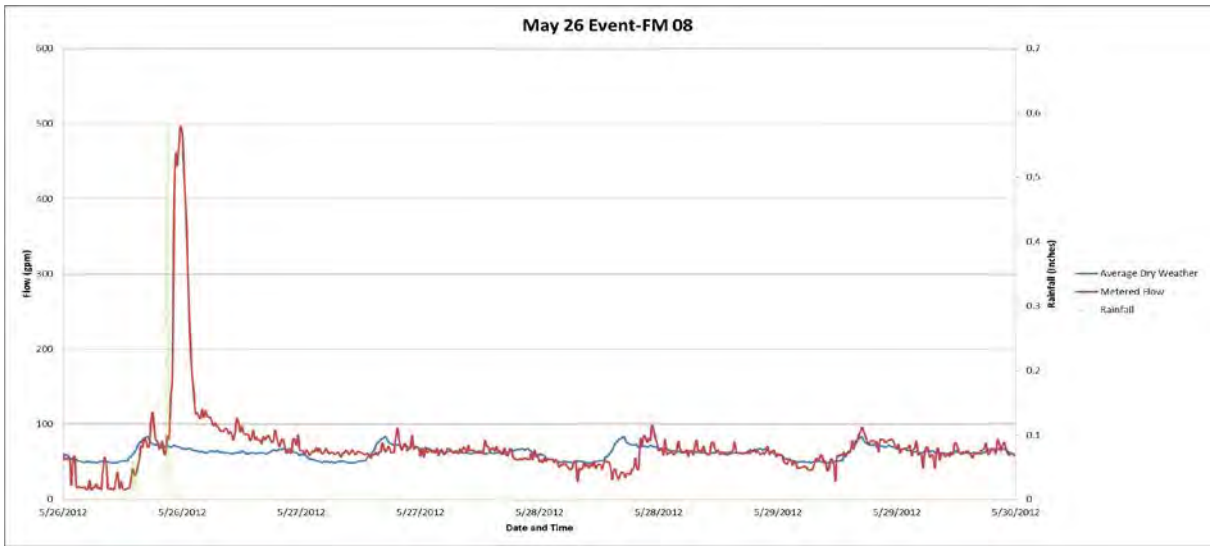
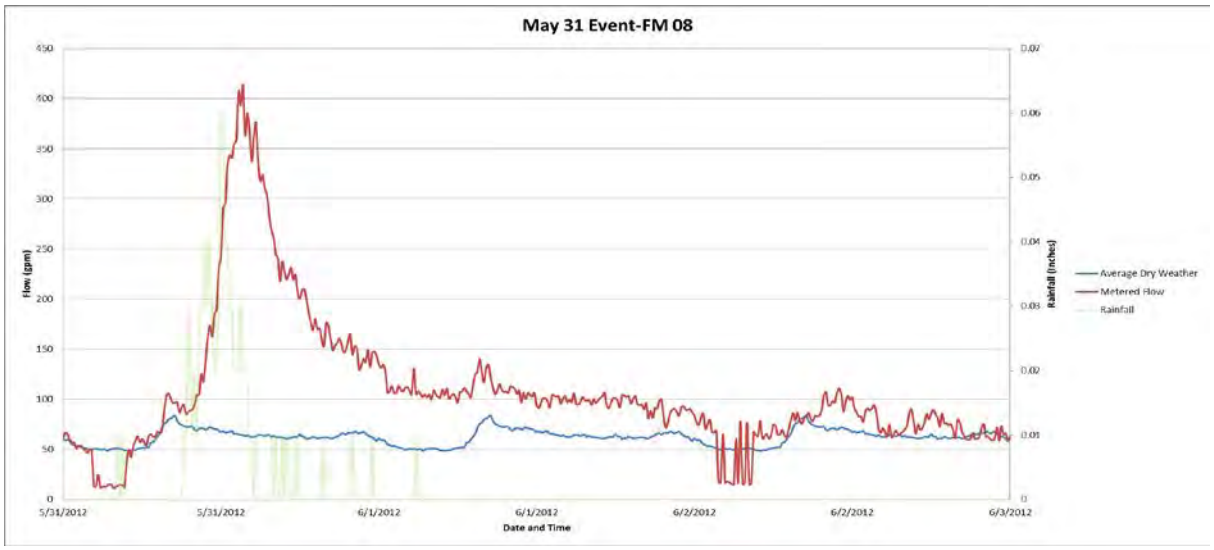
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


April 15 Event-FM 08
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


May 26 Event-FM 08
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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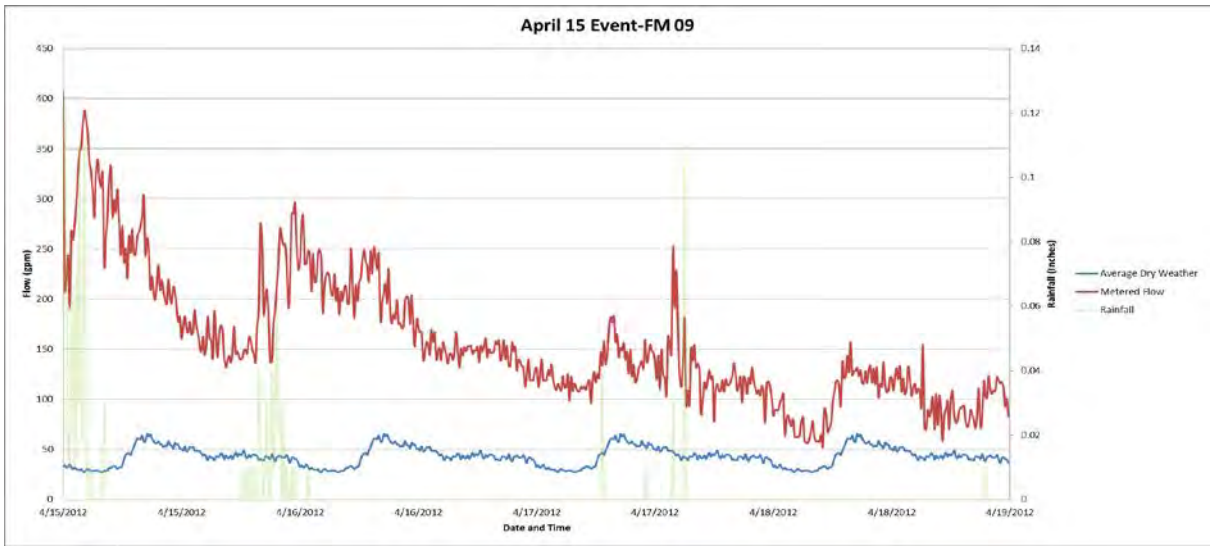
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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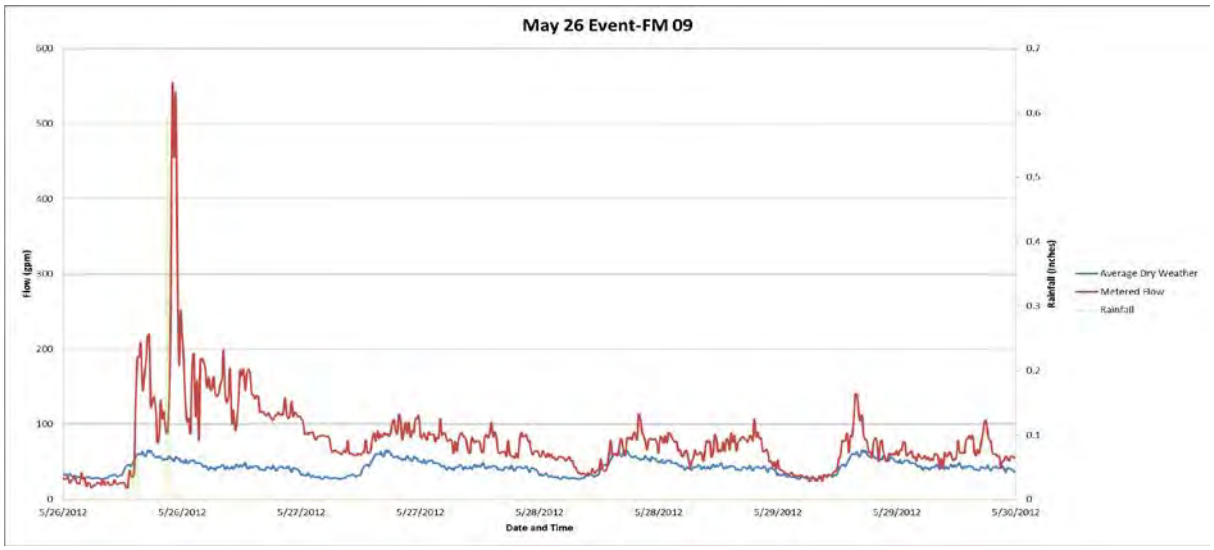
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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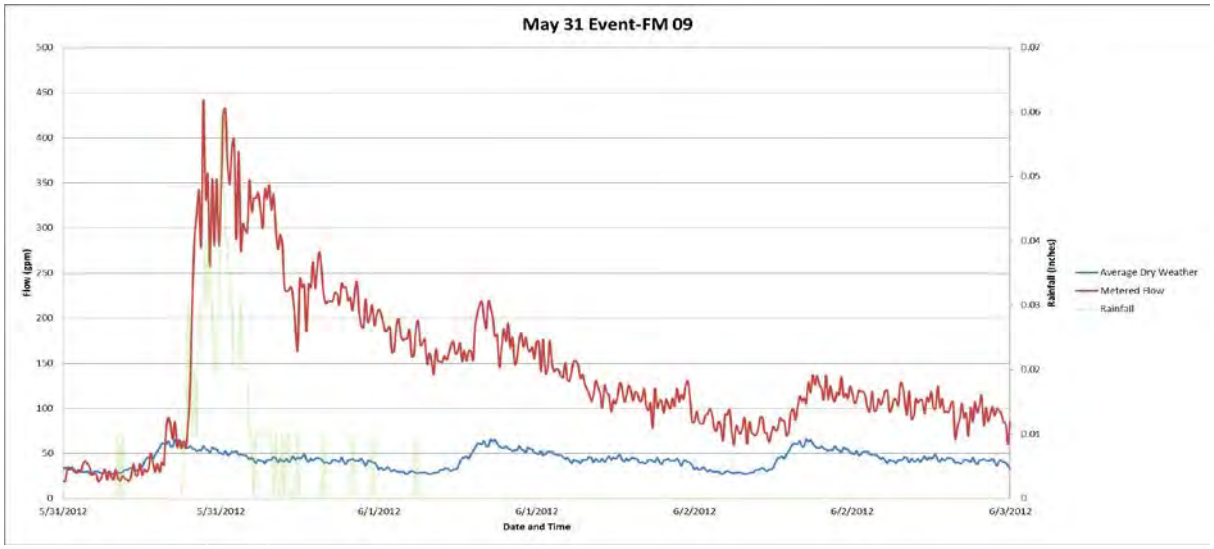
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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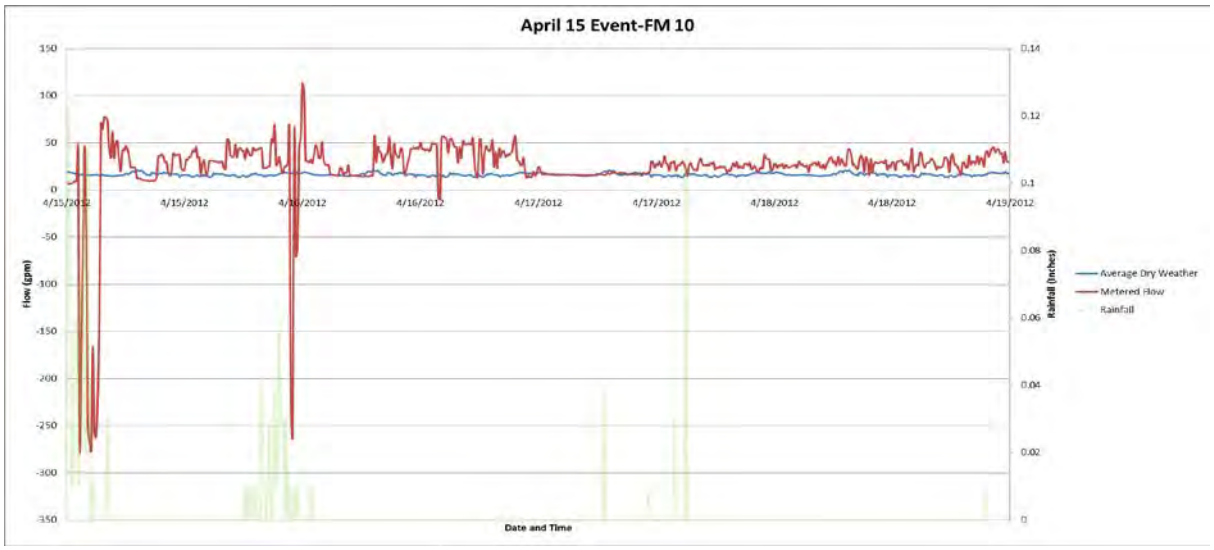
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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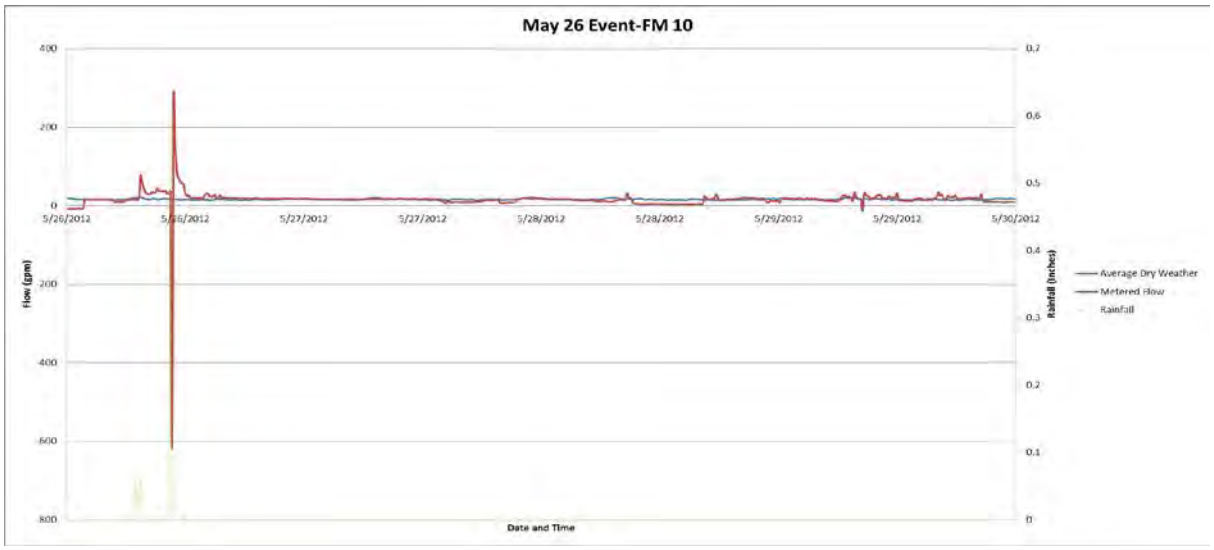
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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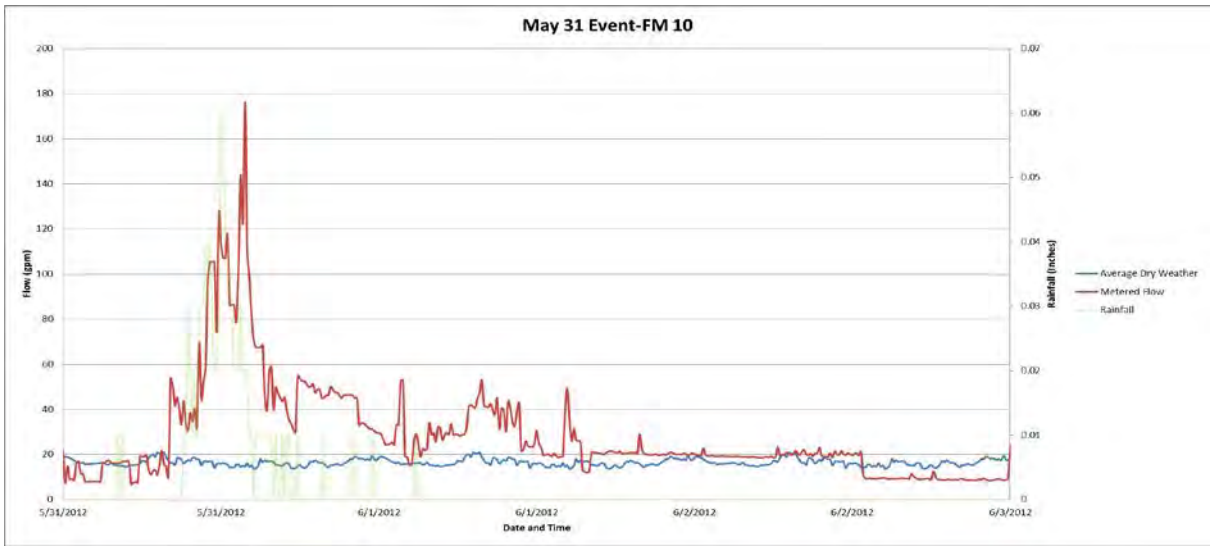
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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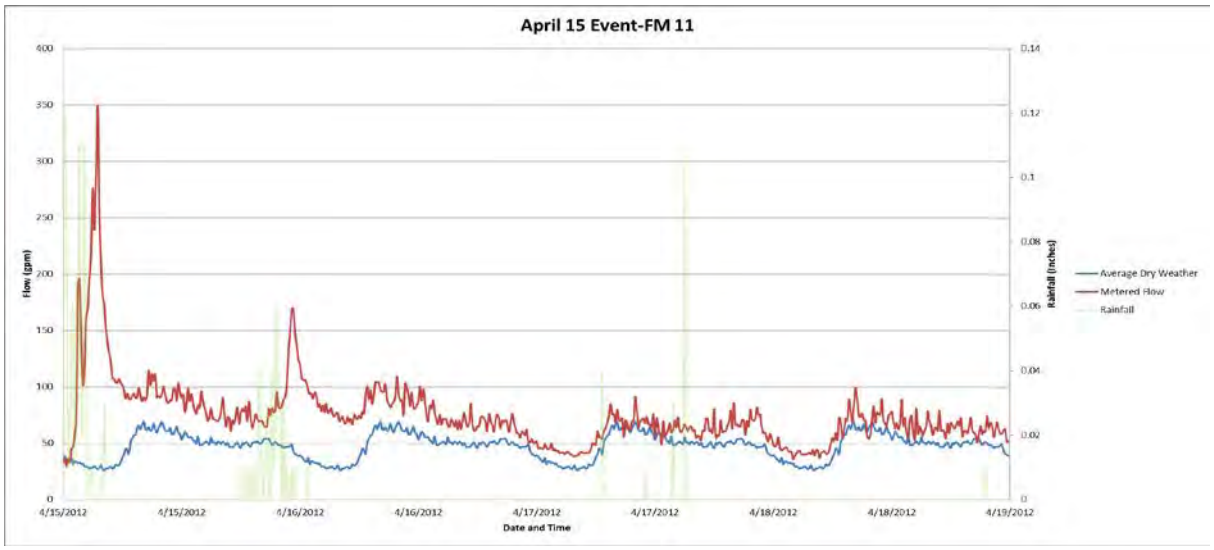
Flow (gpm)
Rainfall (Inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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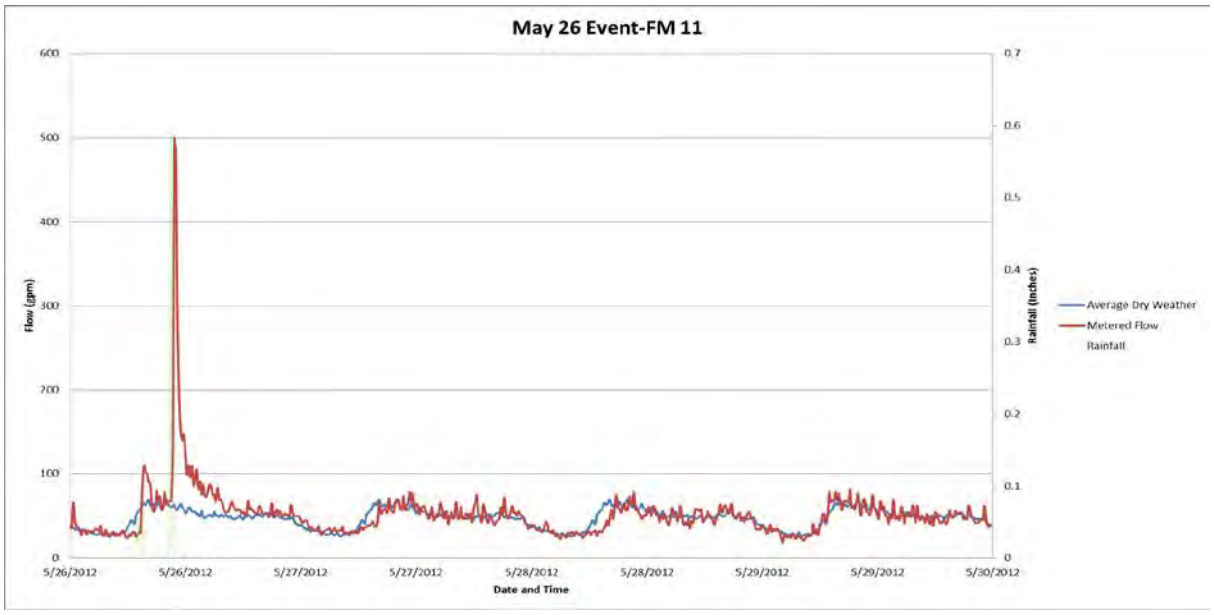
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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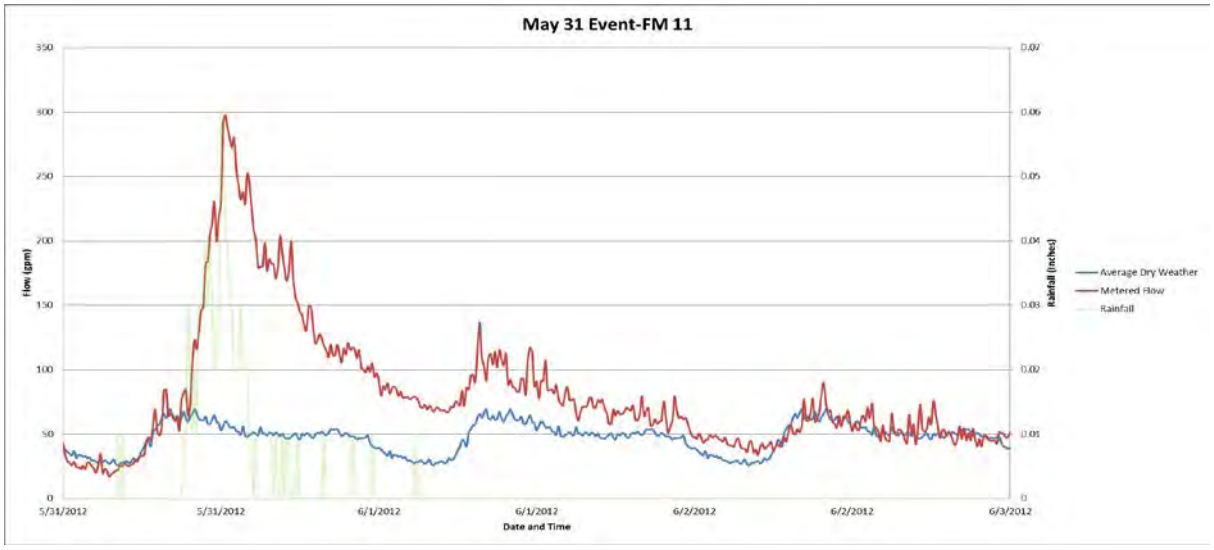
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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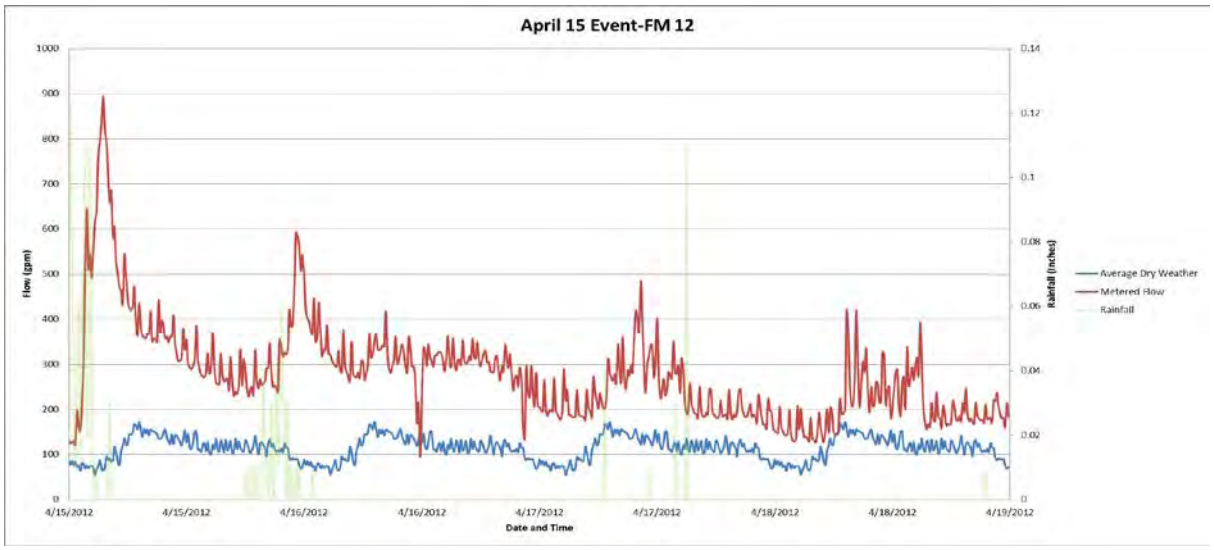
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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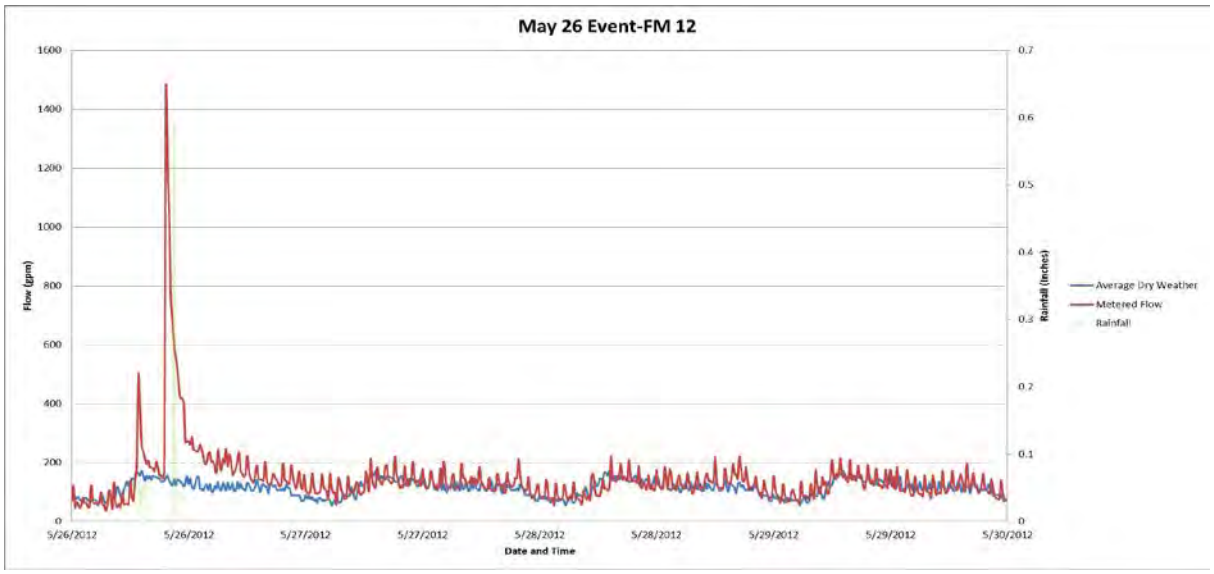
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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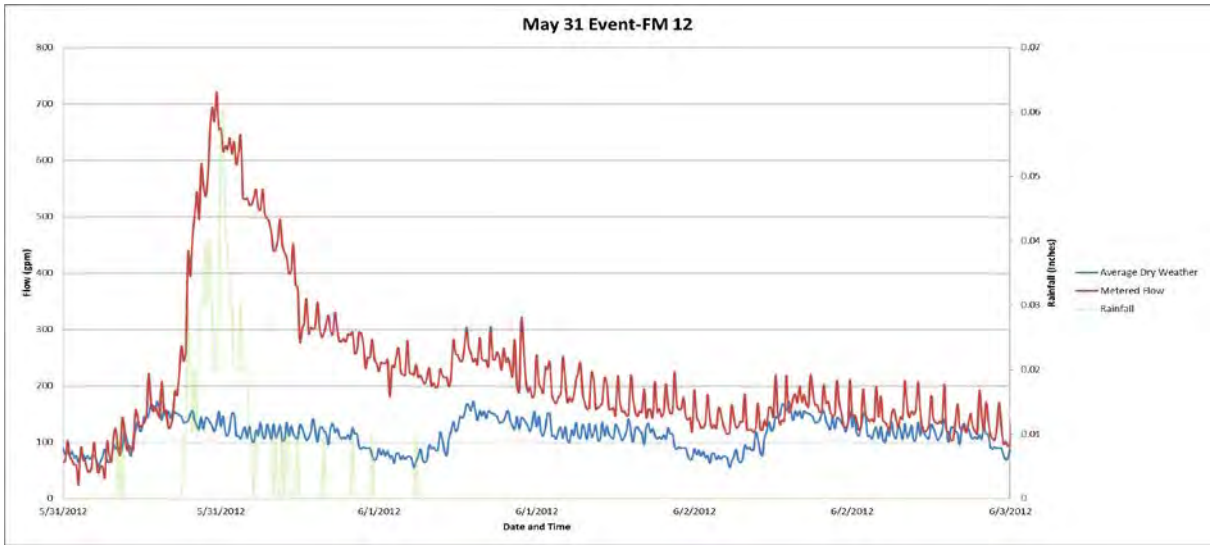
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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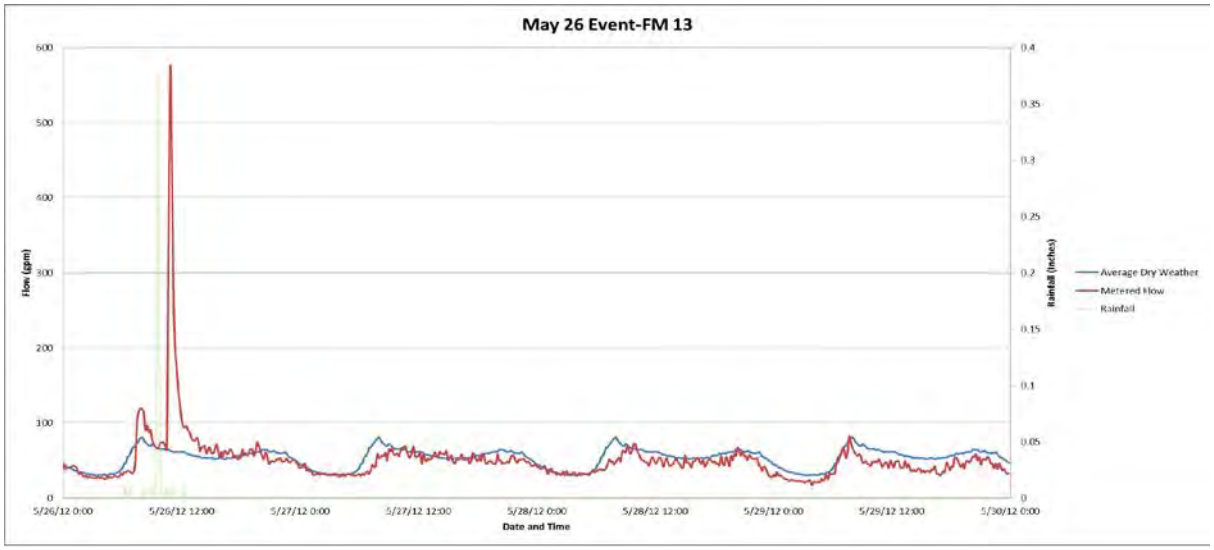
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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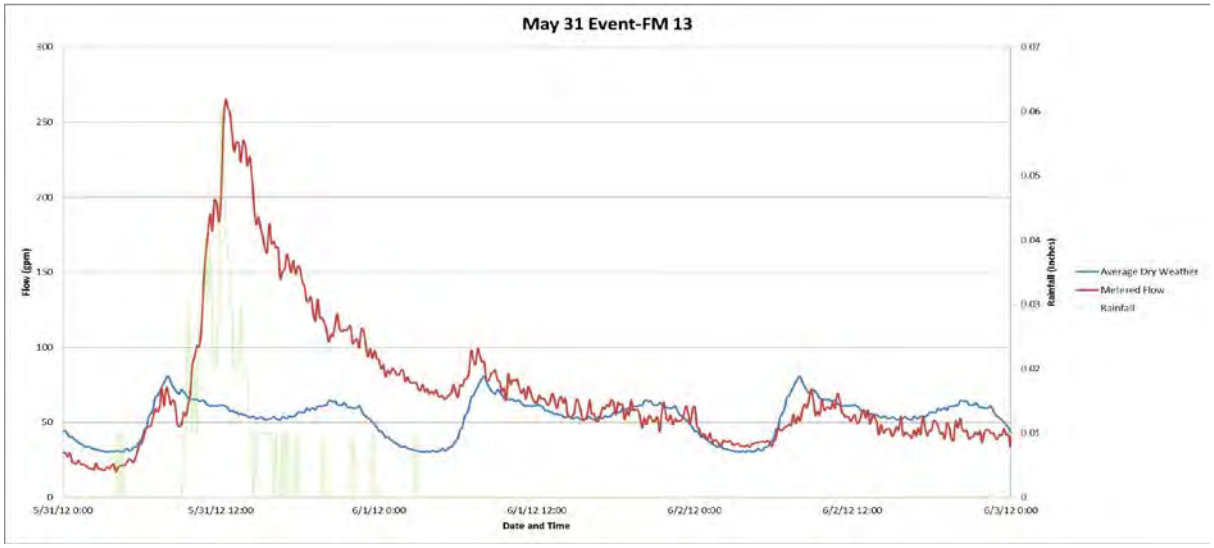
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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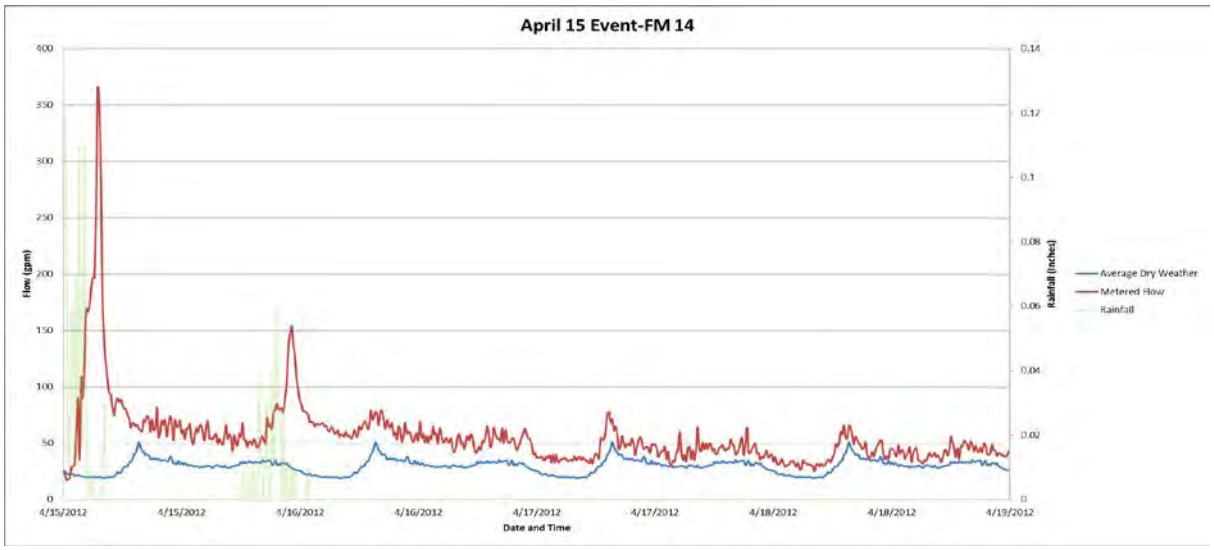
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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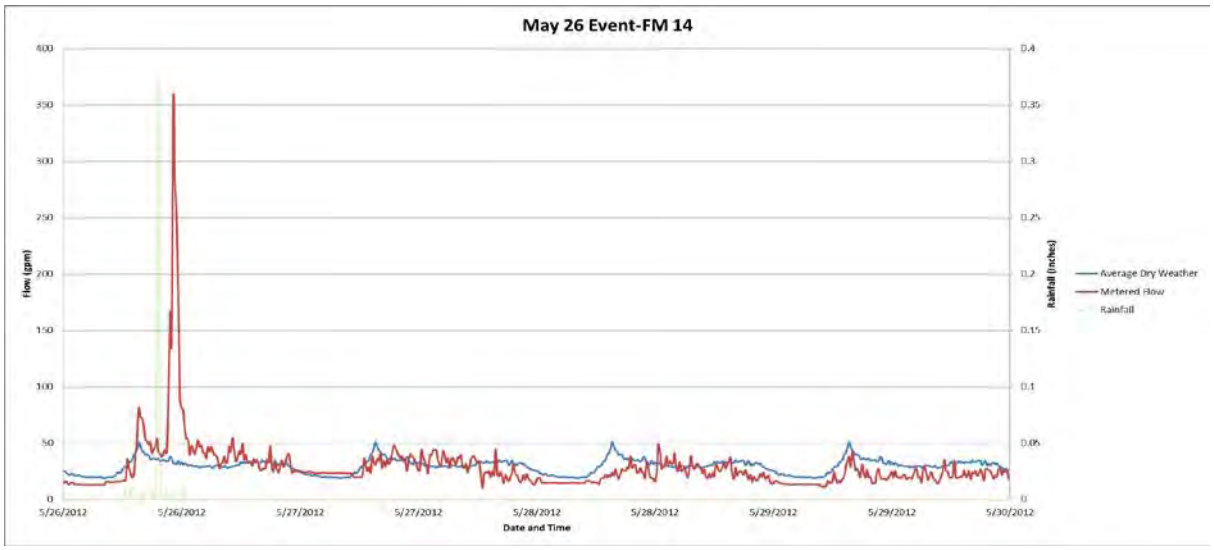
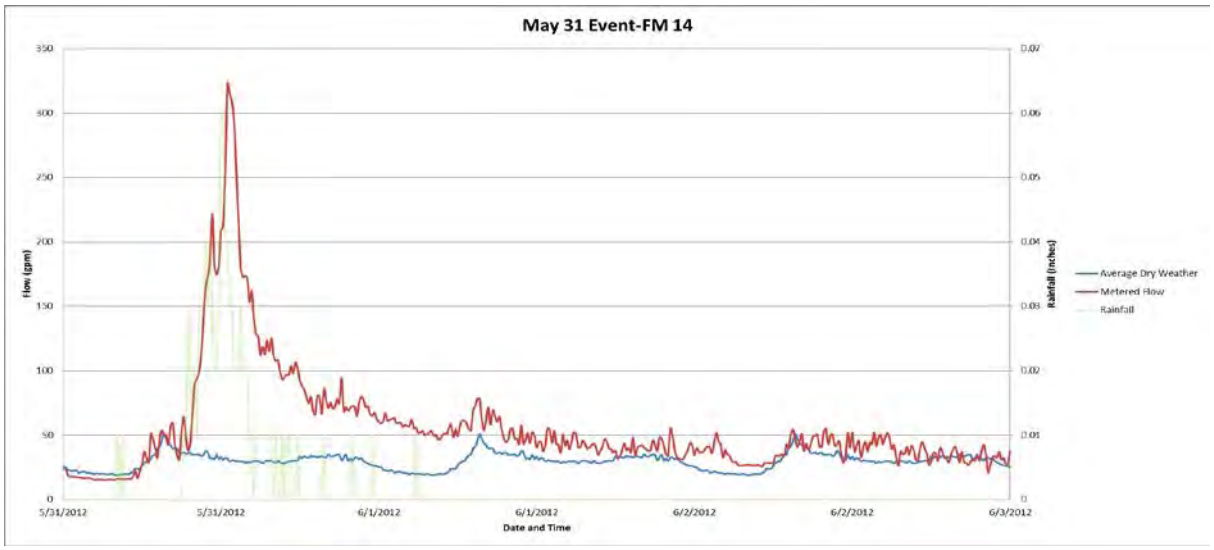
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


May 26 Event-FM 14
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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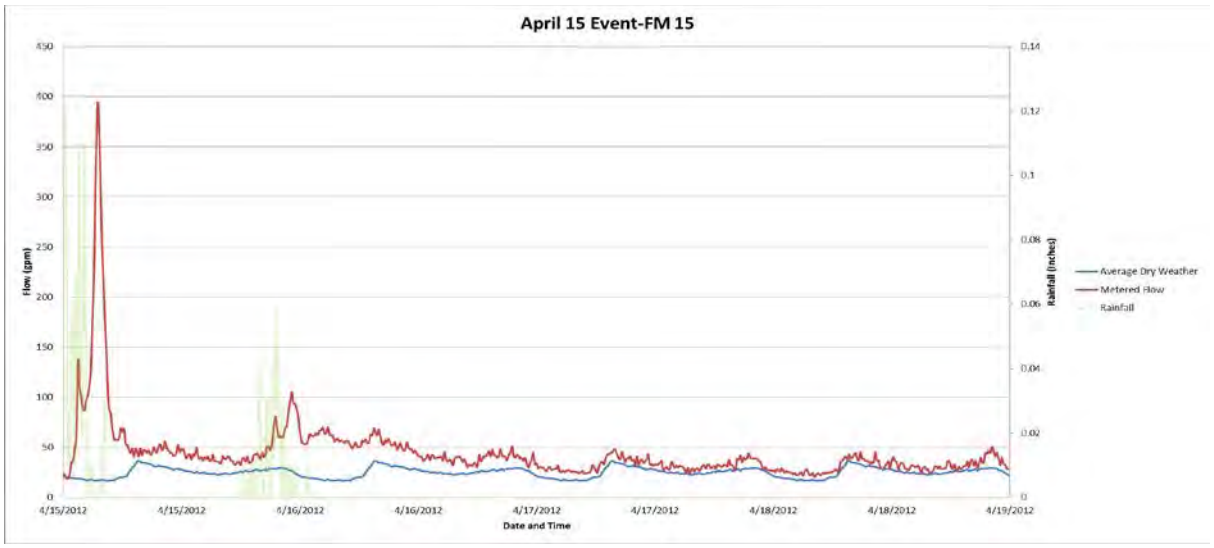
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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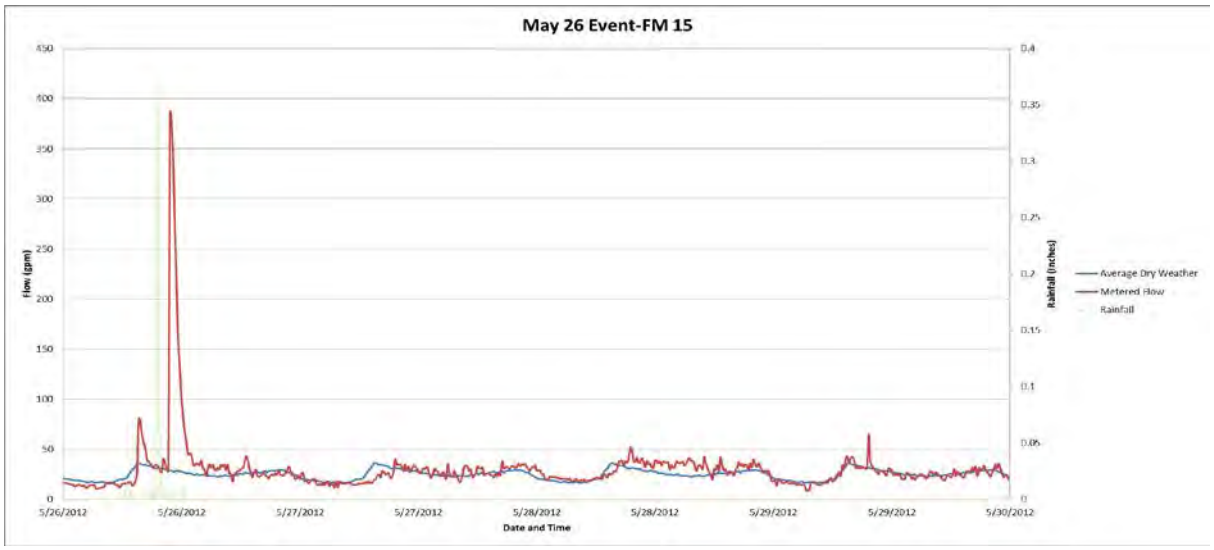
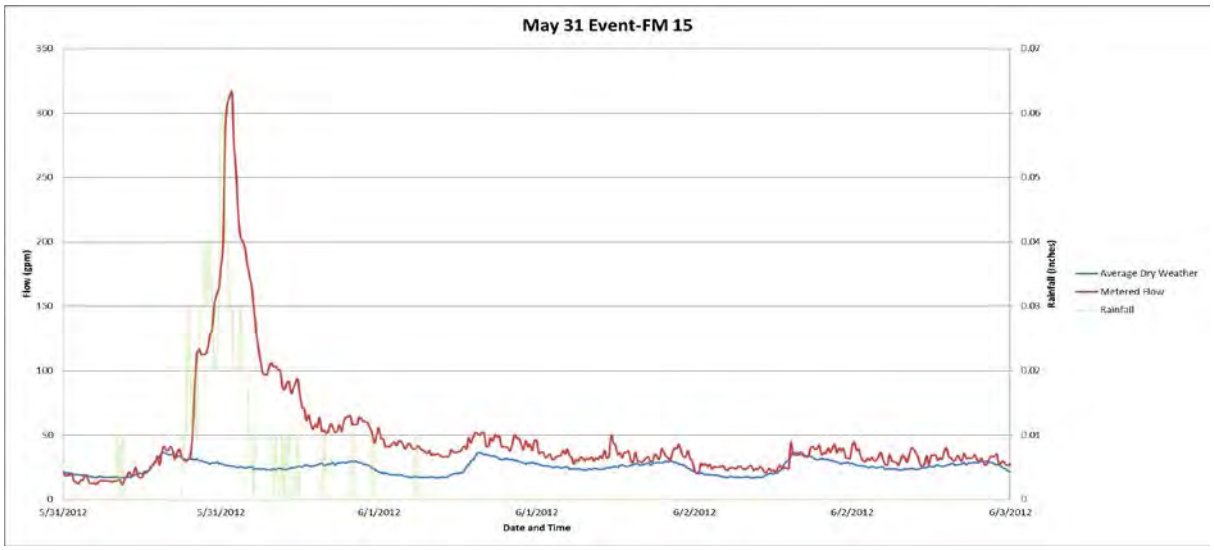
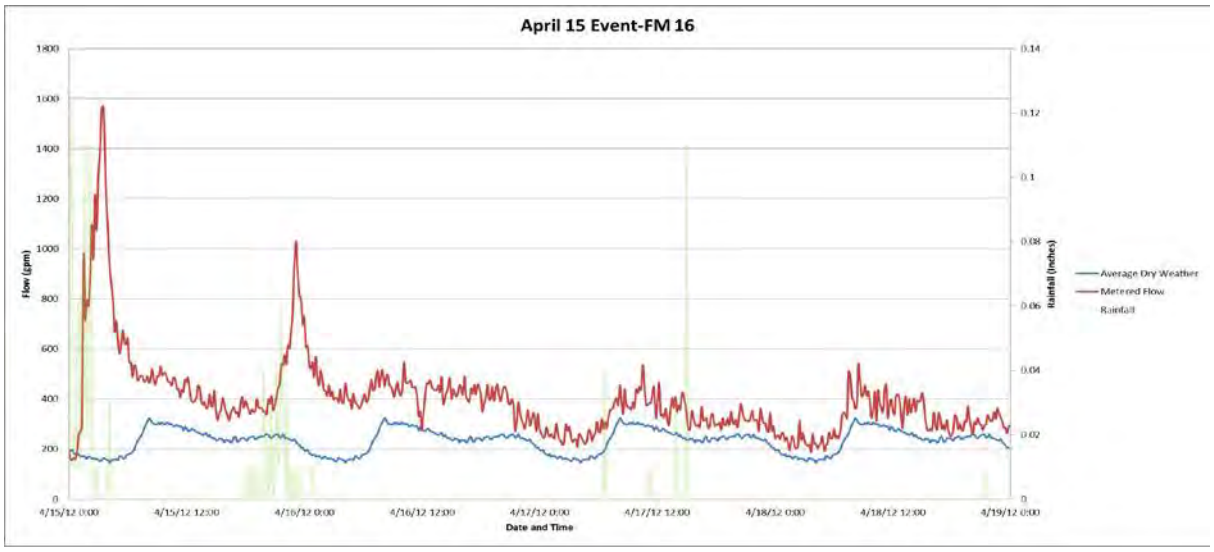
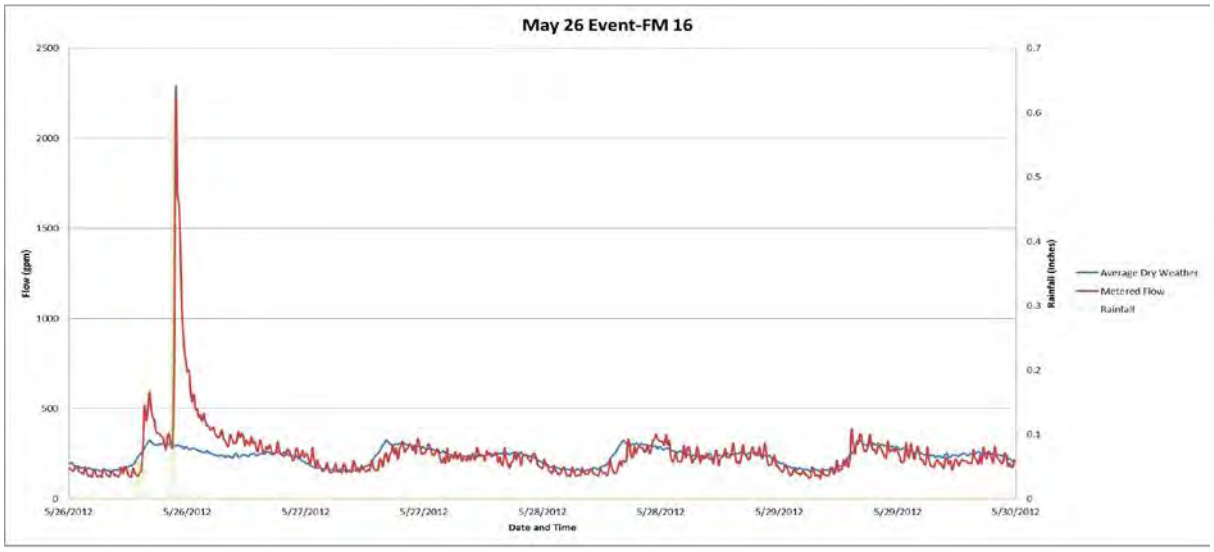
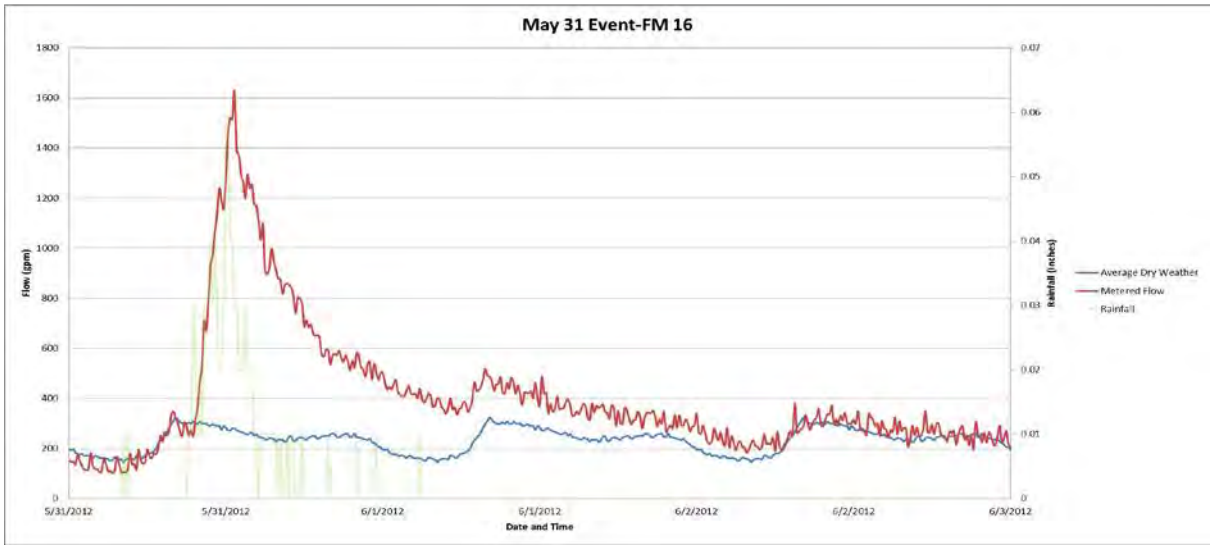
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

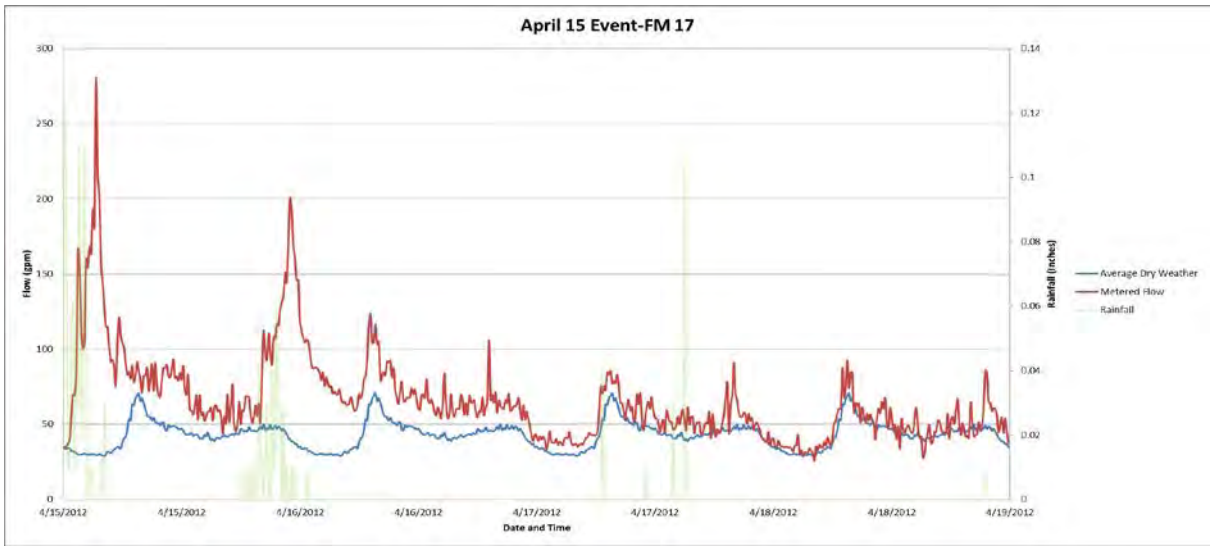

May 26 Event-FM 15
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

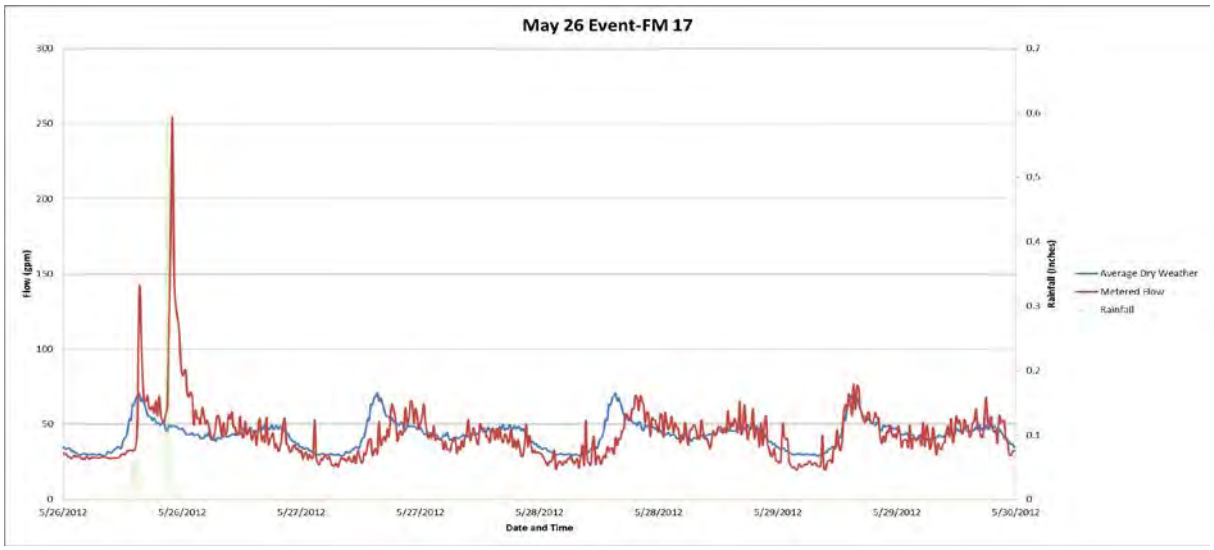

May 31 Event-FM 15
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

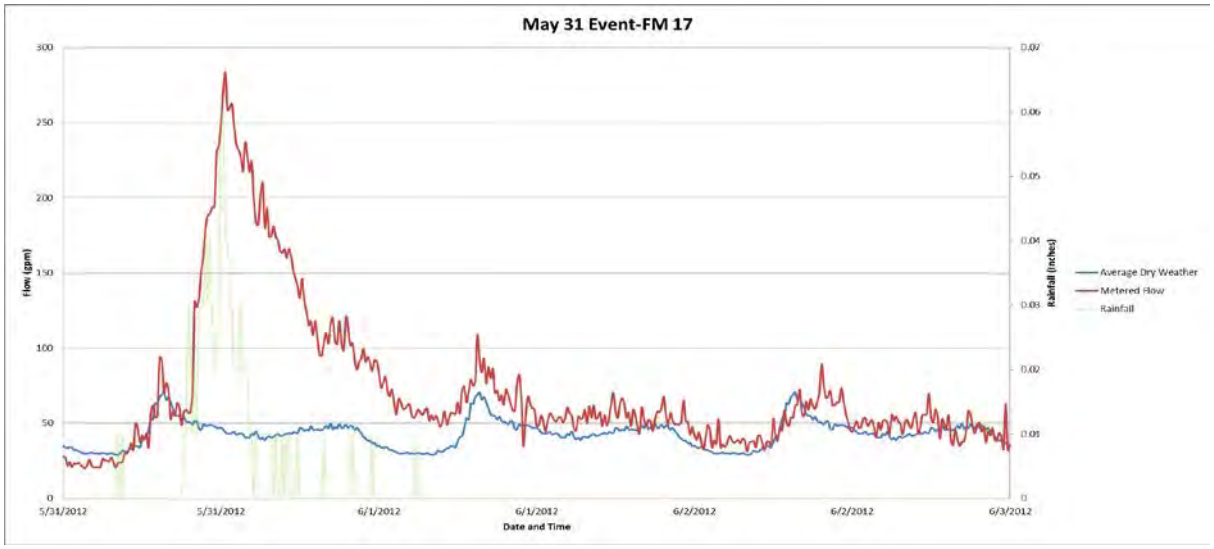

April 15 Event-FM 16
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

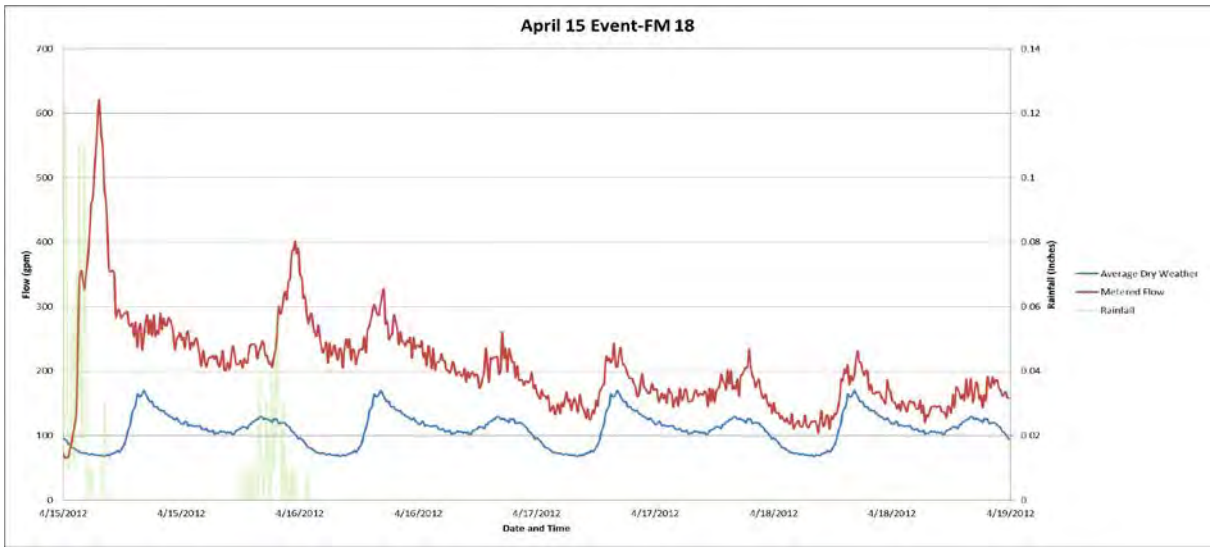

May 26 Event-FM 16
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


May 31 Event-FM 16
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


April 15 Event-FM 17
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


May 26 Event-FM 17
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


May 31 Event-FM 17
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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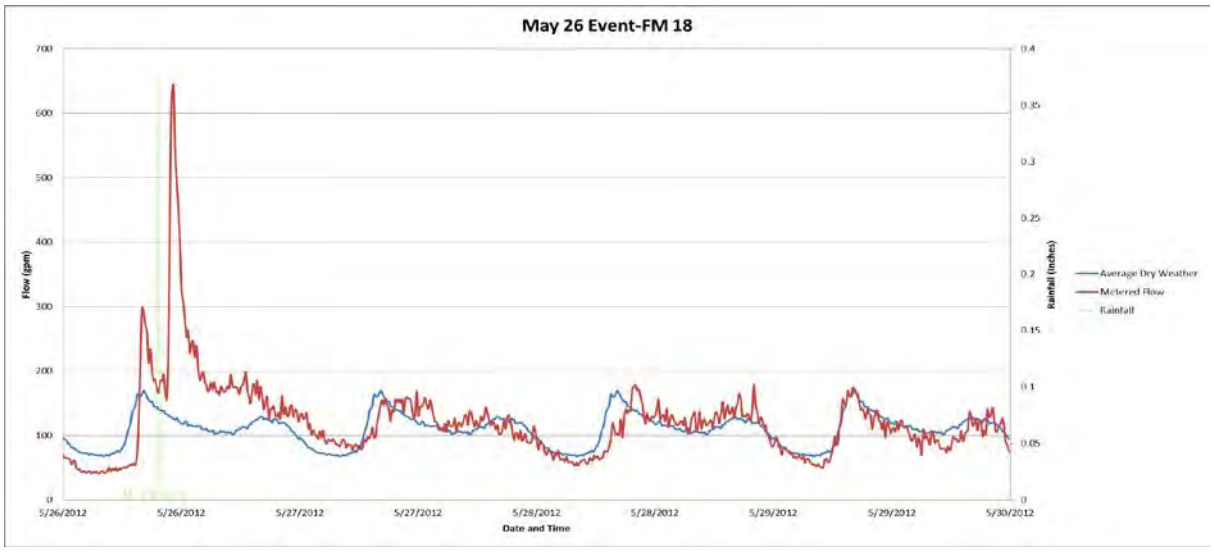
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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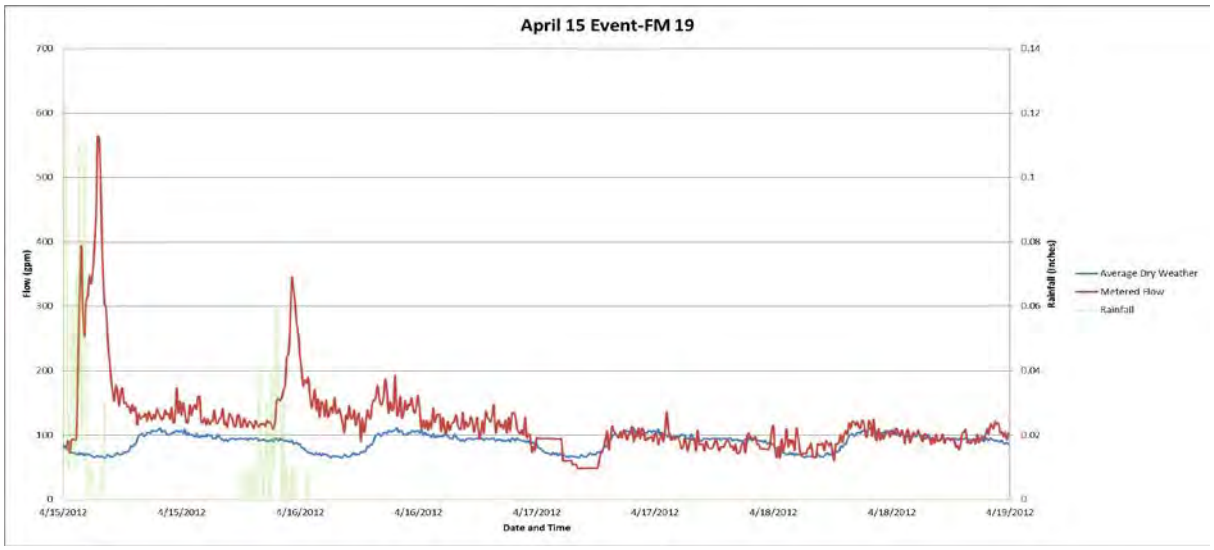
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

May 31 Event-FM 18
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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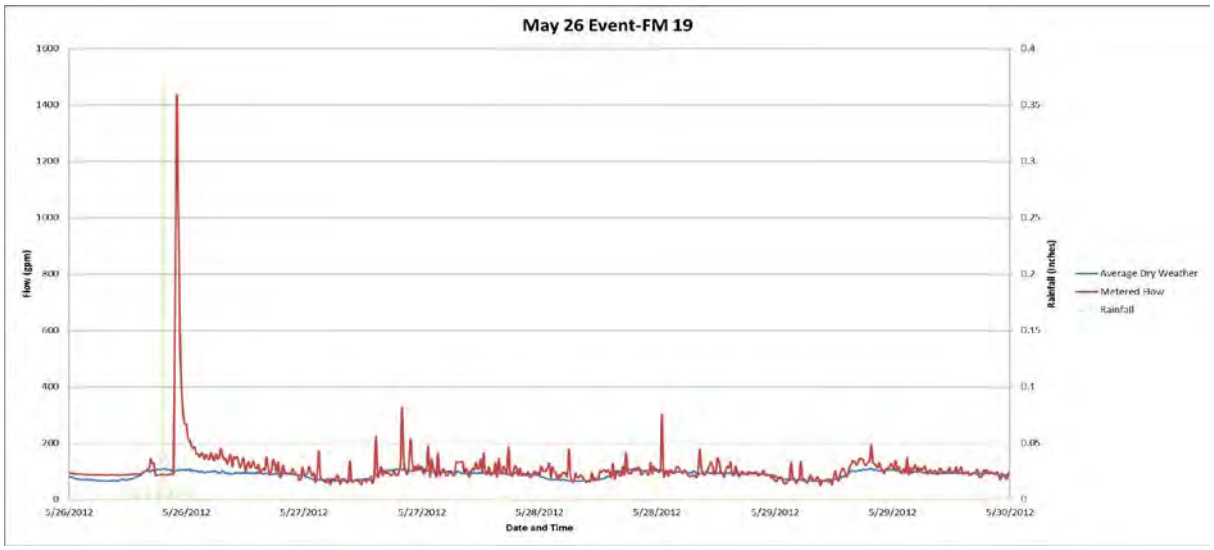
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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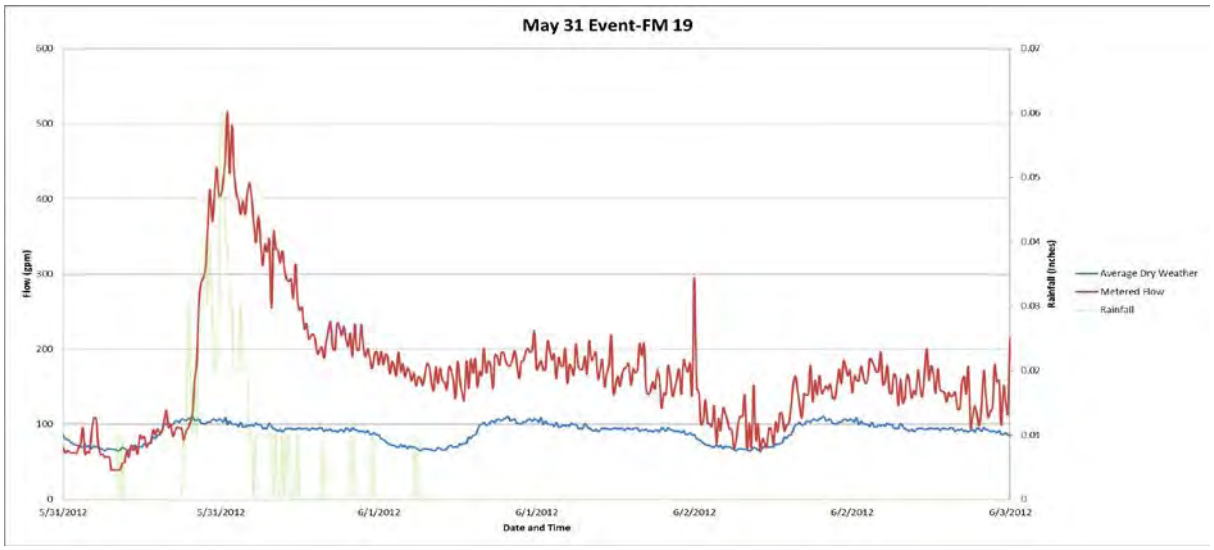
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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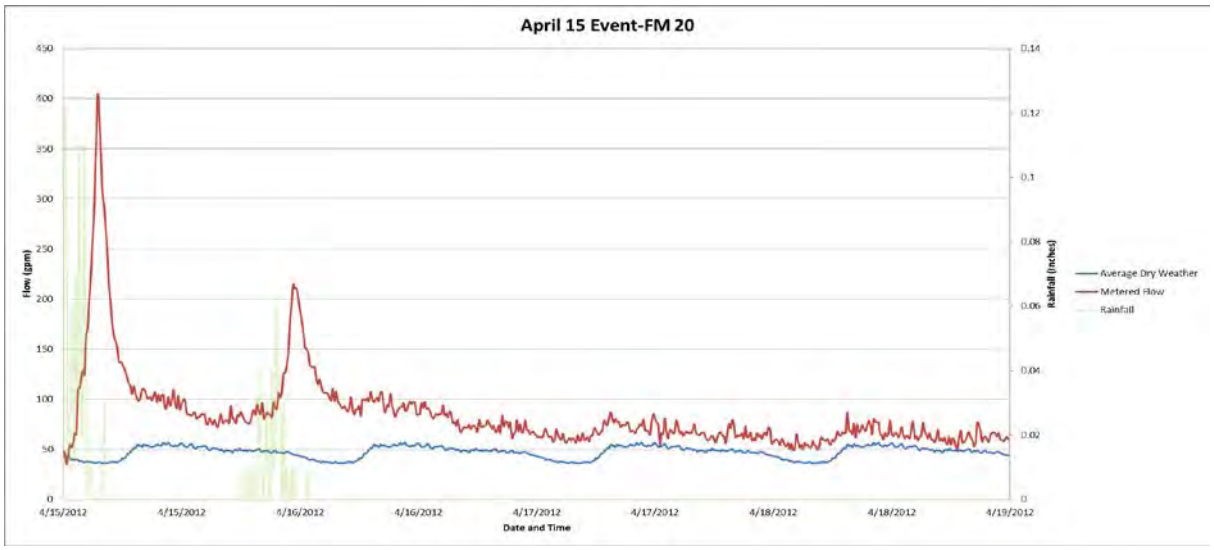
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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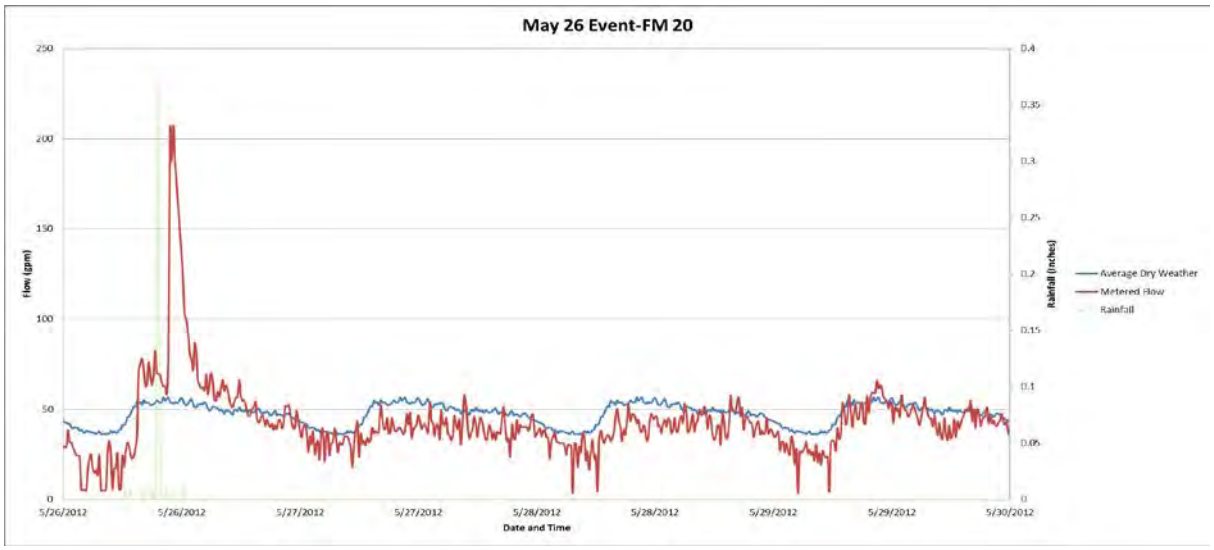
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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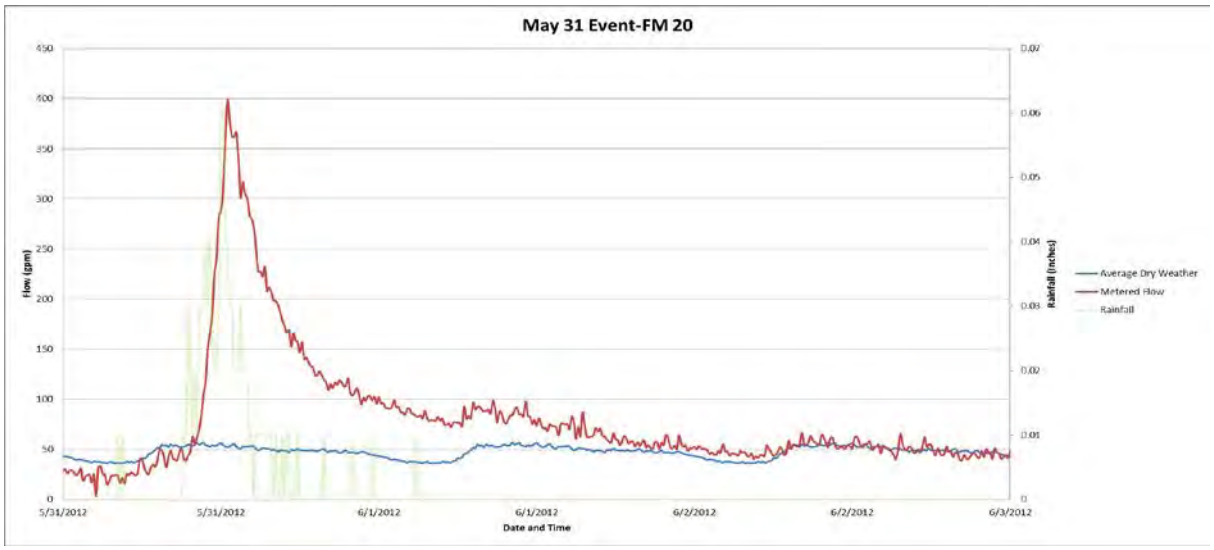
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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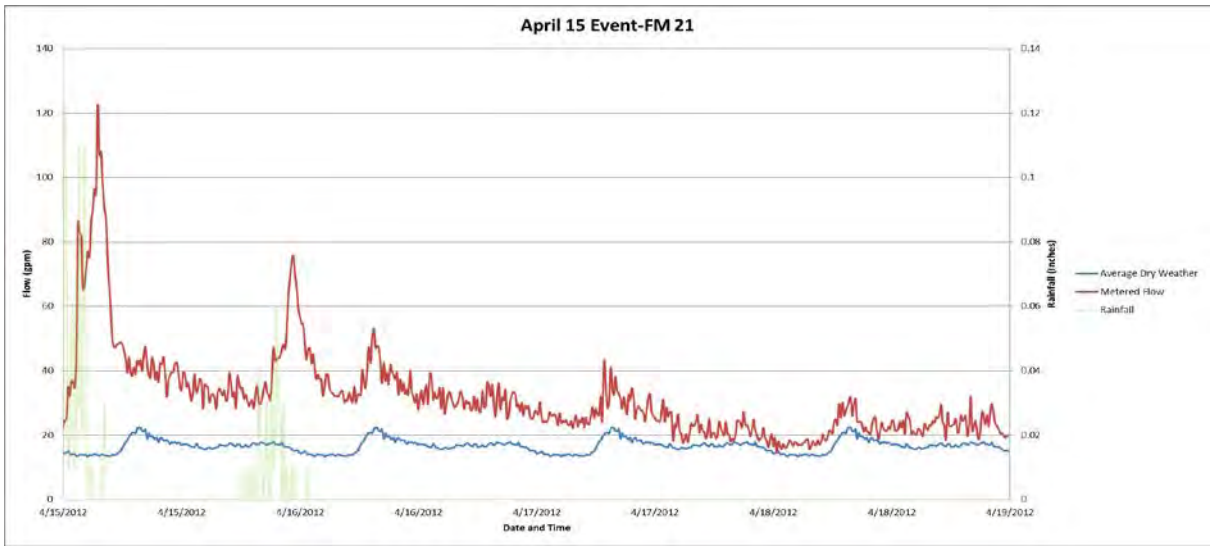
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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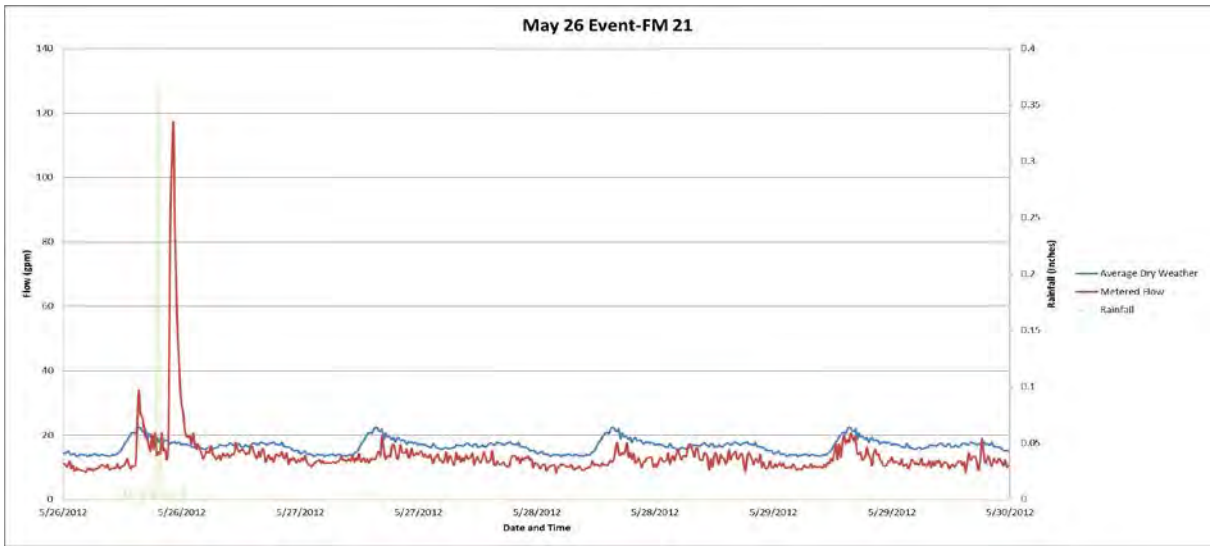
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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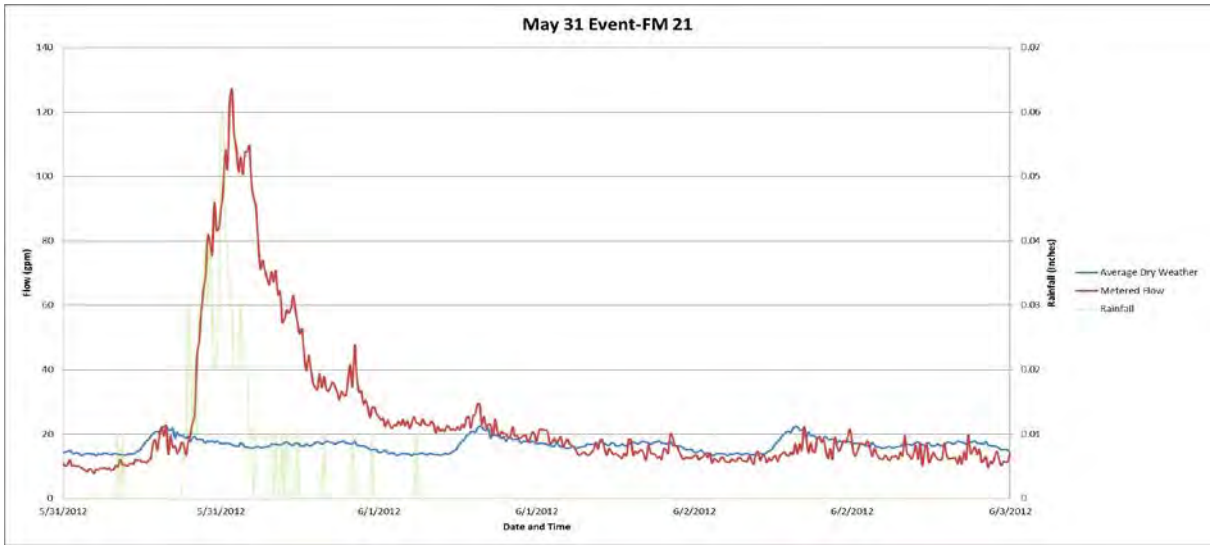
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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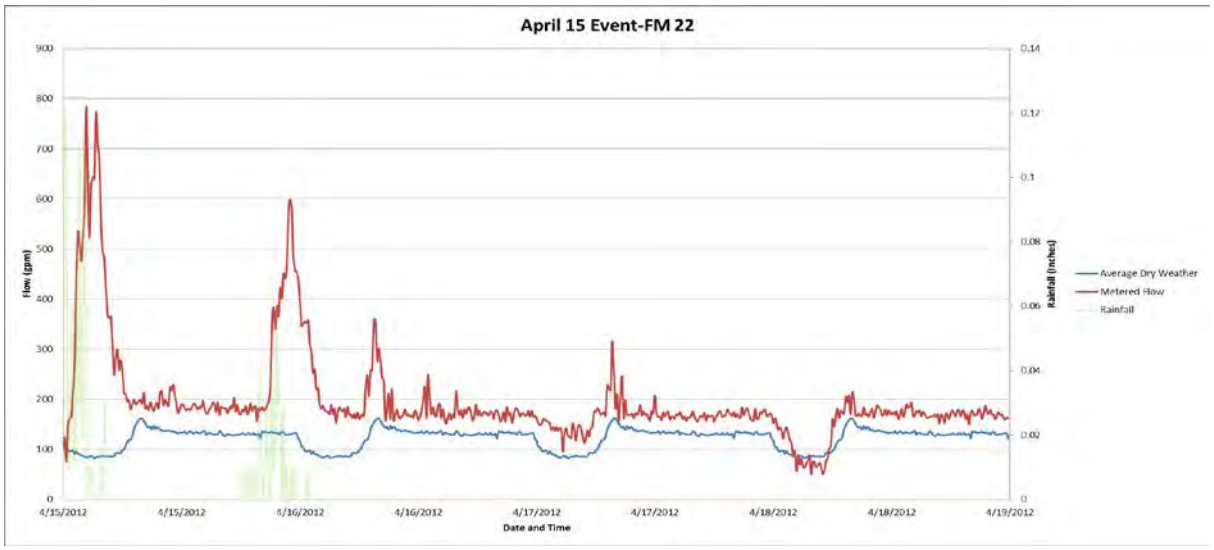
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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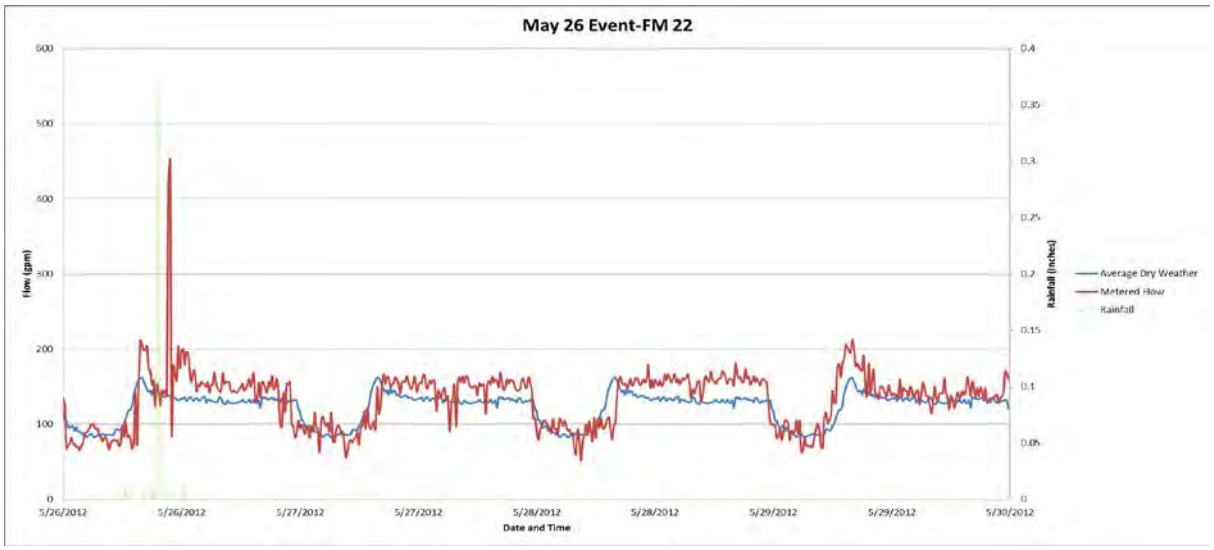
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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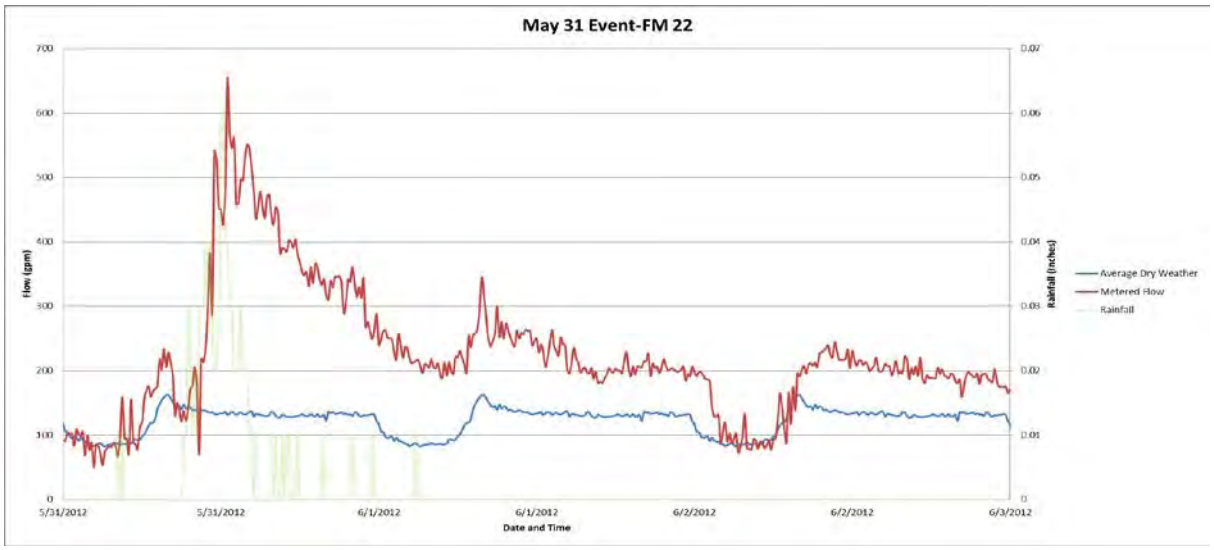
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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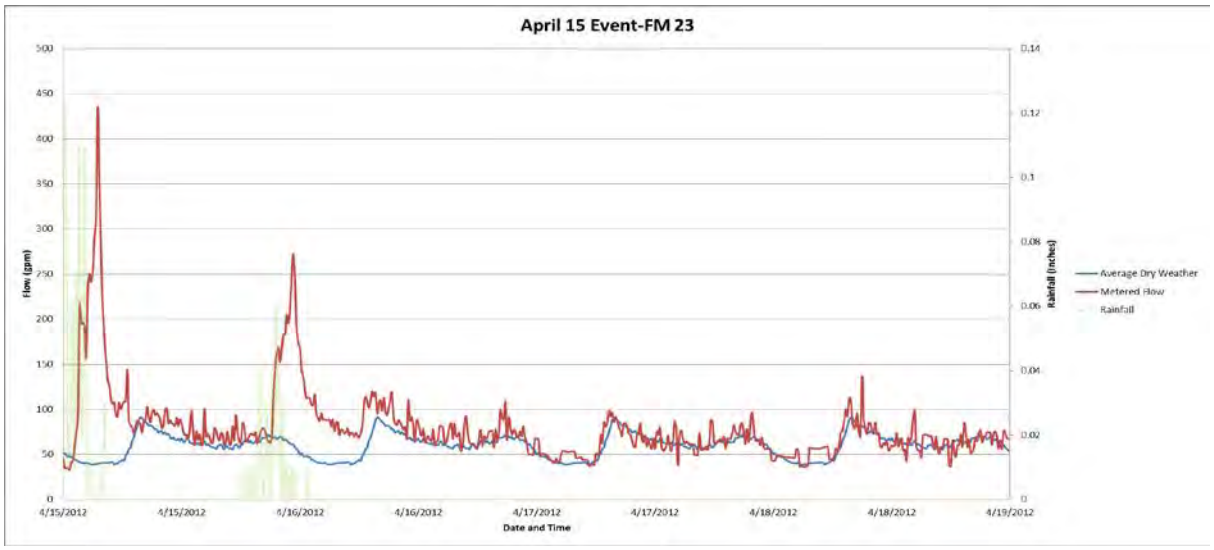
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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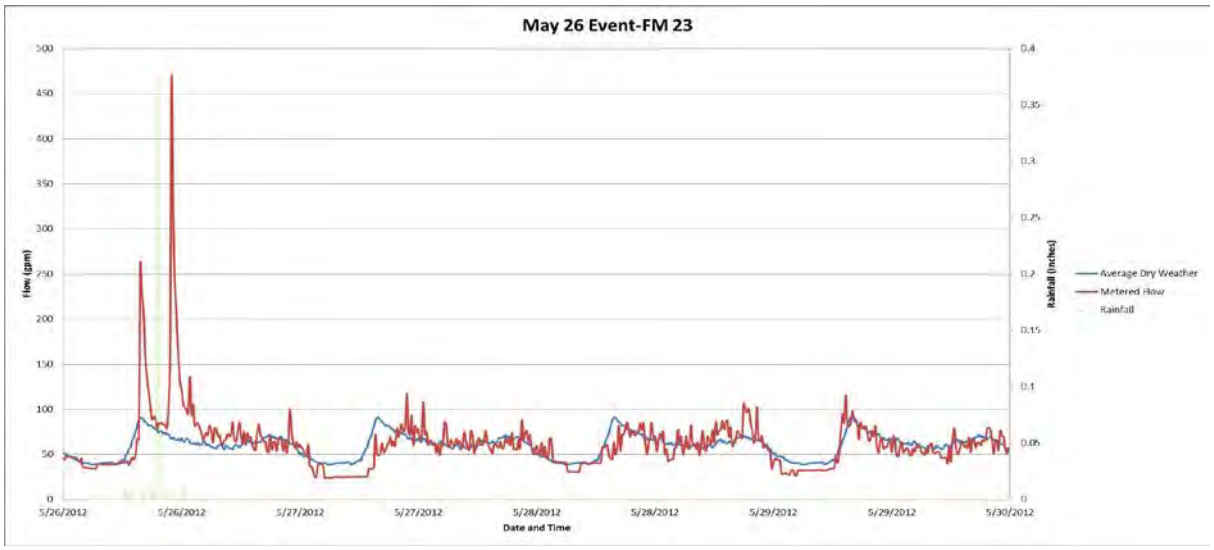
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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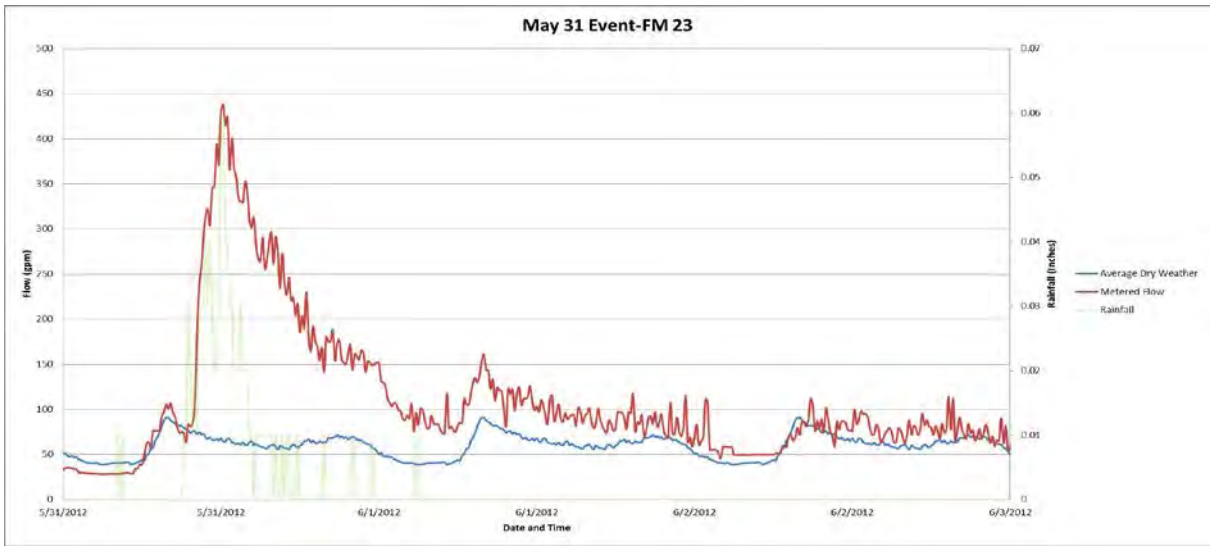
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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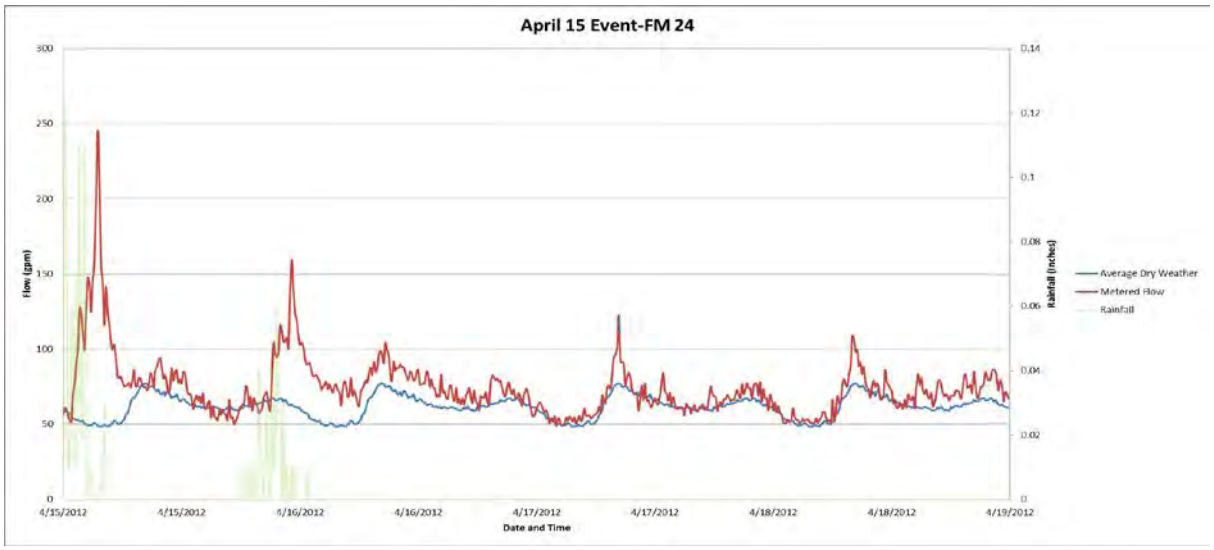
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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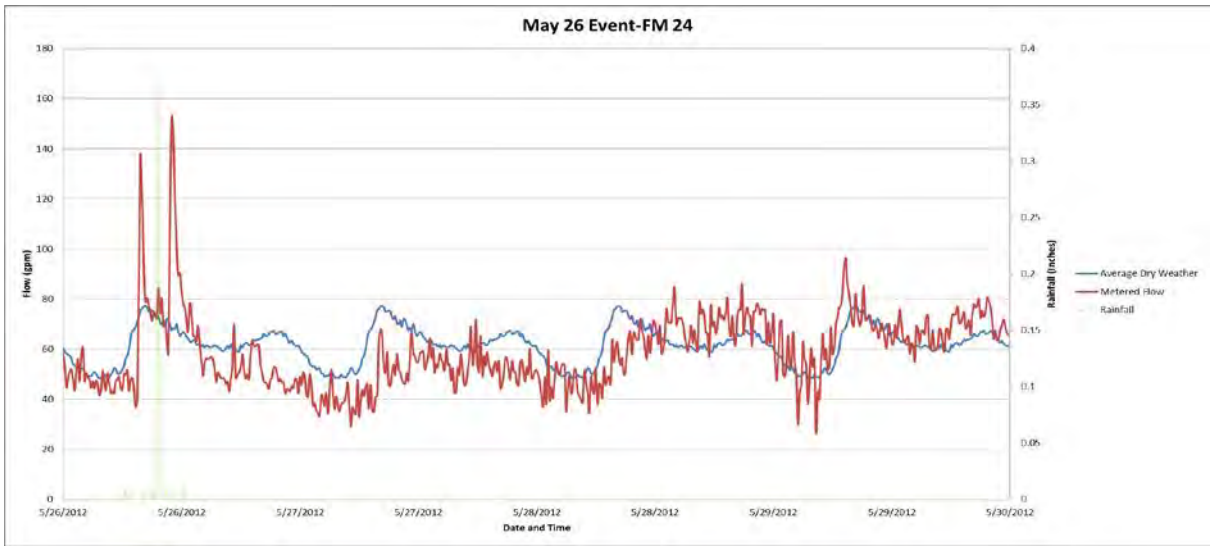
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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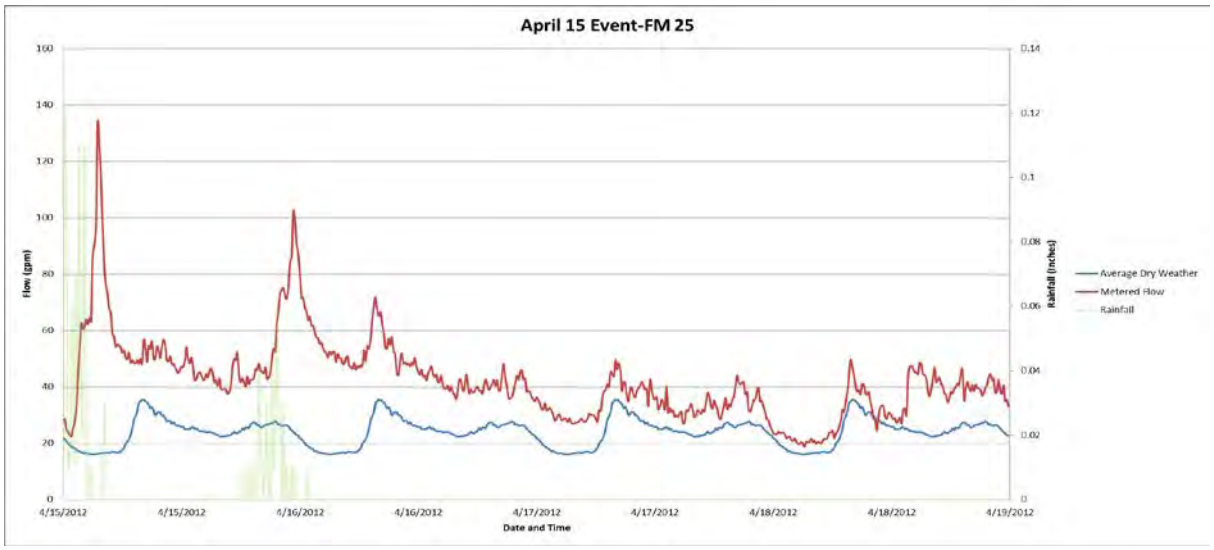
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

May 31 Event-FM 24
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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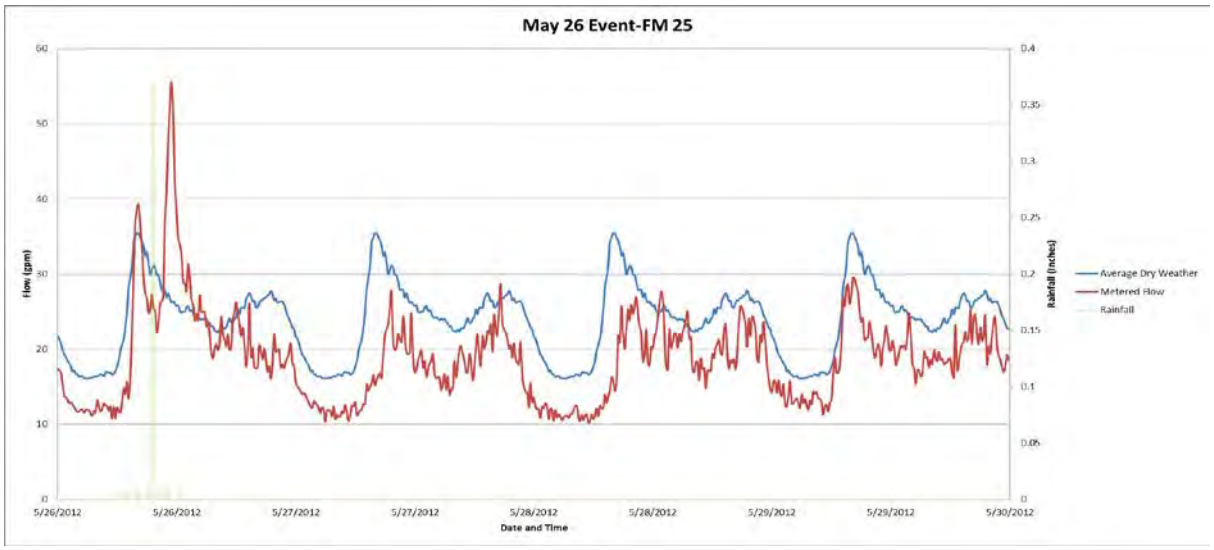
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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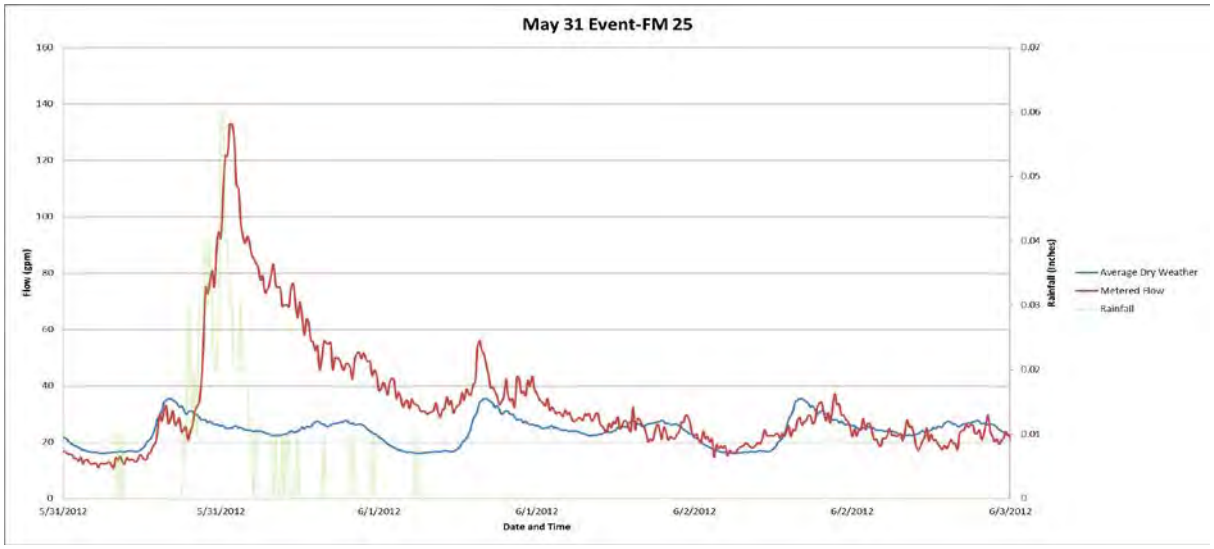
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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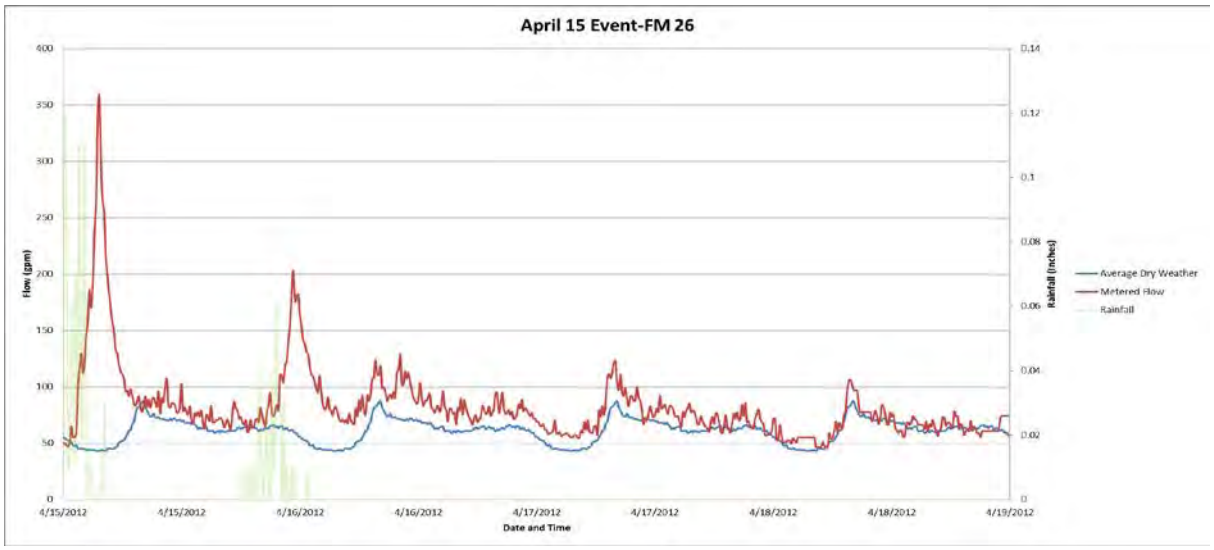
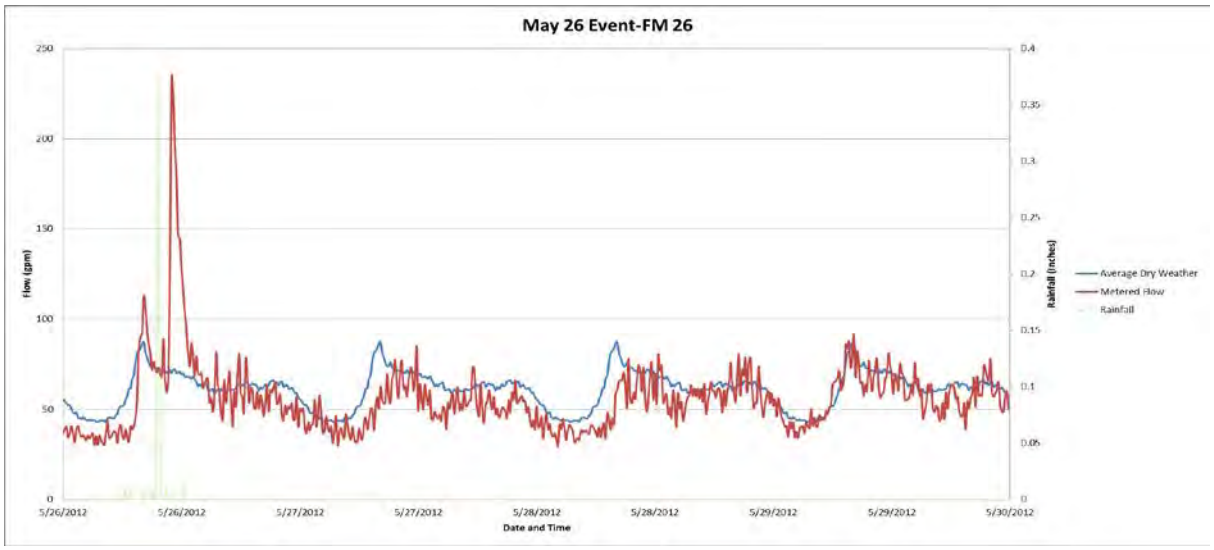
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


April 15 Event-FM 26
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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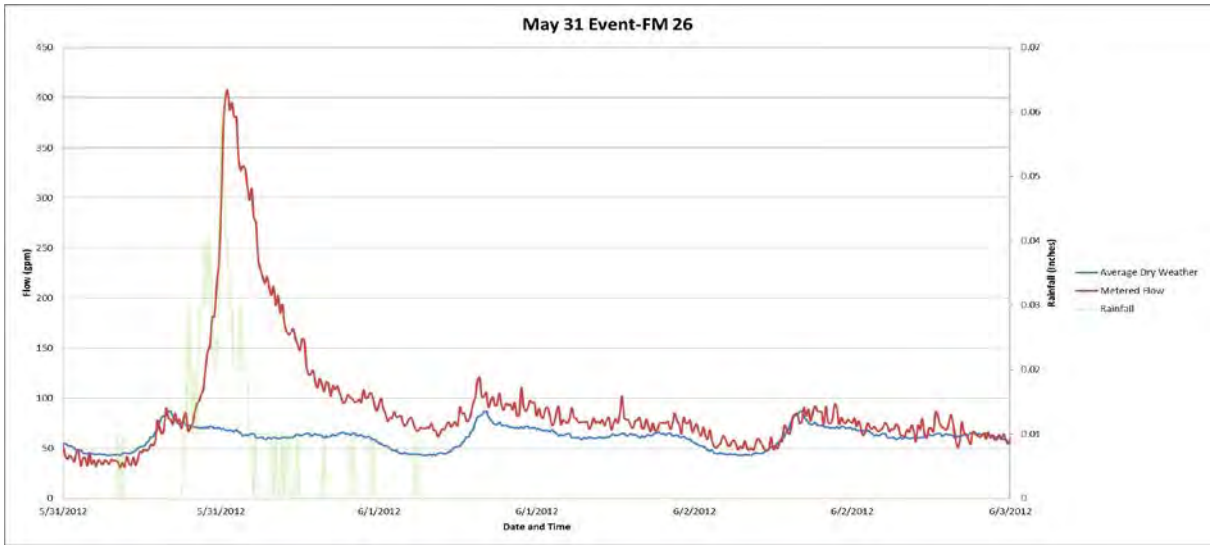
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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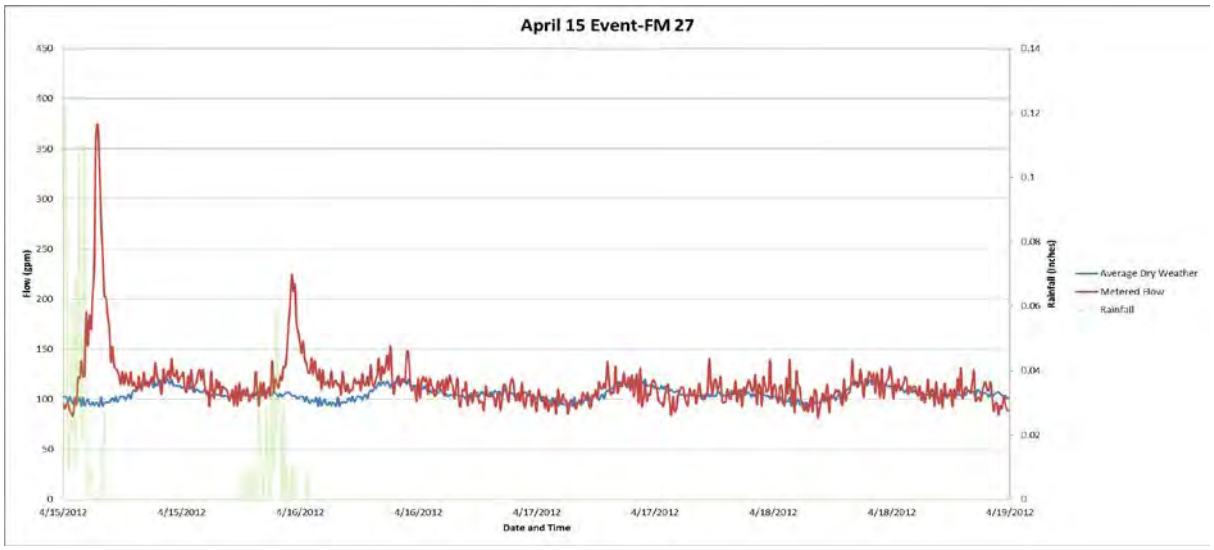
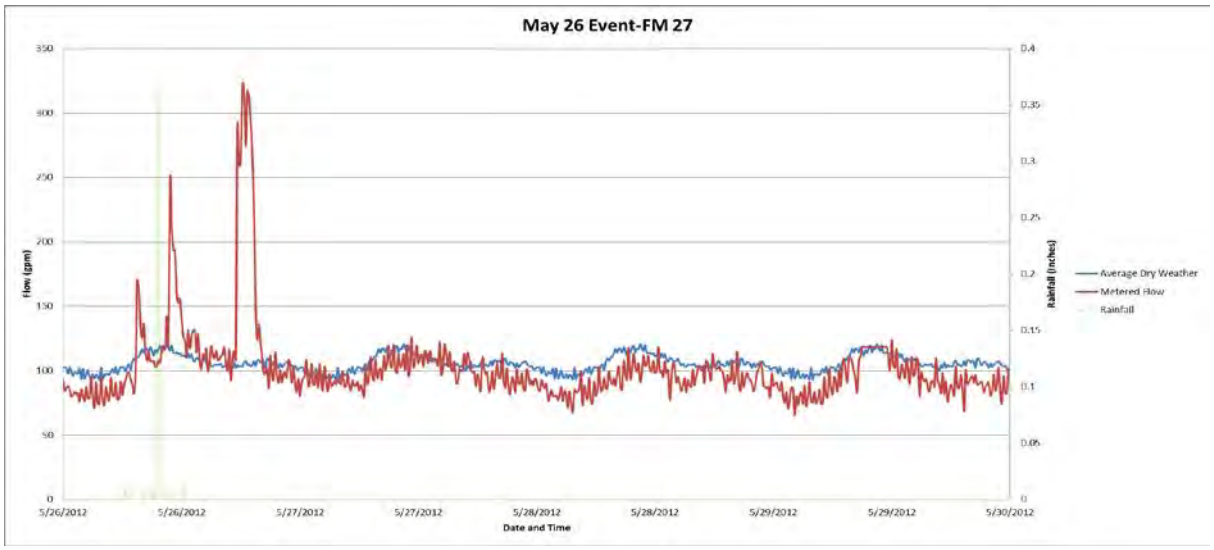
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


April 15 Event-FM 27
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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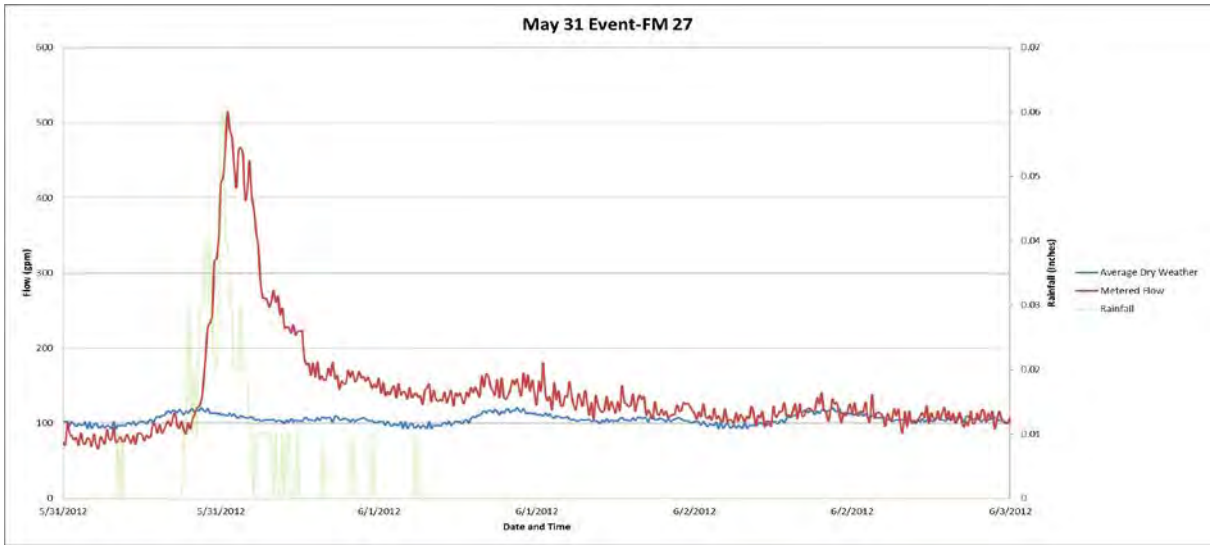
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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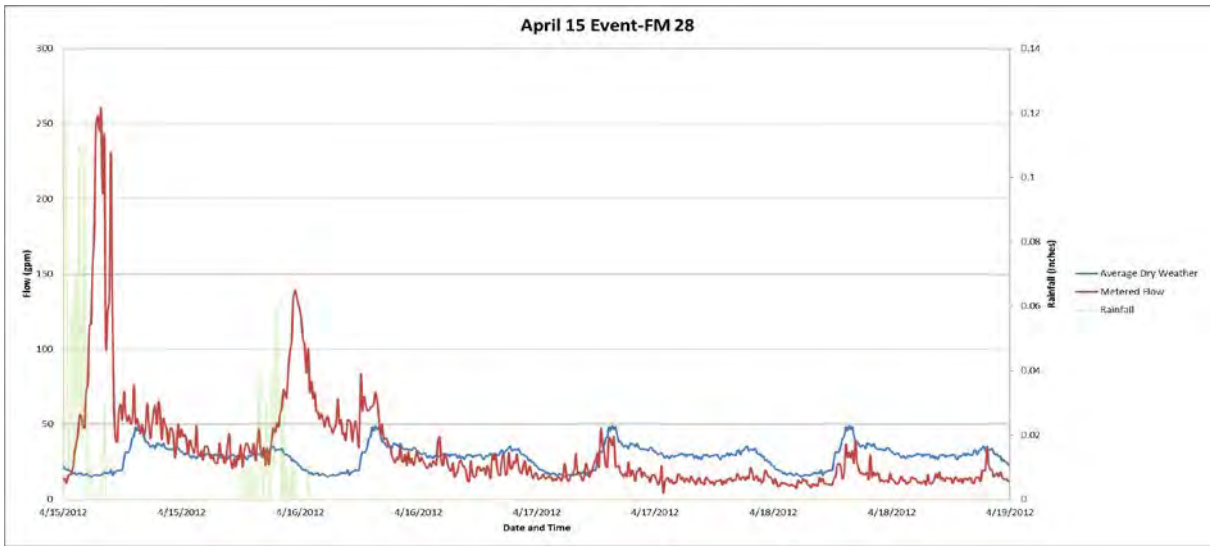
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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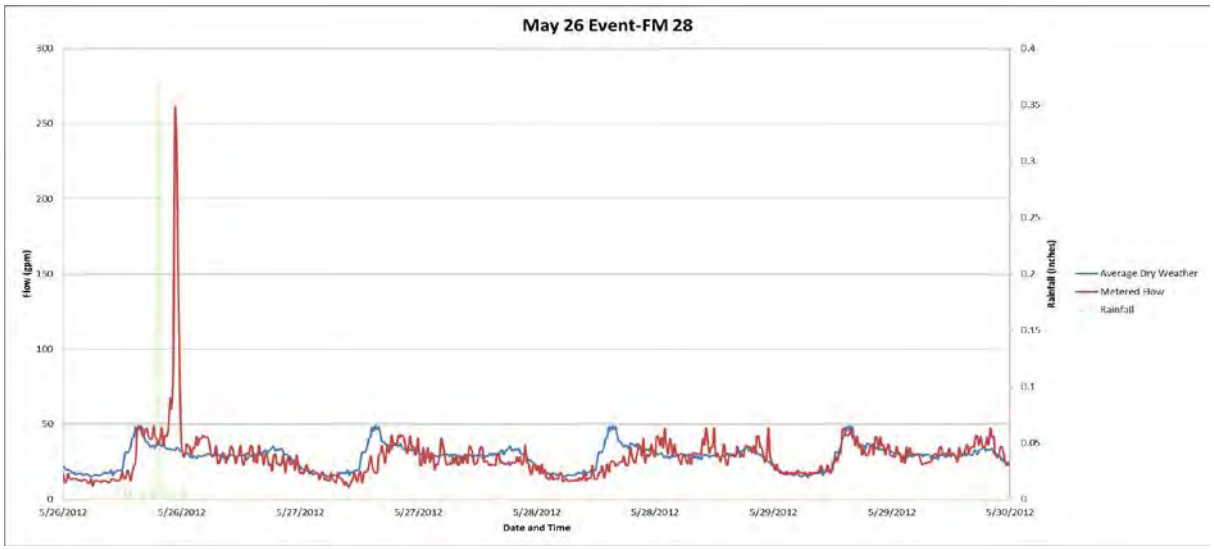
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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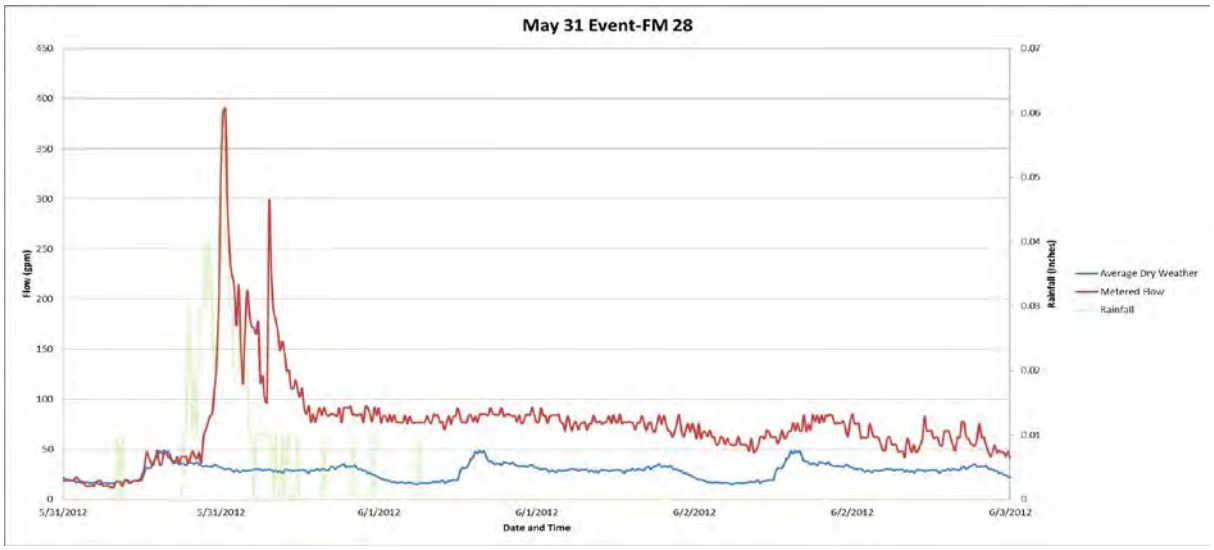
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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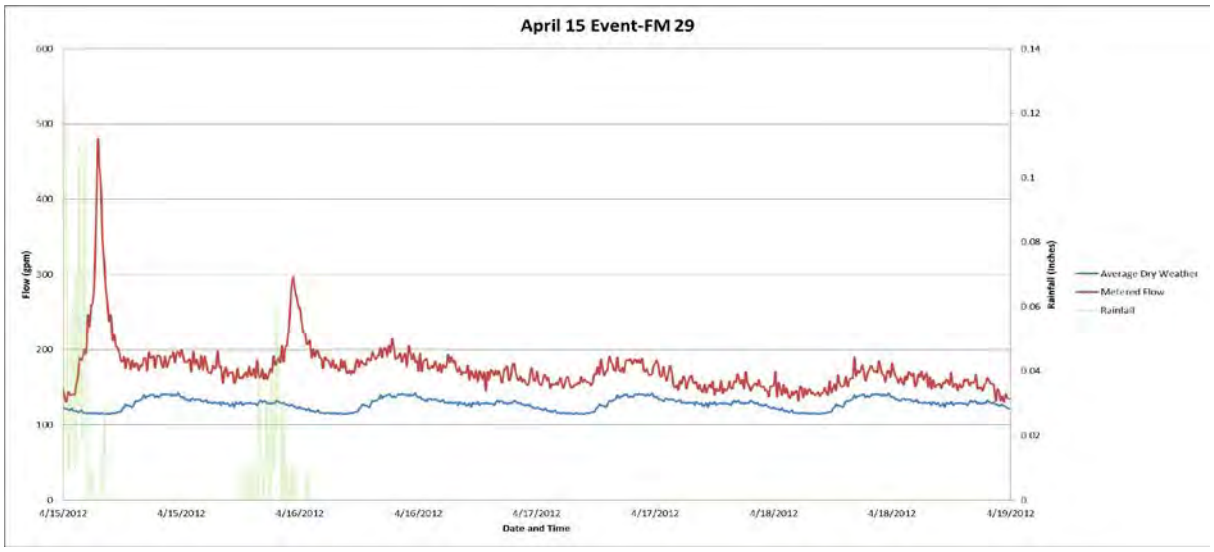
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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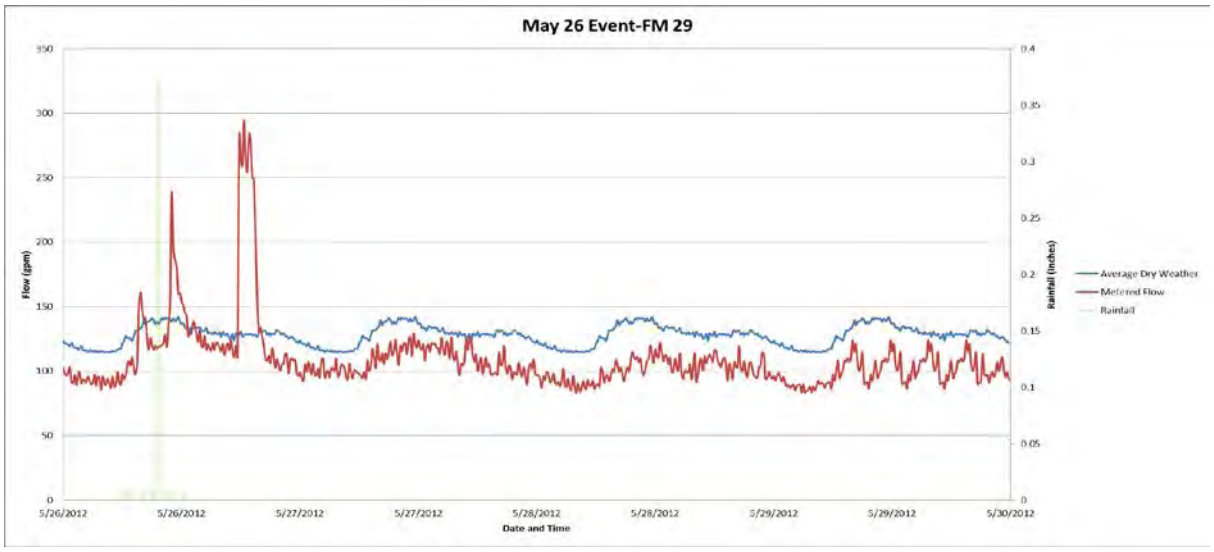
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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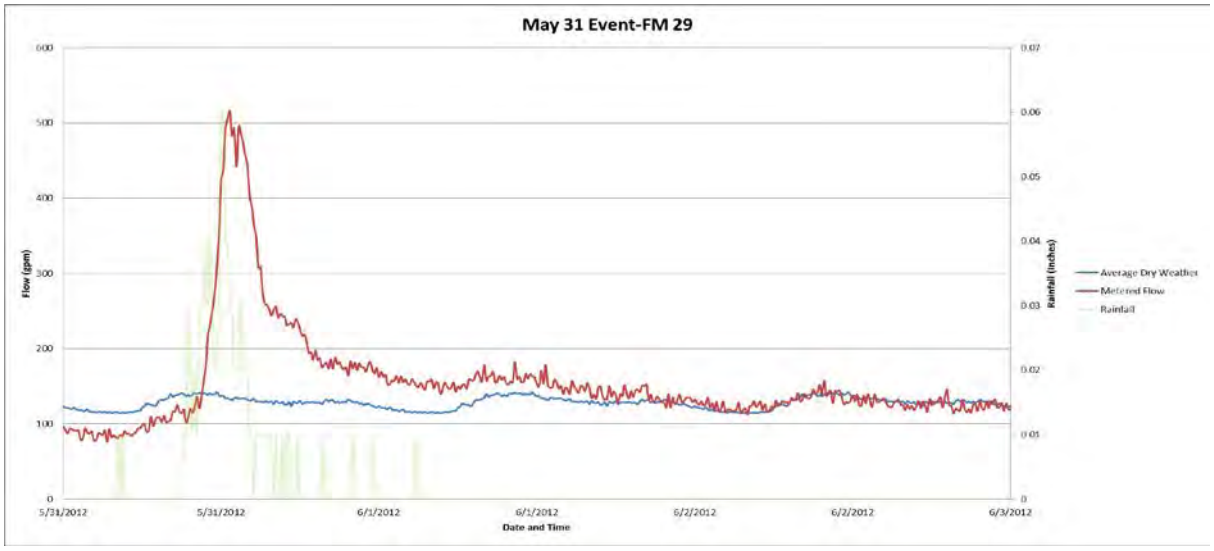
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall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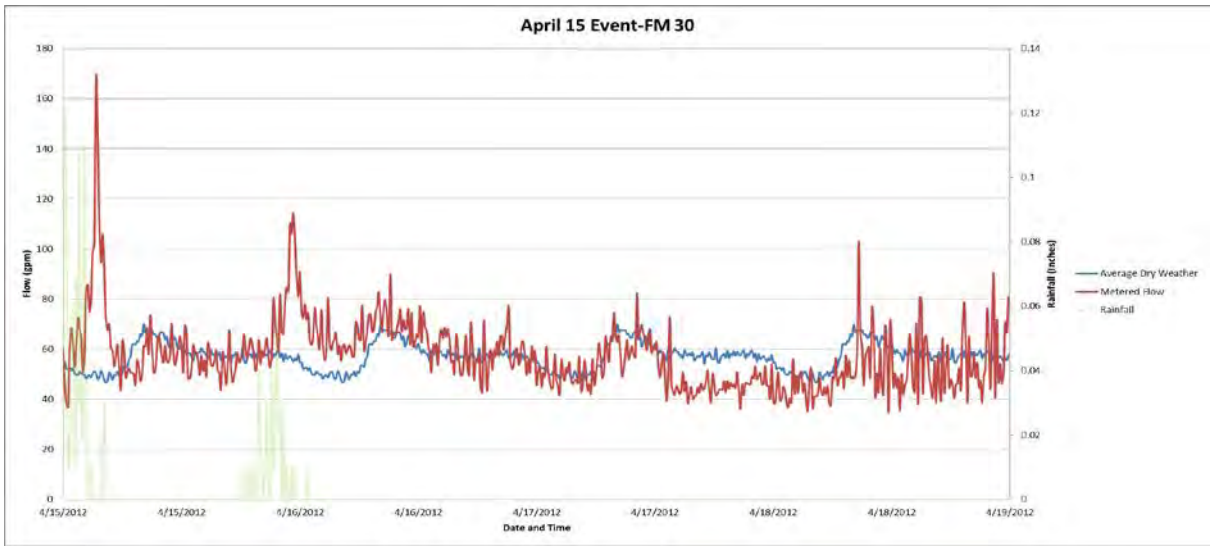
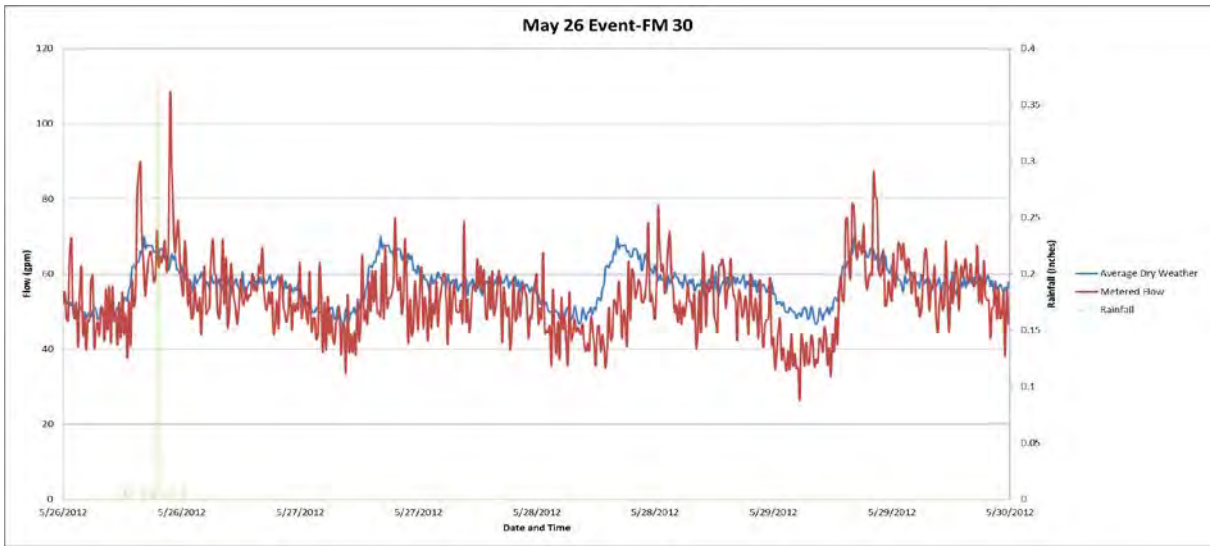
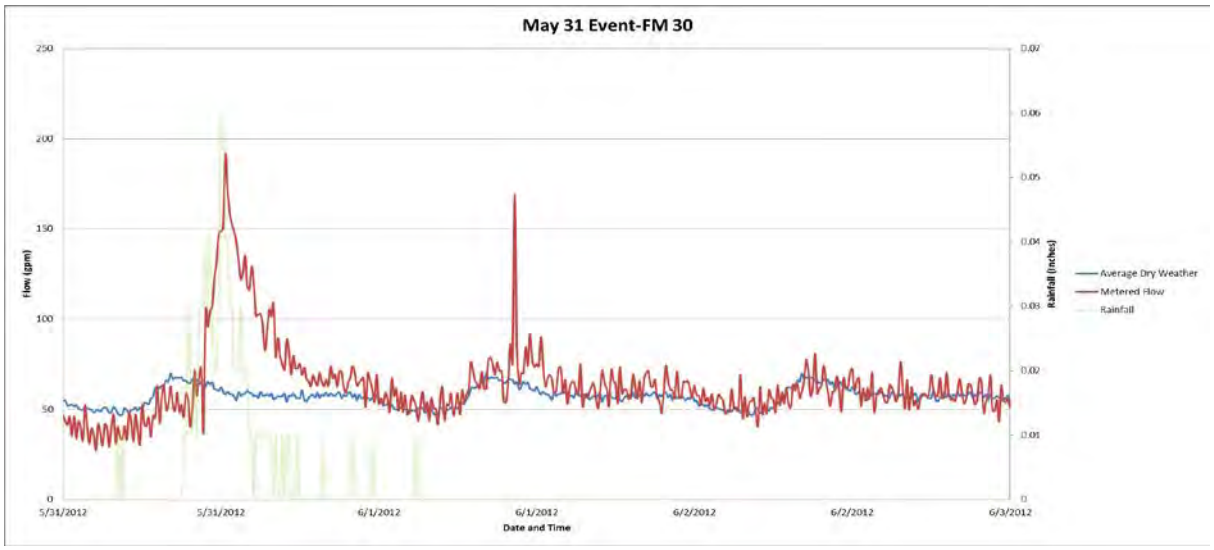
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


April 15 Event-FM 30
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


May 26 Event-FM 30
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall


May 31 Event-FM 30
Flow (gpm)
Rainfall (inches)
Date and Time
Average Dry Weather
Metered Flow
Rainfall

APPENDIX C
MANHOLE ASSESSMENT FIELD SHEETS

1 MH Inspection Form

Manhole_ID_(12): start

Manhole ID Selector

Update Next Manhole =>

Add New MH

System_Owner_(2):

Drainage_Area_(4):

Location_Code_(38): C = Light Highway

Curb_Material: C = Concrete (Non-Reinforced)

Surveyor_Name_(1):

Date_Inspected_(8):

Time_Inspected_(9):

Weather_(37):

Manhole_Surface_Type_(40): Concrete Pavemen

Manhole_Surface_Condition

Rim_to_Invert_(ft)_(13):

Rim_to_Grade_(ft)_(15):

PreCleaning_(36): Z = Not Known

Date_Cleaned_(36a):

Additional_Information_(39):

Access_Point_Type_(42): Manhole (AMH)

Inspection_Status_(48): Surface Inspection (SI)

Potential_for_Runoff_(41):

Close_To_Curb:

Evidence_Of_Surcharge_(49):

Use_of_Sewer_(20): SS = Sanitary

Purpose_of_Survey_(34): D = Pre Rehabilitation Survey

<= Back to 4 MH Defects

Save

Forward to MH Component Observations =>

2 MH Component Observations

Manhole_ID_(12):	start
Cover_Shape:	C = Circular
Cover_Material:	CAS = Cast Iron
Cover_Type:	Solid
Number_Vent_Holes:	
Vent_Hole_Diameter:	
Cover_Frame_Fit:	Good (G)
Cover_Condition:	Sound
Gasket_Condition:	
Adjusting_Ring_Type:	
Adjusting_Ring_Condition:	
Adjustment_Ring_Height_(ft):	
Frame Material:	CAS = Cast Iron
Frame_Condition	Sound
Frame Seal Condition:	
Frame_Offset_Distance_(ft)	
Chimney_Material_1:	
Int_Chim_Coating_Liner:	None (NC)
Ext_Chim_Coating_Liner:	

Cone_Type:	
Cone_Material:	
Int_Cone_Coating_Liner:	None (NC)
Ext_Cone_Coating_Liner	
MH_Diameter_1_(ft):	
MH_Diameter_2_(ft):	
Wall_Material_1:	
Wall_Material_2:	
Int_Wall_Coating_Liner:	
Ext_Wall_Coating_Liner:	
Bench_Present:	Yes (Y)
Bench_Coating_Liner:	None (NC)
Bench_Material:	C = Concrete (Non-Reinf
Channel_Installed:	Yes
Channel_Material:	C = Concrete (Non-Reinforc
Channel_Type:	
Channel_Exposure:	Fully Open (F)
Number_Steps:	
Step_Material:	
Step_Condition:	

<= Backward to 1 MH Inspection | Save | Forward to 3 Pipe Connections =>

3PipeConnections

Manhole_ID_(12): start

Cxn1_Compass_Dir:		Cxn5_Compass_Dir:	
Cxn1_Direction:		Cxn5_Direction:	
Cxn1_Special_Condn:		Cxn5_Special_Condn:	
Cxn2_Compass_Dir:		Cxn6_Compass_Dir:	
Cxn2_Direction:		Cxn6_Direction:	
Cxn2_Special_Condn:		Cxn6_Special_Condn:	
Cxn3_Compass_Dir:		Cxn7_Compass_Dir:	
Cxn3_Direction:		Cxn7_Direction:	
Cxn3_Special_Condn:		Cxn7_Special_Condn:	
Cxn4_Compass_Dir:		Cxn8_Compass_Dir:	
Cxn4_Direction:		Cxn8_Direction:	
Cxn4_Special_Condn:		Cxn8_Special_Condn:	

<= Back to 2 MH Component Observations | Save | Forward to 4 MH Defects =>

Manhole_ID_(12): 65-14

Cxn1_Compass_Dir:	S	Cxn5_Compass_Dir:	
Cxn1_Direction:	Out	Cxn5_Direction:	
Cxn1_Special_Condn:		Cxn5_Special_Condn:	
Cxn2_Compass_Dir:	N	Cxn6_Compass_Dir:	
Cxn2_Direction:	In	Cxn6_Direction:	
Cxn2_Special_Condn:		Cxn6_Special_Condn:	

4MHDefects

Manhole_ID_(12): start

Overall_Condition:

Rehab Method 1:

Rehab Method 2:

Rehab Method 3:

Rehab Method 4:

D1_Location:

D1_Code:

D1_Rating:

D1_II:

D1_Comments:

D2_Location:

D2_Code:

D2_Rating:

D2_II:

D2_Comments:

D3_Location:

D3_Code:

D3_Rating:

D3_II:

D3_Comments:

D4_Location:

D4_Code:

D4_Rating:

D4_II:

D4_Comments:

D5_Location:

D5_Code:

D5_Rating:

D5_II:

D5_Comments:

D6_Location:

D6_Code:

D6_Rating:

D6_II:

D6_Comments:

APPENDIX D
OPINION OF PROBABLE COSTS OF FURTHER INVESTIGATIONS

FURTHER SSES INVESTIGATIONS OPINION OF PROBABLE COSTS BY BASIN

Basin	Number of Manholes	Length of Sewer (ft)	Opinion of Cost of SSES Investigations	Opinion of Cost of Televising
14	8	1,413	$2,900	$1,100
15	32	5,391	$6,200	$3,900
5	23	5,899	$5,100	$4,300
6	49	14,240	$9,100	$10,400
13	25	8,050	$5,800	$5,800
18	39	11,571	$7,200	$8,400
21	10	2,437	$2,300	$1,800
4	16	2,594	$4,000	$1,900
12	103	18,261	$17,800	$13,200
20	25	4,514	$5,100	$3,300
Priority Unmetered Areas	48	8,083	$7,700	$5,900
Basin 23 Flood Cluster	16	3,213	$4,700	$2,300
Basin 25 Flood Cluster	35	7,526	$7,700	$5,500
Basin 24 Flood Cluster	12	2,545	$3,100	$1,800
Basin 26 Flood Cluster	20	3,417	$5,600	$2,500
Basin 16 Flood Cluster	19	4,266	$4,800	$3,100
Basin 17 Flood Cluster	15	3,204	$3,900	$2,300
Non-Priority Unmetered Areas	202	41,575	$26,700	$29,900
3	19	5,819	$4,900	$4,200
2	26	4,768	$6,600	$3,500
1	25	5,440	$5,800	$3,900
28	28	7,017	$6,700	$5,100
10	20	5,207	$5,000	$3,800
19	47	5,308	$9,700	$3,800
Remaining 26	34	6,730	$4,900	$4,900
Remaining 23	14	1,423	$3,200	$1,000
Remaining 24	33	4,047	$6,900	$2,900
Remaining 25	29	6,142	$5,300	$4,500
11	34	7,023	$7,000	$5,100
8	23	4,708	$5,000	$3,400
Remaining 17	14	2,857	$3,300	$2,100
Remaining 16	26	4,228	$4,500	$3,100
22	45	11,152	$11,000	$8,100
7	43	10,881	$8,100	$7,900
29	29	1,604	$3,900	$1,200
27	4	710	$2,900	$500
30	9	1,563	$3,600	$1,100

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Agenda Report

Subject: **Spruce Street Outlet Drainage Improvements – Tower Road Relief Sewer**

Prepared By: Steven M. Saunders, Director of Public Works/Village Engineer

Date: August 12, 2012

On March 8, 2012 the Village awarded a contract to Christopher B. Burke Engineering, Ltd. (CBBEL) to complete detailed plans and specifications suitable for permits and obtaining construction bids for two drainage improvements in the Spruce Street Outlet Study Area of northeast Winnetka. The contract awarded by the Village included a provision for a public review by interested citizens and the Village Council before proceeding to final design. Engineering is approximately 65% complete and input is being sought at this time before proceeding to final design. The specific improvements involved are as follows:

Lloyd Park Storm Sewer Outlet. The Spruce Street Outlet Area is a large drainage area east of the railroad grade separation bounded on the north by Tower Road, and on the south by approximately Spruce Street. All of the stormwater runoff generated in this area drains to Lake Michigan at a single outlet, located at the east end of Spruce Street. The size of this drainage area and change of topography contribute, along with insufficient storm sewer capacity for larger rain events, to significant flooding along Sheridan Road from Maple Street south, and along Spruce Street east to the lake. CBBEL has developed a proposed improvement for this area that consists of separating the large watershed into two outlet areas by constructing a new storm sewer outlet from Sheridan Road at the south end of Lloyd Park. This would divert stormwater from the north half of the watershed and allow the existing Spruce Street outlet to function much more effectively, reducing flooding along Sheridan Road.

The proposed storm sewer outlet would consist of a new 36-inch diameter storm sewer beneath the parking lot at Lloyd Park. The project would re-use an existing abandoned 20” ductile iron water main to transit the slope to reach lake level. While this section of water main is smaller in diameter than the incoming 36-inch storm sewer, the significantly steeper slope provides sufficient capacity to carry the necessary flow. The water would discharge to the lake via a new rubble-covered discharge structure constructed by the Park District last spring.

The initial cost estimate for this project was approximately $500,000, however the current cost estimate is lower, at approximately $309,000. This is because re-using the existing water main pipe and outlet to transit to lake level saves a significant amount of pipe construction and bluff restoration, reducing the project cost.

Issues Remaining to be Addressed: There are two issues needing further resolution at this time. First, a detailed evaluation needs to be made of the Park District’s lake

discharge structure to assure that it can accommodate the additional flow from the proposed storm sewer. Second, although preliminary discussions are ongoing with Park District staff about the routing of the proposed storm sewer through the parking lot, the routing needs to be finalized, easements obtained, and agreements formalized about parking lot restoration.

Tower Road/Old Green Bay Relief Sewer. An additional area of flooding, including overland property damage flooding, is along Tower Road east of Old Green Bay Road. Flooding in this area is primarily caused by three factors – 1) insufficient capacity for larger storms in the storm sewer system along Tower Road; 2) insufficient inlet grate capacity to capture water draining north from Foxdale Avenue and Lincoln Avenue; and 3) topography issues wherein properties along the north side of Tower Road are lower than the roadway, so that any significant flooding that does occur in the roadway spills north into these properties. CBBEL has developed a proposed improvement that consists of increased inlet capacity at key locations, and a new storm sewer to convey stormwater west on Tower Road and north along Old Green Bay Road, to an existing storm sewer beneath the ravine that outlets to Lake Michigan. The existing storm sewer primarily drains the Union Pacific Railroad right of way, but also drains a small drainage area west of the railroad tracks. CBBEL has analyzed this storm sewer and has determined that sufficient excess capacity exists to accommodate the additional runoff tributary from the Tower Road area without causing backups into the railroad property.

The initial cost estimate for this project was approximately $1,400,000, however the current cost estimate is lower, at approximately $973,000. This is primarily due to further advancement of the engineering allowing more detailed cost estimates for pavement restoration, trench backfill, and other items.

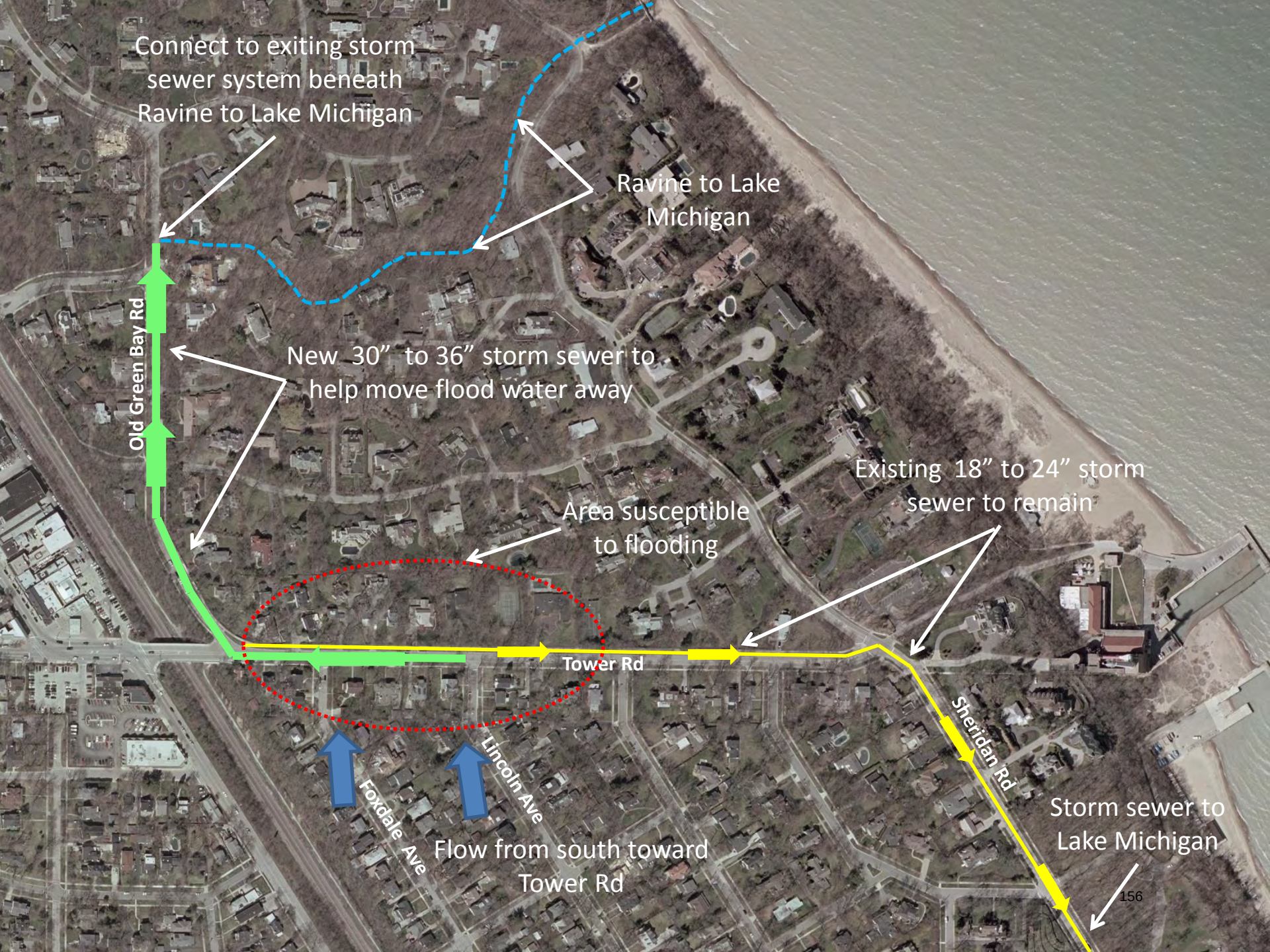
Issues Remaining to be Addressed: There is a significant technical issue still to be addressed with the proposed project. The receiving storm sewer that runs beneath the ravine primarily serves as drainage for the railroad right-of-way, but also drains an area of Hubbard Woods centered on Merrill Street. After CBBEL was engaged to complete design work on this proposed improvement, the Village also engaged Baxter & Woodman, as part of the stormwater master planning process, to evaluate the Merrill Street area and develop potential improvements to reduce flood risk in that area. Baxter & Woodman has not yet completed this task, so it is not yet known whether the flow tributary to the ravine storm sewer will remain as it exists today. CBBEL's technical analysis of the existing storm sewer system does not include any potential improvements to the Merrill Street area. If Baxter & Woodman recommends stormwater capacity improvements along Merrill Street that would increase downstream flows, the combination of improvements might create surcharge conditions in the downstream pipe that do not currently exist. It is advisable at this time to wait for the completion of Baxter & Woodman's evaluation of the Merrill Street area before proceeding with final design on the Tower Road project, so that recommended improvements in the two areas can be evaluated in concert with one another.

A second technical issue involves addressing erosion at the head of the ravine caused by existing roadway drainage from Old Green Bay Road. While the Village's proposed improvements will not affect the amount of water discharging to the ravine, the existing erosion should be addressed while the Village is working in the area. Since the ravine bottom is classified as a wetland, improving the area to address erosion will require a permit from the US Army Corps of Engineers. It is not anticipated that there will be any significant difficulty associated with securing this permit.

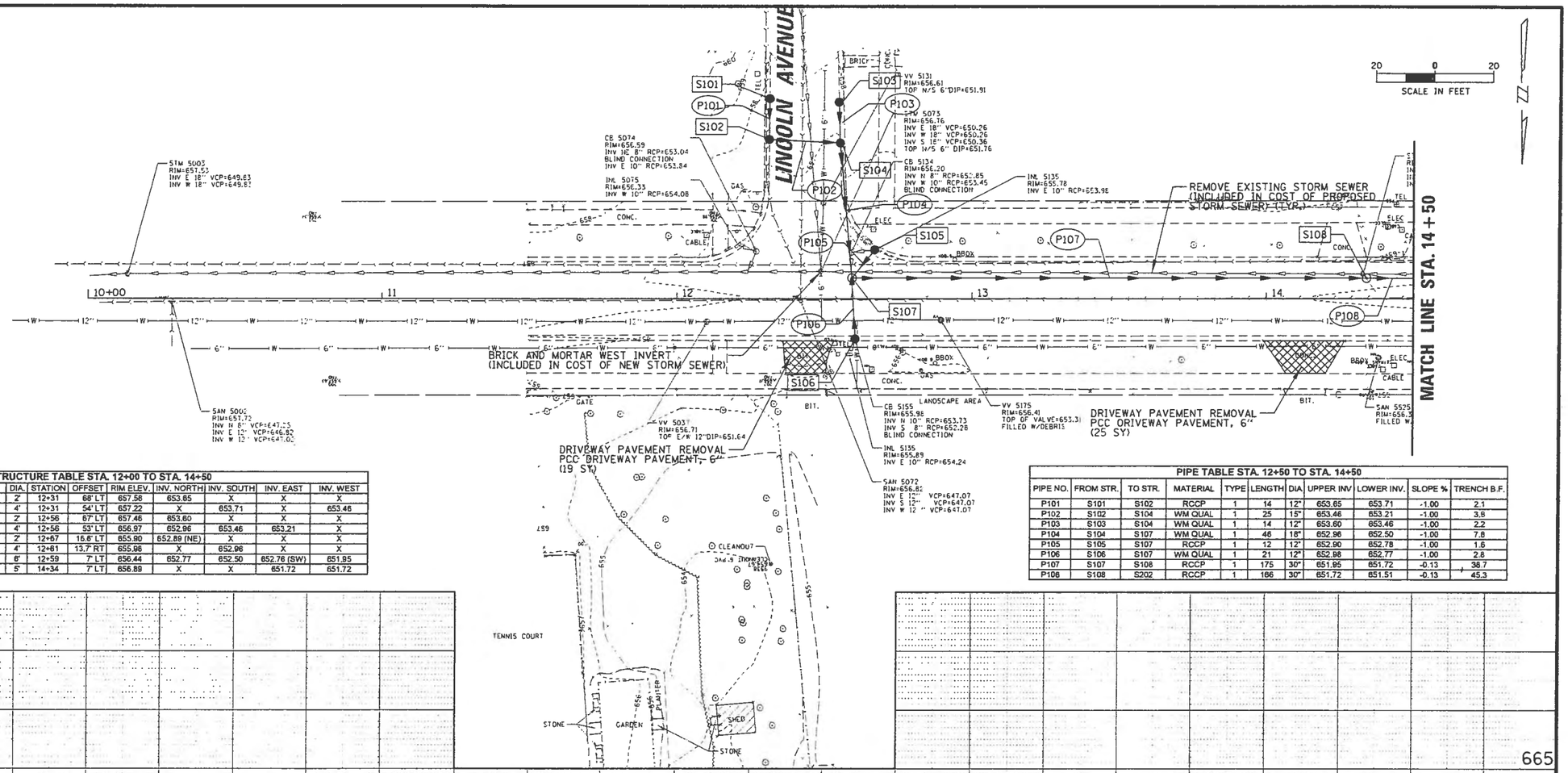
Recommendation:
Review preliminary plans and provide comments.

Attachments:
1. Conceptual Plan
2. Preliminary Detailed Plan Sheets
3. CBBEL Technical Memo

ATTACHMENT 1
CONCEPTUAL PLAN


Connect to exiting storm sewer system beneath Ravine to Lake Michigan
Ravine to Lake Michigan
Old Green Bay Rd
New 30" to 36" storm sewer to help move flood water away
Existing 18" to 24" storm sewer to remain
Area susceptible to flooding
Tower Rd
Sheridan Rd
Lincoln Ave
Foxdale Ave
Flow from south toward Tower Rd
Storm sewer to Lake Michigan

ATTACHMENT 2
PRELIMINARY DETAILED PLAN SHEETS



STRUCTURE TABLE STA. 12+00 TO STA. 14+50

STRUCTURE NO	STRUCTURE TYPE	DIA.	STATION	OFFSET	RIM ELEV.	INV. NORTH	INV. SOUTH	INV. EAST	INV. WEST
S101	CB TY C, R-3015, TY L	2'	12+31	68' LT	657.58	653.65	X	X	X
S102	CB TY A, R-3015, TY L	4'	12+31	54' LT	657.22	X	653.71	X	653.46
S103	CB TY C, R-3015, TY L	2'	12+56	67' LT	657.46	653.60	X	X	X
S104	CB TY A, R-3015, TY L	4'	12+56	53' LT	656.97	652.96	653.46	653.21	X
S105	CB TY C, R-3015, TY R	2'	12+67	16.6' LT	655.90	652.89 (NE)	X	X	X
S106	CB TY A, R-3015, TY R	4'	12+61	13.7' RT	655.98	X	652.96	X	X
S107	MH TY A, T1F CL	6'	12+59	7' LT	656.44	652.77	652.50	652.78 (SW)	651.95
S108	MH TY A, T1F CL	5'	14+34	7' LT	656.89	X	X	651.72	651.72

PIPE TABLE STA. 12+50 TO STA. 14+50

PIPE NO.	FROM STR.	TO STR.	MATERIAL	TYPE	LENGTH	DIA.	UPPER INV	LOWER INV.	SLOPE %	TRENCH B.F.
P101	S101	S102	RCCP	1	14	12"	653.65	653.71	-1.00	2.1
P102	S102	S104	WM QUAL	1	25	15"	653.46	653.21	-1.00	3.8
P103	S103	S104	WM QUAL	1	14	12"	653.60	653.46	-1.00	2.2
P104	S104	S107	WM QUAL	1	46	18"	652.96	652.50	-1.00	7.8
P105	S105	S107	RCCP	1	12	12"	652.90	652.78	-1.00	1.6
P106	S106	S107	WM QUAL	1	21	12"	652.98	652.77	-1.00	2.8
P107	S107	S108	RCCP	1	175	30"	651.95	651.72	-0.13	38.7
P108	S108	S202	RCCP	1	166	30"	651.72	651.51	-0.13	45.3

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TOWER ROAD/OLD GREEN BAY ROAD STORM SEWER IMPROVEMENTS

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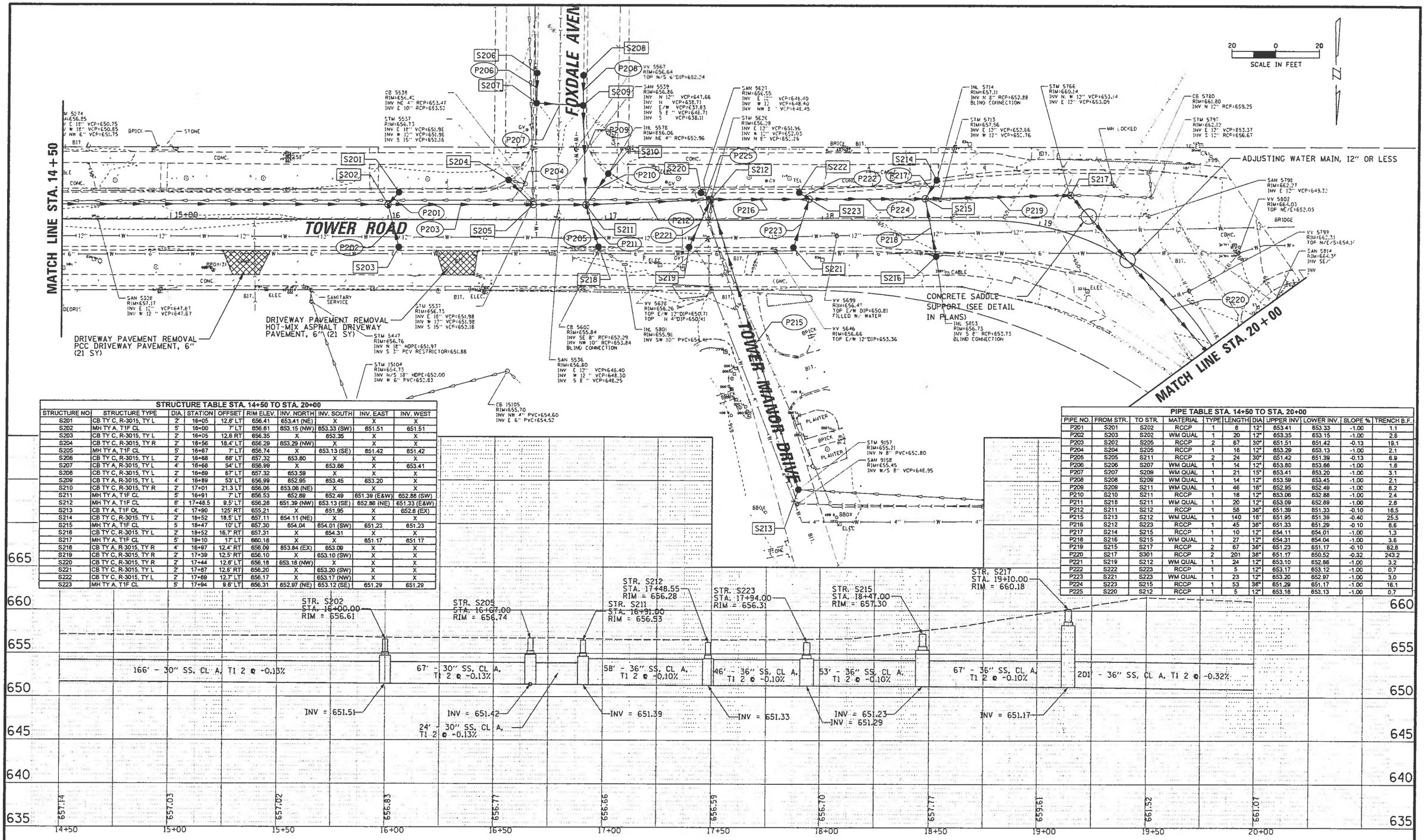

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STRUCTURE NO	STRUCTURE TYPE	DIA.	STATION	OFFSET	RIM ELEV.	INV. NORTH	INV. SOUTH	INV. EAST	INV. WEST
S201	CB TY C, R-3015, TY L	2'	16+05	12.8' LT	656.41	653.41 (NE)	X	X	X
S202	MH TY A, T1F CL	5'	16+00	7' LT	656.61	653.15 (NW)	653.33 (SW)	651.51	651.51
S203	CB TY C, R-3015, TY L	2'	16+05	12.6 RT	656.35	X	653.35	X	X
S204	CB TY C, R-3015, TY R	2'	16+56	18.4' LT	656.29	653.29 (NW)	X	X	X
S205	MH TY A, T1F CL	5'	16+67	7' LT	656.74	X	653.13 (SE)	651.42	651.42
S206	CB TY C, R-3015, TY L	2'	16+68	68' LT	657.32	653.80	X	X	X
S207	CB TY A, R-3015, TY L	4'	16+68	54' LT	656.99	X	653.66	X	653.41
S208	CB TY C, R-3015, TY L	2'	16+89	67' LT	657.32	653.59	X	X	X
S209	CB TY A, R-3015, TY L	4'	16+89	53' LT	656.99	652.95	653.45	653.20	X
S210	CB TY C, R-3015, TY R	2'	17+01	21.3 LT	656.06	653.06 (NE)	X	X	X
S211	MH TY A, T1F CL	5'	16+91	7' LT	656.53	652.89	652.49	651.39 (E&W)	652.88 (SW)
S212	MH TY A, T1F CL	6'	17+48.5	9.5' LT	656.28	651.39 (NW)	653.13 (SE)	652.86 (NE)	651.33 (E&W)
S213	CB TY A, T1F OL	4'	17+90	125' RT	655.21	X	651.95	X	652.6 (EX)
S214	CB TY C, R-3015, TY L	2'	18+52	18.5' LT	657.11	654.11 (NE)	X	X	X
S215	MH TY A, T1F CL	5	18+47	10' LT	657.30	654.04	654.01 (SW)	651.23	651.23
S216	CB TY C, R-3015, TY L	2'	18+52	16.7' RT	657.31	X	654.31	X	X
S217	MH TY A, T1F CL	5'	19+10	17' LT	660.18	X	X	651.17	651.17
S218	CB TY A, R-3015, TY R	4'	16+97	12.4' RT	656.09	653.84 (EX)	653.09	X	X
S219	CB TY C, R-3015, TY R	2'	17+39	12.5' RT	656.10	X	653.10 (SW)	X	X
S220	CB TY C, R-3015, TY R	2'	17+44	12.8' LT	656.18	653.18 (NW)	X	X	X
S221	CB TY C, R-3015, TY L	2'	17+87	12.6' RT	656.20	X	653.20 (SW)	X	X
S222	CB TY C, R-3015, TY L	2'	17+69	12.7' LT	656.17	X	653.17 (NW)	X	X
S223	MH TY A, T1F CL	5'	17+94	9.6' LT	656.31	652.97 (NE)	653.12 (SE)	651.29	651.29

PIPE TABLE STA. 14+50 TO STA. 20+00

PIPE NO.	FROM STR.	TO STR.	MATERIAL	TYPE	LENGTH	DIA	UPPER INV	LOWER INV.	SLOPE %	TRENCH B.F.
P201	S201	S202	RCCP	1	8	12"	653.41	653.33	-1.00	1.1
P202	S203	S202	WM QUAL	1	20	12"	653.35	653.15	-1.00	2.6
P203	S202	S205	RCCP	2	67	30"	651.51	651.42	-0.13	19.1
P204	S204	S205	RCCP	1	16	12"	653.29	653.13	-1.00	2.1
P205	S205	S211	RCCP	2	24	30"	651.42	651.39	-0.13	6.9
P206	S206	S207	WM QUAL	1	14	12"	653.80	653.66	-1.00	1.8
P207	S207	S209	WM QUAL	1	21	15"	653.41	653.20	-1.00	3.1
P208	S208	S209	WM QUAL	1	14	12"	653.59	653.45	-1.00	2.1
P209	S209	S211	WM QUAL	1	46	18"	652.95	652.49	-1.00	6.2
P210	S210	S211	RCCP	1	18	12"	653.06	652.88	-1.00	2.4
P211	S218	S211	WM QUAL	1	20	12"	653.09	652.69	-1.00	2.6
P212	S211	S212	RCCP	1	58	36"	651.39	651.33	-0.10	16.5
P215	S213	S212	WM QUAL	1	140	18"	651.95	651.39	-0.40	25.5
P216	S212	S223	RCCP	1	45	36"	651.33	651.29	-0.10	8.6
P217	S214	S215	RCCP	1	10	12"	654.11	654.01	-1.00	1.3
P218	S216	S215	WM QUAL	1	27	12"	654.31	654.04	-1.00	3.6
P219	S215	S217	RCCP	2	67	36"	651.23	651.17	-0.10	62.8
P220	S217	S301	RCCP	2	201	36"	651.17	650.52	-0.32	243.2
P221	S219	S212	WM QUAL	1	24	12"	653.10	652.86	-1.00	3.2
P222	S222	S223	RCCP	1	5	12"	653.17	653.12	-1.00	0.7
P223	S221	S223	WM QUAL	1	23	12"	653.20	652.97	-1.00	3.0
P224	S223	S215	RCCP	1	53	36"	651.29	651.17	-1.00	16.1
P225	S220	S212	RCCP	1	5	12"	653.18	653.13	-1.00	0.7

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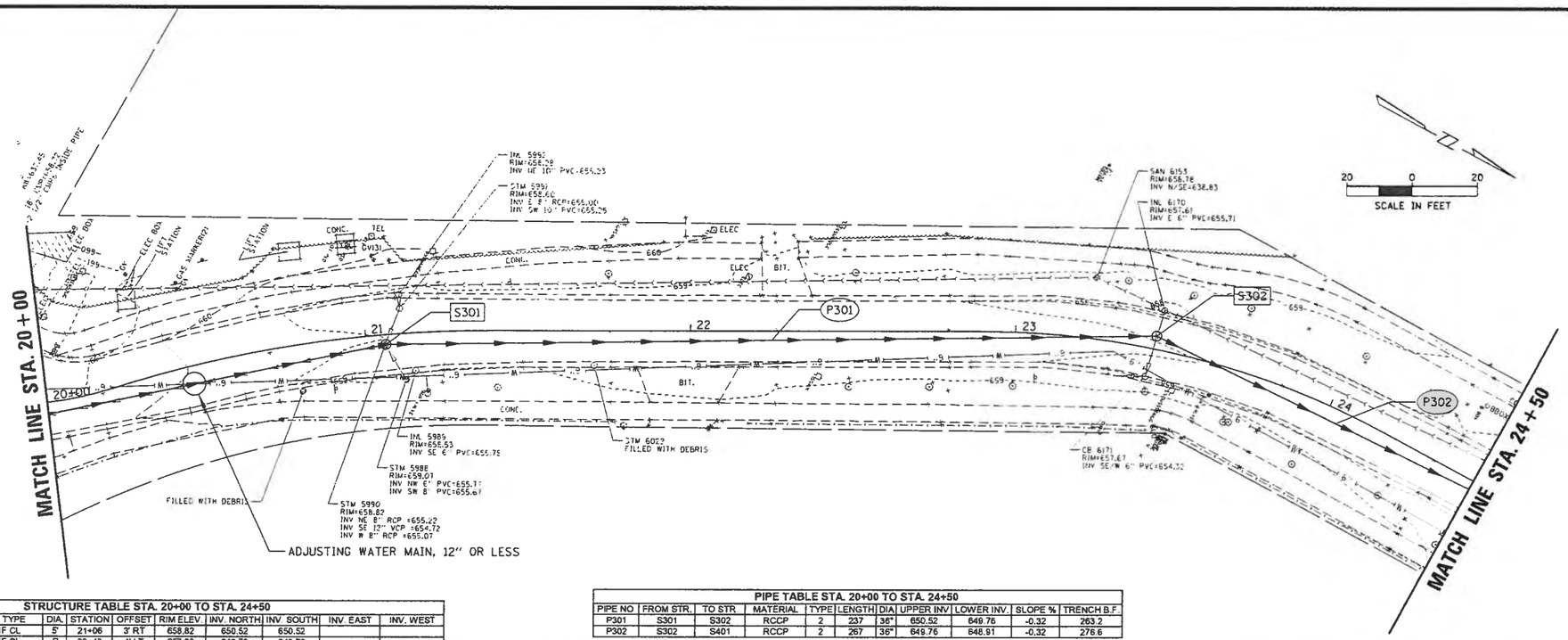

STRUCTURE TABLE STA. 20+00 TO STA. 24+50									
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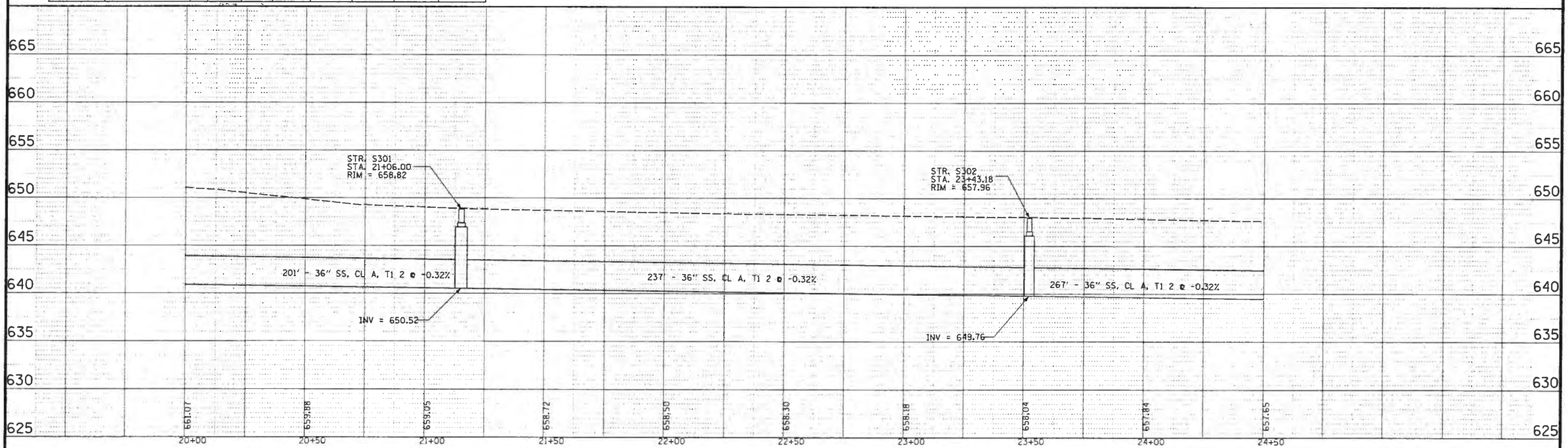
S301	MH TY A, T1F CL	5'	21+06	3' RT	658.82	650.52	650.52		
S302	MH TY A, T1F CL	5'	23+43	4' LT	657.96	649.76	649.76		

PIPE TABLE STA. 20+00 TO STA. 24+50										
PIPE NO	FROM STR.	TO STR	MATERIAL	TYPE	LENGTH	DIA	UPPER INV	LOWER INV.	SLOPE %	TRENCH B.F
P301	S301	S302	RCCP	2	237	36"	650.52	649.76	-0.32	263.2
P302	S302	S401	RCCP	2	267	36"	649.76	648.91	-0.32	276.6



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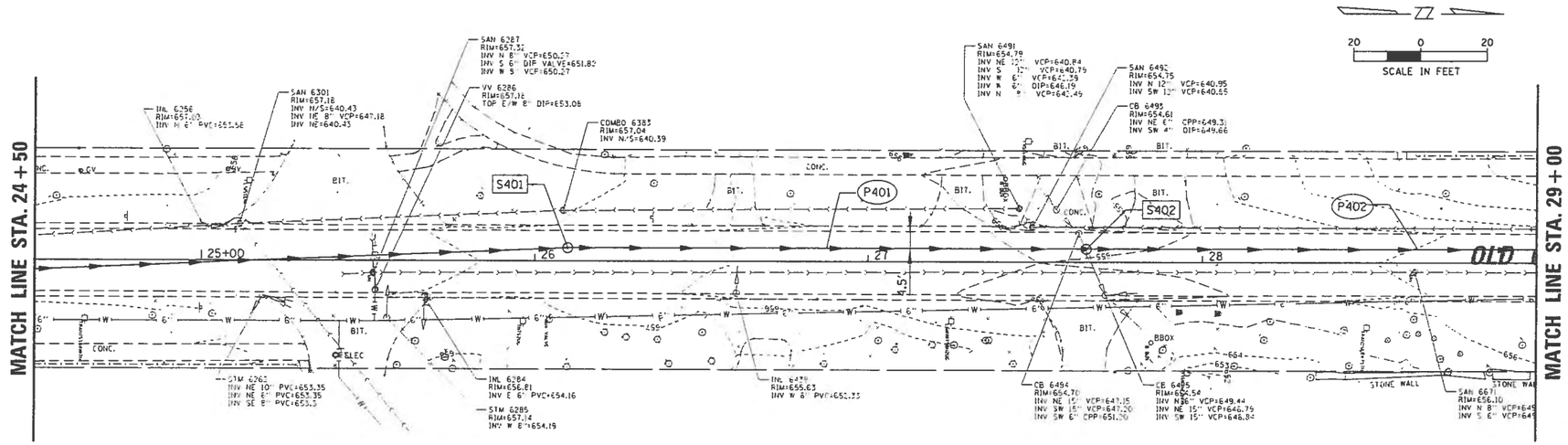

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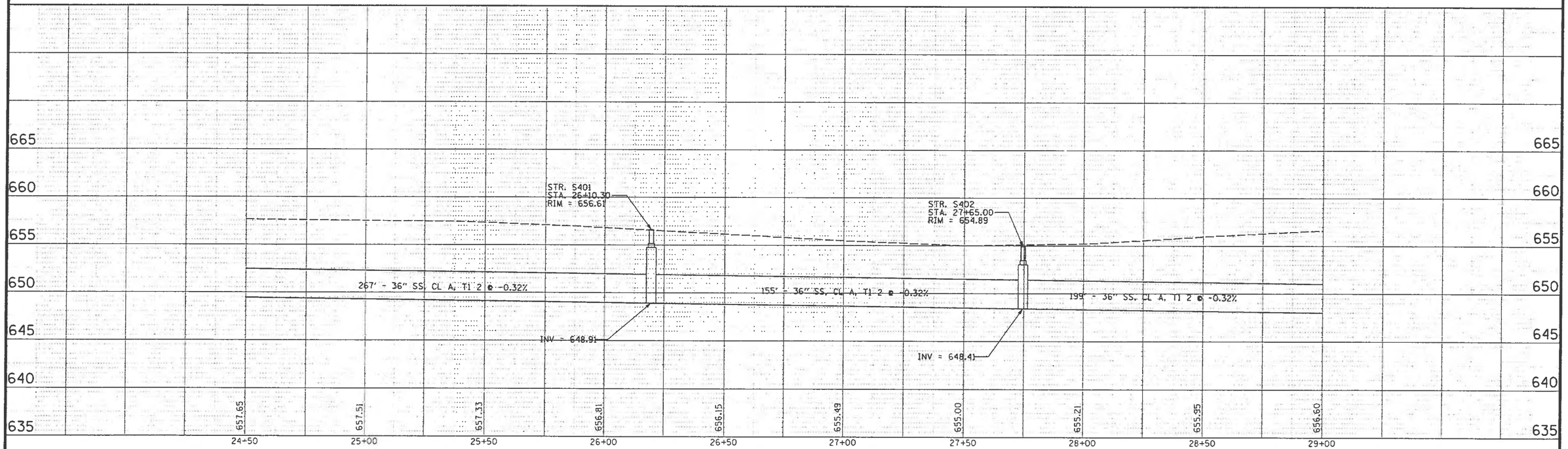
STRUCTURE NO	STRUCTURE TYPE	DIA.	STATION	OFFSET	RIM ELEV.	INV. NORTH	INV. SOUTH	INV. EAST	INV. WEST
S401	MH TY A, T1F CL	5'	26+10	4' LT	656.61	648.91	648.91		
S402	MH TY A, T1F CL	5'	27+65	4' LT	654.89	648.41	648.41		

PIPE TABLE STA. 24+50 TO STA. 29+00										
PIPE NO.	FROM STR.	TO STR.	MATERIAL	TYPE	LENGTH	DIA	UPPER INV	LOWER INV.	SLOPE %	TRENCH B.F.
P401	S401	S402	RCCP	2	155	36"	648.91	648.41	-0.32	127.6
P402	S402	S501	RCCP	2	199	36"	648.41	647.78	-0.32	195.8



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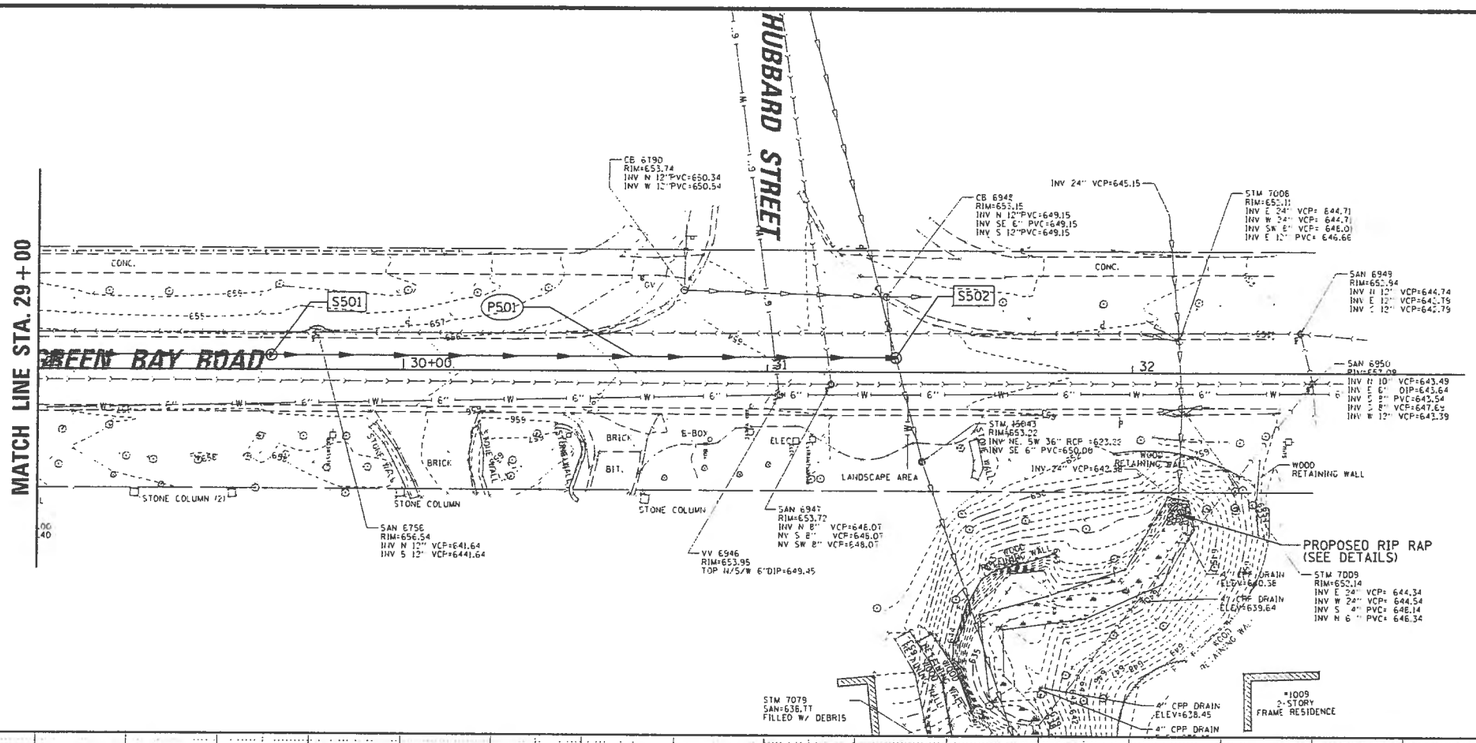

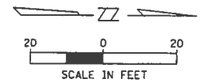

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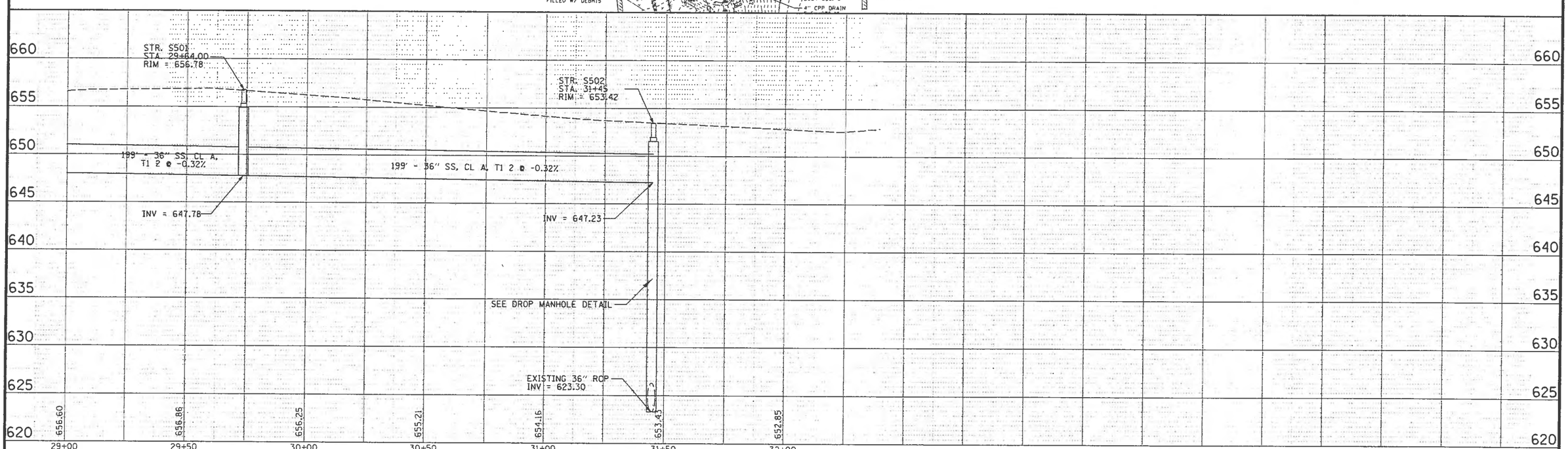
S501	MH TY A, T1F CL	5'	29+64	4' LT	656.78	647.78	647.78		
S502	DROP MH TY A, T1F CL	5'	31+35	4' LT	653.04		647.23	623.3	623.3

PIPE TABLE STA. 29+00 TO STA. 32+00										
PIPE NO.	FROM STR.	TO STR.	MATERIAL	TYPE	LENGTH	DIA	UPPER INV	LOWER INV.	SLOPE %	TRENCH B.F.
P501	S501	S502	RCCP	2	171	36	647.78	647.23	-0.32	156.0



CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W. Higgins Road, Suite 600
Rosemont, Illinois 60018
(847) 823-0500

CLIENT:
VILLAGE·OF·WINNETKA
Incorporated in 1869

NO.	DATE	NATURE OF REVISION	CHKD.

FILE NAME: N:\WINNETKA\120145\Civil\Sewer_120145_05.SHT

DSGN.	
DWN.	
CHKD.	
SCALE:	20'
PLOT DATE:	7/20/2012
CAD USER:	mvorderer
MODEL:	Default

TITLE:
TOWER ROAD/OLD GREEN BAY ROAD STORM SEWER IMPROVEMENTS

DRAFT

PROJ. NO. 120145
DATE:
SHEET 12 OF 12
DRAWING NO. SPP5

ATTACHMENT 3
CBBEL TECHNICAL MEMORANDUM

MEMORANDUM

June 21st, 2012

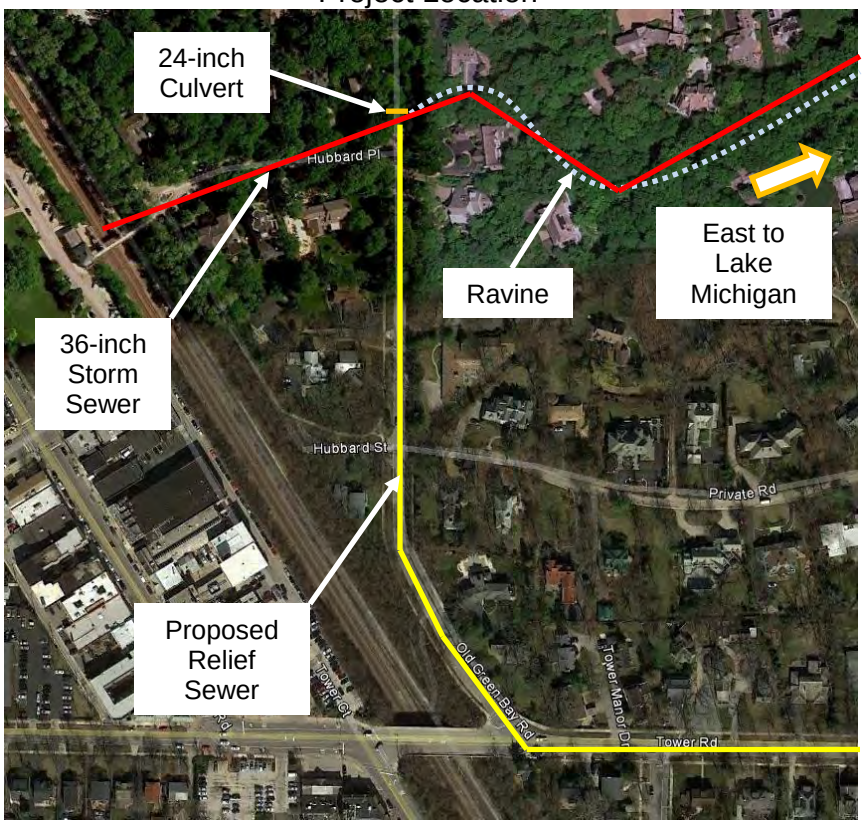
TO: Steve Saunders, PE

FROM: Thomas T. Burke, PE
Steve Sugg, PE
Dave Buckley, PE

SUBJECT: Ravine Outlet – Old Green Bay Road
(CBBEL Project No. 12-0145)

Christopher B. Burke Engineering, Ltd. (CBBEL) has completed an analysis of the proposed relief storm sewer that will drain the intersections of Tower Road at Foxdale and Lincoln Avenues. The need for this improvement was identified for the Spruce Street Outlet study area in the October 2011 Flood Risk Reduction Assessment (25-, 50-, 100-year Protection). The proposed relief sewer will convey runoff north along Old Green Bay Road and outlet to the Ravine at Hubbard Place (Figure 1).

Figure 1.
Project Location



CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W Higgins Road, Suite 600 Rosemont, Illinois 60018-4920 Tel (847) 823-0500 Fax (847) 823-0520

Existing Conditions

There is an existing 36-inch storm sewer that drains the railroad right-of-way as shown in Figure 1. This sewer is approximately 30 feet deep at Old Green Bay Road and flows east underneath the Ravine before outletting to Lake Michigan through a 4-foot by 5-foot concrete box culvert east of Sheridan Road.

There is also a 24-inch cross road culvert draining approximately 15 acres of tributary area that outlets to the Ravine east of Old Green Bay Road near the 36-inch storm sewer crossing (Figure 1). The downstream end of the 24-inch culvert is approximately 3 feet above the bottom of the Ravine. The area has become eroded over time as shown in Figure 2.

Figure 2.
Downstream End of 24-inch Cross Culvert at Old Green Bay Road

Analysis

This analysis determined the feasibility of connecting the proposed relief sewer to the existing 36-inch storm sewer draining the railroad and/or the 24-inch cross road culvert. The new connections will minimize erosion in the Ravine by avoiding the need for a new outlet for the proposed relief sewer. The Village would also like to provide erosion control measures at the existing 24-inch outlet.

CBBEL completed a field survey that identified the depth on Old Green Bay Road of the 36-inch storm sewer that drains the railroad right-of-way. The upstream invert elevation of the storm sewer at the railroad is unknown. A sensitivity analysis was performed utilizing multiple upstream invert elevations to determine the impact of an assumed invert elevation at the railroad. The 36-inch storm sewer information was entered into XP-SWMM, and the sensitivity analysis showed that the hydraulic grade line is not affected by varying inverts at the upstream end of this pipe. According to the XP-SWMM analysis, the hydraulic grade line in the 36-inch storm sewer is approximately 633.0 feet at the railroad for the 100-year design storm. The lowest ground elevation in the railroad right-of-way on either side of the tracks is approximately 643.0 feet. Downstream of Old Green Bay Road, the 36-inch storm sewer can surcharge into the Ravine during very intense storm events. According to the XP-SWMM analysis, the sewer does not surcharge during the 100-year event.

The proposed relief sewer was connected to the 36-inch storm sewer at Old Green Bay Road and analyzed in XP-SWMM. The new connection increases the hydraulic grade line to approximately 642.0 feet at the upstream end in the railroad right-of-way for the 100-year design storm. This is 1 foot below the lowest ground elevation shown on the Cook County 1-foot aerial topography in the railroad corridor. The proposed connection also causes two structures, located at the approximate midpoint of the Ravine, to overflow with approximately 3.5 cfs each.

Recommendation

The Ravine at Old Green Bay Road has a known erosion problem and it is not recommended that a new outfall for the proposed relief sewer be constructed at this location. We recommend tying the proposed relief sewer into the existing 36-inch storm sewer at Old Green Bay Road. The proposed hydraulic grade line in the existing sewer will remain below the lowest ground elevations in the railroad right-of-way and the overflow from two structures in the bottom of the ravine is minimal. We recommend constructing erosion control measures at the downstream end of the existing 24-inch cross culvert in the Ravine as part of construction of the relief sewer. Erosion control measures at this location will require approval from the US Army Corps of Engineers for maintenance within the area identified as Waters of the US. We will modify the plans and obtain the necessary approval to complete this work as part of the relief sewer project.

N:\WINNETKA\120145\Water\Docs\M_old grn bay rd outlet 062112.docx

AGENDA REPORT

TO: Village Council

FROM: Robert M. Bahan, Village Manager

DATE: August 17, 2012

SUBJECT: **Resolutions Recognizing Village Residents**

Attached are resolutions which recognize two Village residents, who have made significant impacts with their recent athletic achievements.

Recommendation: Consider approving Resolution R-30-2012 recognizing Winnetka resident Mark Stephan. And consider approving Resolution R-31-2012 recognizing Winnetka resident Conor Dwyer.

RESOLUTION NO. R-30-2012

THE VILLAGE COUNCIL OF WINNETKA, ILLINOIS

August 21, 2012

WHEREAS, Mark Stephan, a Winnetka resident, has demonstrated great courage in his recovery from a 2007 bicycle accident that left him a quadriplegic; and

WHEREAS, Mark's tenacity was clear as he underwent grueling physical therapy in order to regain his abilities and strength, but also to train to undertake a cross-country riding challenge; and

WHEREAS, Mark overcame obstacles to complete a 78-day, 3,129 mile ride on his recumbent tricycle—traveling from San Diego, California to St. Augustine, Florida—which became known as the "Stephan Challenge;" and

WHEREAS, Mark's determination to overcome a crushing injury helped to raise nearly $1 million for the Rehabilitation Institute of Chicago (RIC) through his website, www.stephanchallenge.com; and

WHEREAS, His altruistic goal gave back significantly to an organization that assisted him in conquering his disabilities and will help fund a new research hospital for RIC; and

WHEREAS, Mark's example serves as an inspiration to countless others facing the challenges of recovering from life-altering illness or injury and truly showcases his mission to prove anything is possible; and

NOW THEREFORE, BE IT RESOLVED that the Village Council, on behalf of the Village of Winnetka and Village staff, commends Mark Stephan for his amazing recovery and unselfish dedication and extends to him sincere appreciation for his fundraising achievements that will benefit current and future patients of the Rehabilitation Institute of Chicago.

_____
Jessica Tucker
Village President

Attest:

_____
Robert M. Bahan
Village Clerk

RESOLUTION NO. R-31-2012

THE VILLAGE COUNCIL OF WINNETKA, ILLINOIS

August 21, 2012

WHEREAS, Conor Dwyer, a Winnetka resident, was a member of the United States Men's Swim Team that won first place in the 4x200-meter freestyle relay event during the 2012 Summer Olympics held in London, England; and

WHEREAS, Conor played a critical role in the freestyle relay, where he was the second of four teammates to swim and helped to create and maintain the lead that led to victory over France (in a time of 6 minutes, 59.7 seconds); and

WHEREAS, Conor's athleticism was apparent in not only the relay, but also in his fifth place finish (3 minutes, 46.39 seconds) in the men's 400-meter freestyle event; and

WHEREAS, Among Conor's career highlights are gold medals in the 2011 World Championships 4x200-meter freestyle and the 2011 Pan American Games 4x200-meter freestyle. In addition, he won silver medals at the 2011 Pan American Games in the 200-meter individual medley, the 400-meter individual medley, and the 4x100-meter freestyle; and

WHEREAS, Conor has demonstrated that he is not only an exceptional athlete, but also a leader—serving as the Senior Swim Team Captain while attending Loyola Academy in Wilmette, where he graduated in 2007; and

WHEREAS, Conor's collegiate career, during which he attended University of Iowa and University of Florida, included many accolades, such as NCAA Swimmer of the Year (2010 and 2011), Southeastern Conference Swimmer of the year (2010 and 2011), 12 All-American honors, and 3 NCAA Titles; and

NOW THEREFORE, BE IT RESOLVED that the Village Council, on behalf of the Village of Winnetka and Village staff, commends Conor on his gold medal performance and for his stellar representation of our community on the Olympic world stage. A celebration of Conor's Olympic achievements will be held Saturday, August 25, which we hereby proclaim to be "Conor Dwyer Day."

_____
Jessica Tucker
Village President

Attest:

_____
Robert M. Bahan
Village Clerk

AGENDA REPORT

SUBJECT:	**D's Haute Dogs – Liquor License Request**	
PREPARED BY:	Katherine S. Janega, Village Attorney	
REF:	May 17, 2011	Village Council Agenda, pp. 181-193
	March 16, 2010	Village Council Agenda, pp. 394 - 410
	October 20, 2009	Village Council Agenda, pp. 62 - 69
DATE:	August 16, 2012	

I. Background

Jared Boyar, owner of D's Haute Dogs, has applied for a Class A liquor license with TV and Sidewalk Liquor Service riders, and is seeking conditional approval from the Village Council. Unlike his three prior requests, which sought the creation of a new license classification for his hot dog business, the current request is based on an expansion of the D's Haute Dogs space, menu and business operation so that it would now meet the definition of "restaurant " in the Village's Liquor Ordinance, and thus be eligible for a Class A liquor license and related riders.

II. Liquor Licensing Procedures

The Village's process for issuing liquor licenses is governed by Chapter 5.09 of the Village Code, which in turn is based on the Illinois Liquor Control Act, which pre-empts home rule powers. That process involves the Village President and Village Trustees in varying capacities.

As required by the Liquor Control Act, the Village President serves, ex officio, as the Local Liquor Control Commissioner, and it is the Commissioner who administers the Liquor Control Regulations and ultimately issues the liquor licenses. The Commissioner is assisted by the Village Manager, the Chief of Police, and the Village Attorney. (See WVC §§5.09.020 – 5.09.040)

The six Village Trustees constitute the Local Liquor Advisory Board, which advises the Commissioner on policy issues related to liquor licensing, and may also conduct or participate in license hearings. (WVC §5.09.050) In that dual capacity, the Trustees engage in policy discussions that most often pertain to the characteristics of the different license categories.

From time to time, pursuant to Section 5.09.130 of the Village Code, the Village Council is also called upon to adopt a resolution to make a license available in response to a specific application. This step in the process occurs after a complete application has been reviewed by the appropriate Village staff on behalf of the Liquor Commissioner. If the review discloses eligibility, a resolution adding a license to the appropriate category is prepared for Council consideration.

On occasion, however, after staff confers with the Liquor Commissioner, an application is brought before the full Council for policy guidance. If the Council determines that an

application meets existing standards, then a resolution is prepared, with conditions as necessary to implement the Council's policy direction. If the Council determines that a modification of existing provisions or a new category of license is warranted, a Code amendment is prepared accordingly. If the Council determines that an application does not meet existing standards, then no further action is taken and the application is denied.

Once a license category is established and a license is made available for a specific applicant, the Liquor Commissioner will issue the license when all applicable conditions have been met.

III. The D's Haute Dogs Application

In an e-mail dated April 9, 2012, Mr. Boyar informed the Village Manager that D's Haute Dogs has the opportunity to expand into adjacent space, and stated that he needs to have a liquor license in order to expand and would follow all Village guidelines for liquor sales. (Attachment 1) The Village Manager responded in a letter dated April 20, 2012, in which he outlined the eligibility requirements and suggested that Mr. Boyar contact the Police Department to discuss eligibility. (Attachment 2)

D's Haute Dogs filed its license application on or about June 15, 2012. Chief of Police Patrick Kreis responded in an e-mail dated June 29, 2012, that contained a series of questions and requests for additional information. The response also noted that the proposed lease was for a diner and that diners are not eligible for liquor licenses, as provided in Section 5.09.080.A.22 of the Village Code. (Attachment 3) Mr. Boyar submitted a point-by-point response to Chief Kreis' questions (Attachment 4), and submitted a sample menu (Attachment 5) and a mark-up of the floor plan that indicated the proposed locations for the host/hostess station and the three television sets. (Attachment 5)

To be eligible for a Class A license, D's Haute Dogs must first establish that it is a restaurant, as defined in Section 5.09.010 of the Village Code. It must also meet the individual eligibility requirements set out in Sections 5.09.070 and 5.09.080, which include submitting to a background check. In addition, the premises must meet the location and premises eligibility and sanitation requirements of Sections 5.09.180, 5.09.200 and 5.09.230 of the Village Code.

To be considered a restaurant under the Village's Liquor Control Regulations, D's Haute Dogs must demonstrate that it meets all of the following requirements:

- that the business is "kept, used, maintained, advertised and held out to the public as a place where complete meals are served;"
- that "complete meals are actually and regularly served;"
- that the space has "adequate and sanitary kitchen and dining room equipment;"
- that the business employs "a sufficient number and kind of employees to prepare, cook and serve suitable food for its patrons;"
- that a host or hostess seats patrons;
- that patrons order from individual, pre-printed menus;
- that orders are taken from and served to patrons at their tables;

- that the food service uses nondisposable dishes, glassware and utensils; and
- that the service of alcoholic beverages is incidental and complementary to such meal service.

Mr. Boyar's responses to the inquiries from the Chief of Police indicated the applicant's intent for the proposed expanded operation to meet the requirements for a Class A license; however, the current operation of D's Haute Dogs does not meet the above requirements and the information provided is not yet concrete enough for staff to present a resolution for approval to the Council. Therefore, the Village Manager, Chief Kreis and the Village Attorney reviewed the D's Haute Dogs application with the Liquor Commissioner, at which time it was determined that the matter should be brought before the Council for policy consideration, as the application raises several issues that have no precedent in prior liquor license applications. Those issues are discussed in the following section.

IV. Discussion of Issues

Presence of Unaccompanied Minors. D's Haute Dogs marks the first attempt to convert a fast food restaurant that has a significant carry-out business and is also frequented by unaccompanied minors, into a full service restaurant that offers and serves full meals and alcoholic beverages. Like most municipalities in the area, the Village's Liquor Ordinance has general provisions that prohibit the sale, service or delivery of liquor to minors, that limit service and possession of alcohol by minors, and that contain penalty and parental responsibility provisions. Other communities have additional requirements. For example, Northbrook prohibits unaccompanied minors in licensed premises, while Glenview addresses the presence of minors in determining the eligibility for a license. (See Attachment 7)

Menu Offerings and "Restaurant" Status. The applicant has submitted a draft menu (Attachment 5), but a conclusive determination regarding status as a restaurant will require reviewing the final menu offerings to determine what items from the original menu will be retained, what type of menu items will predominate, and whether the operation will more closely resemble the restaurants that have liquor licenses, or the diners and fast food enterprises that do not qualify for a liquor license. (See Attachment 8)

Given that the proposed space expansion is accompanied by a significant lease commitment, it is necessary to confirm as early as possible that the resulting establishment will be a place where complete meals are not only offered, but are also "actually and regularly served." It is equally necessary to understand that the business as it ultimately operates may not be as initially hoped and proposed. If that occurs, the Village would face the prospect of declaring that the operation is not a restaurant for purposes of liquor licensing. This scenario is not without precedent. A few years ago, the type of service offered by one restaurant in the Village was found to be inconsistent both with the business as described in the application materials and with the eligibility standards. As a result, the licensee had to surrender its liquor license to avoid revocation proceedings that could have jeopardized future license applications.

Unsigned Lease. Mr. Boyar has not yet signed the lease for the expanded space, and has only a preliminary space plan for the combined space. (Attachment 6) No liquor license has ever been conditionally approved without an actual lease and dimensioned space plan, which are required for an application to be complete.

No Expansion of Meal Service Offered Pending Construction. As noted above, Mr. Boyar has represented that he needs the expanded space and business to succeed, and that he won't sign the lease or apply for a building permit for that expansion unless the Village first conditionally approves his license application. Despite the need for an expanded business, D's Haute Dogs has not attempted to expand the type of service offered in the current space.

The D's Haute Dogs scenario is different from the closest precedents, Mirani's and Café Aroma, which both started off in small spaces without liquor service before moving into their current, larger spaces. However, both of those restaurants expanded their menus and service and obtained liquor licenses while still in their original spaces. When their new premises were ready for occupancy, the licenses for the smaller spaces were surrendered and replaced with licenses for the new premises. In contrast, D's Haute Dogs seeks assurances that it will be granted a license in the future, although it has not altered its current business model, premises and menu offerings to demonstrate its ability to operate as a full service restaurant. This is of particular importance, since one of the factors presented in the liquor license application is "the length of time the applicant has been in business of that character" (WVC §5.09.070.D), and the license application discloses that the four-year existence of D's Haute Dogs is the owner's sole experience in the food service industry.

Request for Conditional Approval. Although prior Village Councils have occasionally granted conditional approval for a new license, no Council has ever given a conditional approval until not only were the plans and business fully fleshed out, but the work was also near completion, so that the only conditions that remained to be fulfilled were (i) the completion of the construction, (ii) the issuance of the occupancy permit following a final inspection to confirm compliance with the approved plans, and (iii) confirmation that the completed premises meets the Liquor Ordinance's eligibility standards.

The dilemma facing the Village, which stems from the issues and concerns described above, is that the farther an application is from fulfilling the detailed requirements of the Village's Liquor Control Regulations, the closer the application is to a mere declaration of an intent to comply. Consequently, formally granting a conditional approval as early as is being requested here makes it impossible to define conditions with the precision needed for both the applicant and the Village to share a clear and identical understanding of what is required for final compliance. At the same time, providing an informal indication of an intent to eventually approve the license would serve to encourage the applicant to undertake the expense of the expansion. This, in turn, could allow the applicant to invoke estoppel to prevent the Village from denying a license even if, in the end, eligibility is not demonstrated.

V. Suggested Conditions

A review of the Liquor licensing procedures in seven nearby communities provides no evidence that any of them would issue a conditional license under the circumstances presented here, and the City of Evanston would clearly not allow it, since it allows conditional licenses only pending the return of fingerprint checks. Nevertheless, other communities do authorize their village boards or city councils to impose conditions pursuant to resolution. (See Attachment 7)

In the limited instances in which the Village of Winnetka has given conditional approval for a liquor license, the conditions have been incorporated into the resolution that created the license and made it available for the Commissioner to issue to the specific applicant. If the conditions were met, then the Commissioner issued the license, as authorized. If the conditions had not been met, the license would not have come into existence and therefore could not have been issued.

In light of all of the foregoing, Village staff recommends that, if the Council wishes to give conditional approval to the D's Haute Dogs request, it should first consider making the creation of the license subject to the following conditions:

1. The resolution granting conditional approval shall be null, void and of no effect unless the lease for the expanded premises is signed within 30 days of the Village's grant of conditional approval, and unless the lease specifically authorizes the operation of a restaurant, including the service of alcoholic beverages.
2. Within 30 days after the lease is signed, the applicant or its landlord shall submit a complete application for a building permit to modify the leased premises, as generally depicted in the conceptual plan (Attachment 6). The Village shall reserve the right to deny the application for liquor license if the leased premises does not meet the premises eligibility standards of Chapter 5.09 of the Village Code.
3. The applicant shall submit a draft of the final menu for review within 30 days of the Village's grant of conditional approval. The Village reserves the right to deny the application for license if the final menu does not demonstrate that the restaurant will be offering and serving complete meals rather than fast foods.
4. The license shall not be issued unless and until the leased premises comply with the Village Code's eligibility requirements for a Class A Liquor License with TV and Sidewalk Liquor Service riders, which shall be determined by the Police Department following an inspection of the completed premises.
5. The license shall not be issued unless and until the construction of the new premises has been completed in accordance with all applicable Village codes, which shall be determined by the Community Development Department following a final inspection of the completed premises, and which shall be evidenced by the issuance of a final Certificate of Occupancy.
6. The licensee shall sign a consent, release and waiver, (i) consenting to summary and automatic rescission of the conditional approval and to summary and automatic revocation or surrender of the conditional license upon notice from Village that the

final documentation, construction and/or operation of the business renders the applicant, its business or the leased premises ineligible, (ii) waiving any right to a hearing before such rescission, revocation or surrender, and (iii) releasing any claims the applicant may have against the Village for any costs or damages applicant may have incurred, including without limitation the loss of business, in the event the Village determines that the applicant has not met all applicable conditions for the issuance of a Class A Liquor License with TV and Sidewalk Liquor Service riders.

7. The license shall not be issued unless it contains the following additional conditions:

   a. No unaccompanied minors shall be allowed in the main seating area of the restaurant. For purposes of this provision, an unaccompanied minor means a person under the age of 18 who is not accompanied by a parent or legal guardian. For purposes of this provision, the main seating area shall mean that part of the leased premises that was formerly occupied by Davis Miller and is immediately to the south of the current premises, as shown in Attachment 6.

   b. The owners, manager, host/hostess and every employee that will take beverage orders from or serve beverages to patrons shall complete BASSET training prior to the initial issuance of the license. Proof of such training shall be submitted to the Chief of Police prior to the issuance of the license. All such persons hired after issuance of the license shall complete BASSET training within 10 days after employment. Proof of such training shall be maintained by the licensee at all times and shall be made available upon demand by any member of the Winnetka Police Department or any designee of the Local Liquor Control Commissioner or the state Liquor Control Commission.

   c. Each sales receipt shall identify the menu and beverage items sold, and shall indicate whether carry-out or dine-in service was provided. Licensee shall make the receipts available for inspection by the Local Liquor Control Commissioner or his or her designee upon request.

   d. The licensee shall agree to surrender the liquor license, without prejudice to future applications, in the event the operation of the food service does not constitute a restaurant as defined in Chapter 5.09 of the Village Code.

   e. The host/hostess station shall be located at the entrance to the restaurant, in the area depicted in Attachment 6.

Reference Materials:

Attachment 1	April 9, 2012	E-mail from Jared Boyar to Village Manager
Attachment 2	April 20, 2012	Letter from Village Manager to Jared Boyar
Attachment 3	June 29, 2012	E-mails between Jared Boyar and Chief Kreis, with questions regarding liquor license application
Attachment 4	List of answers from Jared Boyar	
Attachment 5	Draft menu	

Attachment 6	Draft space plan, showing locations of host/hostess stand and TVs
Attachment 7	Comparison of relevant Liquor Control Regulations
Attachment 8	Table of Food Service Establishments

Recommendation:

1. Provide policy direction on the Issues discussed in Section IV of this Agenda Report, starting at page 3.
2. Consider whether to proceed with a conditional license approval and, if so:
   a. Consider the Suggested Conditions in Section V of this Agenda Report, starting at page 5; and
   b. Consider any other conditions the Council deems appropriate under the circumstances.

From: Jared Boyar [mailto:[redacted]]
Sent: Monday, April 09, 2012 6:36 PM
To: Robert Bahan
Subject: Liquor Request

Mr. Bahan:

I am writing to you today to once again request a liquor license for D's Haute Dogs at 551 Lincoln Avenue. I have been before the board in the past, and have been turned down for a myriad of reasons. Mr. Greable often noted the 2005 caucus that showed Winnetka residents preferring to avoid the proliferation of alcohol within the town. However, Mr. Greable just voted emphatically for granting of a liquor license for Trifecta Grill's new wine room. This coupled with the 10 new liquor licenses that have been granted from 2006 to present suggest that something is changing around town.

At our last meeting, it was discussed that if I were to expand, then perhaps I would be allowed to sell liquor. Well that opportunity has arisen. My landlord has offered me the Davis Miller space directly next door to me. I would welcome the opportunity to expand and grow my business in the city of Winnetka. However, I cannot undertake this expansion without a liquor license.

Selling affordable, quality food is nearly impossible these days. Prices go up every week. We feel it at the grocery store in the same way as we feel it at the gas pump. As a vendor, to combat these food cost increases, rent increases, and other incidentals, I am requesting a liquor license to help jump start my expansion. If I cannot expand and sell liquor, I fear I may have to close my doors come next winter if food cost projections continue as forecasted.

I am asking for your help. I will of course follow whatever guidelines the village has for liquor sales. My expansion will require me to have a host/waiter. Our hours will be expanded as will our dinner menu. We may also begin to serve breakfast. Please let me know your thoughts, and I thank you in advance for your consideration.

Best,

Jared Boyar

P: 847.[redacted]

VILLAGE·OF·WINNETKA

Incorporated in 1869

Office of the Village Manager
(847) 716-3542
email: rbahan@winnetka.org

April 20, 2012

Mr. Jared Boyar
D's Haute Dogs
551 Lincoln
Winnetka, Illinois 60093

Dear Mr. Boyar:

Thank you for your e-mail renewing your request for a liquor license for D's Haute Dogs. Your proposed expansion into the Davis Miller space and expanded service may enable you to qualify for a Class A liquor license, without first requiring an ordinance amending the Village's Liquor Control Regulations, which are found in Chapter 5.09 of the Village Code.

Eligibility issues fall into three categories, and each one needs to be satisfied before you could get a license:

1. Eligibility of the proposed licensee: The licensee must reside in Winnetka. Assuming D's Haute Dogs, LLC, would be the licensee, its Winnetka address would meet that requirement. There are other eligibility requirements, which are evaluated in the course of a background check of the individual licensee or of certain partners or shareholders.
2. Eligibility of the premises: The location of licensed liquor establishments must comply with Winnetka's Zoning Ordinance and with State law limitations. In this case, the location of the proposed expansion space does not appear to be problem.
3. Eligibility of the business operation: According to the Village Code, Class A liquor licenses allow for the "service of alcoholic beverages by restaurants, but only when such sales are incidental and complementary to the sale and service of complete meals for consumption only on the premises where sold." The following criteria must be met to be considered a restaurant under the Village's Liquor Control Regulations:
   - It is a public place that is kept, used, maintained, advertised and held out to the public as a place where complete meals are served, and where complete meals are actually and regularly served;
   - There is adequate and sanitary kitchen and dining room equipment;
   - There are a sufficient number and kind of employees to prepare, cook and serve suitable food for the patrons;

Mr. Jared Boyar
April 17, 2012
Page 2

- A host or hostess is present to seat patrons;
- Patrons order from individual pre-printed menus;
- Orders are taken from and food is served to patrons while they are seated at tables;
- Complete meals are served using nondisposable dishes, glassware and utensils; and
- The service of alcoholic beverages is incidental and complementary to such meal service.

The necessary information is generally provided as part of the actual license application process. In this case, however, I would suggest that you first contact the Winnetka Police Department, which now handles all liquor license processing issues, so you can have a preliminary discussion about eligibility. That will help you identify any other issues and allow you to determine if it's worthwhile to move forward with a Class A application.

I hope your proposed expansion will build on the success of your current operation.

Sincerely,

Robert M. Bahan
Village Manager

cc: Patrick M. Kreis, Chief of Police

Patrick Kreis

From: Jared Boyar <[redacted]>
Sent: Friday, June 29, 2012 17:04
To: Patrick Kreis
Subject: Re: Liquor Application - D's Haute Dogs

I will address these questions and hand deliver you a response as well as a map.

Please be advised that the lease is prepared by the landlord. I will have him strike the language and insert appropriate language as we are by no means a diner. We will be a full service restaurant per Winnetka code.

The issue at hand is the landlord will not begin construction nor file for a building permit until conditional approval for the liquor license is granted. If you look at it from their point of view, they are afraid that if the village says no, then they will have wasted their money. I do not blame them. This situation is unique as I am an existing restaurant aiming to expand. Not a new restaurant about to be built. We are knocking down walls not building a new structure or moving.

I would hope that there would be consideration to the obstacles that I need to overcome in order to get this done. I assure you, we will play by the Winnetka Rules. If you like, I can personally escort you through the property to show you how and where things will be done.

P: 847.[redacted]

On Jun 29, 2012, at 4:43 PM, Patrick Kreis <PKreis@winnetka.org> wrote:

Mr. Boyar,

I've reviewed your application for a Class A Liquor License and Television Rider. I need some additional information before I can make a recommendation to the Liquor Commissioner regarding this application. Please either reply to this email or send a separate letter with the information. In either case I will attach your response to the application packet.

1. Your application includes a copy of your current menu. Will this be the same menu for your new expanded operation?
   a. Please provide a copy of the new menu, if the menu will be changing.
   b. If you plan on having different menu offerings for lunch and dinner, and/or a separate menu for carry-out service, please provide a copy of each menu.

2. What type of alcoholic beverages do you plan to serve?
   a. Beer (please specify draft, bottled or canned)
   b. Wine
   c. Spirits

3. Will the alcoholic beverages be included on the menu? If not, please indicate how you will inform your customers of what alcoholic beverages are being offered (e.g., separate beverage menu, wall board, etc.) Will the alcoholic beverages be shown for sale in another way? Beverage Menu, Wall Board, etc.?

4. Where will the alcoholic beverages be kept on the premises:
    a. For storage?
    b. For Display to customers?

5. The floor plan you submitted with the application appears to use the same lay out of your cooking/preparation/service area. Please explain any changes to the cooking/preparation/service areas and provide the following additional and clarifying information:
    a. Location of host/hostess station.
    b. Location of the television.
    c. Location of cash register.
    d. Location of service bar (if there is one).
    e. Location of carry-out ordering and pick-up station.
    f. Location of dish, flatware and glassware washing equipment.

6. What methods will be used to ensure that a customer cannot access alcoholic beverages without being properly served?

7. The floor plan submitted with the application does not illustrate how the customer flow is envisioned. Please provide a description of the method a host or hostess will use to greet and seat customers.

8. Please provide information about the number of employees you will have and what their duties will be. For example, how many servers will be on you wait staff? Will the host/hostess also double as a server? Will there be separate employees to clear and clean tables, wash dishes, do food preparation, cook food and serve alcoholic beverages? If employees will be performing more than one function, please indicate which functions they will perform.

9. What days and hours will you be open for business, and when will you be offering alcoholic beverages?

10. The lease attached to the application is not signed. Do you have a signed copy for inclusion?

11. If not, when do you plan on securing a signed lease?

12. Regarding the building modifications for the expanded space:
    a. When will you be filing the building permit application for the work?
    b. When do you envision completing the work?

13. Please describe how you will record and maintain records of food and beverage sales, including how you will distinguish between eat-in and carry out service.

Lastly, I am aware that you have made three previous requests to be considered for a liquor license. Each time in 2009, 2010 and 2011 the Village, either through the Village President as Liquor Control Commissioner, or the Village Council, as Liquor Advisory Board, indicated that the nature of your establishment did not meet the requirements of the Village Code. The lease you have provided with your application indicates that the purpose of your use is to operate a diner serving hot dogs and other grill type foods. Winnetka Village Code 5.09.080.22 lists diners as ineligible for liquor licenses. I'm unable to provide an affirmative recommendation to the Liquor Commissioner in such a circumstance.

Feel free to call me or Commander James Christensen if you need clarification regarding any of these questions.

Best Regards,

Patrick Kreis
Chief of Police
Winnetka Police Department
410 Green Bay Road
Winnetka, IL 60093-2576
847-716-3400

1) We have attached a copy of our current menu. There will be additional "dinner like" items that will be added to the existing menu. These items will be available all day long. We do not anticipate having different menu's for lunch and dinner. Nor will there be a different menu for carryout. All of our food will be available for consumption at any given time of our hours of operation. I have attached a copy of our additional items. Please see "addendum A".

2) We will offer craft brewed beers from locally sourced brewers. There will be no taps on the premisis. We will also offer wines by the glass and bottle. We would like to also offer bloody mary's as our customer's have asked for them specifically on Saturday's and Sunday's which would require us to also be able to serve spirits. If this is a major sticking point, we are willing to discuss the matter.

3) The alcoholic beverages will be offered on a separate drink menu which will be placed on the table at the time the customer is seated. Alcohol will not be available for carry out.

4) The alcoholic beverages will be kept in our prep area, in a box fridge out of the view of the public. Please see "addendum B".

5) Please see "addendum B"

6) As stated in question 4 beverages will be kept in our prep area in a box fridge out of the view of customers. There is an "employee only" sign on the door to that area. There is only one way in our out of that station, and there is always somebody in that station. Customers are strictly forbidden access to that area.

7) Please see "addendum B" for graphical detail. However, the host will greet the guests at the front door and direct them to the register for carry out or phone orders. In the case that the customer will be dining in, the host would then instruct them to follow him/her into the new dining area where they will be seated and greeted by a server.

8) We will employ roughly 4 cooks, 1-3 hosts, 4-6 servers, and 3 busboys. During slower times a server may double as a host. The servers will primarily serve food, the cooks will exclusively prepare and cook food. The busboys will clean tables and do dishes. Either my wife or myself will prepare the alcoholic beverages for service.

9) We will be open from 11-9 Monday-Saturday & 11-8 on Sunday. Liquor service will be available during all hours of operation in accordance with Winnetka law.

10) The lease attached is a rough copy. I am awaiting a final copy from the landlord. Certain language needs to be changed and a provision for additional air conditioning needs to be included. I will have this to you in short order.

11) Once the lease has been corrected, I will sign it, have our landlord countersign and return it to you.

12) The landlord will file for the building permits once I have been given conditional approval by both the police department and the village.

13) Food and beverage sales will be recorded on our register as it is with most modern establishments. Dine in customers will be seated by the host and served by the server. Carry out service will be directed to the register by the host where they will place and pick up their order. Their order ticket will be noted "TO GO", at the time they place their order, much like it is now. If it is a phone order, the same rules will apply.

14) Please be advised that the language in the lease is provided by the landlord. By no means are we a diner at the present time, nor do we aim to be in the future. We will be a full service restaurant that complies with all of the village codes.

If you have any other questions, please do not hesitate to contact me directly. I appreciate your time and help in making our family business expand to its fullest capabilities.

Thank You-

Jared N Boyar
847.[redacted]

Appetizers

Chicken wings, either buffalo or bbq served with celery and your choice of ranch or blue cheese dressing. $7.95

Hummus platter, with home made pita chips, carrots, celery, cucumber, olive. $7.95

Homemade potato skins, our house blend cheese sauce,
bacon, chives, and a side of sour cream. $9.95

Mini meatball sliders, $6.95

Quesadillias, cheese, chicken or steak, served with a side of quacamole and sour cream.
Cheese $5.95 steak or chicken $7.95

Build your own mac and cheese, our houseblend cheese sauce $8.95
add, bacon, broccoli, corn, garlic, jalapeno, mushrooms, peas, peppers, scallions,
sundried tomatoes. Each ingredient $1.50 exta.

Large Salads

Steakhouse Salad, skirt steak, bacon, egg, tomato, onion, romaine lettuce. $11.95

Ceaser Salad, romaine, parmesean, egg. $7.95 add chicken or steak $9.95

Pear and gorganzola salad, with candied walnuts and mixed greens $9.95

Italian Salad, cucumbers, tomato, onion, chickpeas, salami, mozzarella, peppers. $10.95

Large Plates

(each come with your choice of two sides, coleslaw, potato salad,
sweet potato tots, or our nearly famous hand cut fries)

The ChuB, ½lb in house hand pattied char burger, served with lettuce, tomato, onion
$10.95

Turkey Meatloaf served with roasted seasonal vegetables $10.95

Roasted ½ chicken served with roasted seasonal vegetables $12.95

Gyros platter served with cucumber, tomato, onion tzaziki with pita $9.95

Spaghetti and meatballs, our home made meatballs with fresh pasta $11.95

Skirt Steak, house marinade served with our homemade onion strings $14.95

Islander Sandwich, a juicy marinated chicken breast topped with roasted red pepper, pepperjack cheese, crispy bacon and grilled pineapple. Served on nine grain bread with lettuce and tomato $9.95

The Cubano, our take on a hot pressed Cuban sandwich, made with ham, salami, swiss cheese, garlic aoli, mustard and pickles $9.95

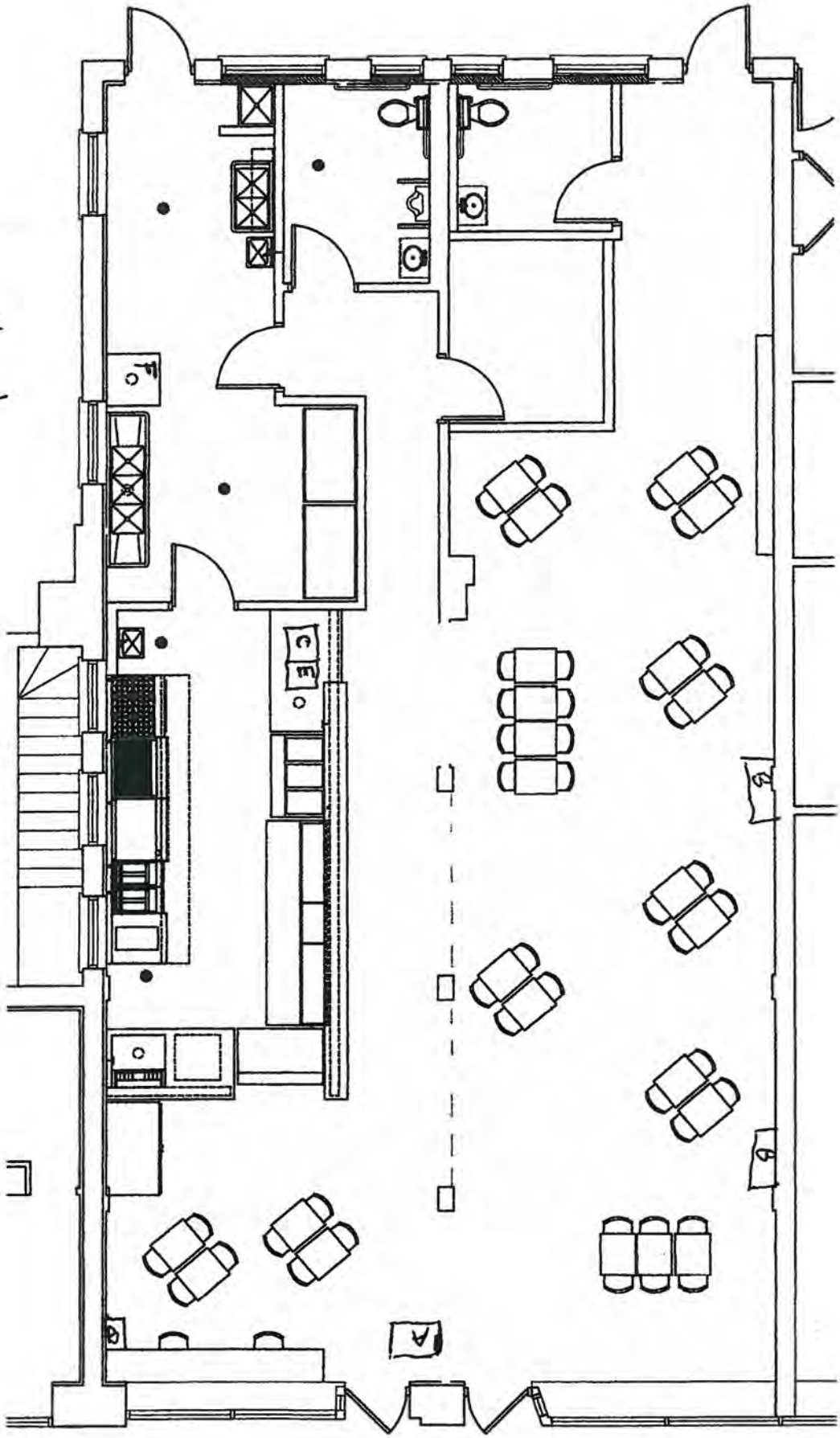
Seasonal Specialties:

TBD

011 -

Key

A: Host
B: TV
C: Register
D: Ø
E: Carry out order pickup
F: Dishwasher



Comparison of Relevant Liquor Control Regulations

Municipality	Minors	BASSET*	Waiver or Release	Probationary or Limited License	Other Conditions
Winnetka	Service prohibited; parental responsibility; no Code prohibition against unaccompanied minors	Not mentioned; not required by Code	Not mentioned; not required by Code	Not mentioned; not required by Code	Conditions built into definitions and classifications Additional conditions imposed in resolution creating license, based on specific circumstances
Glencoe	Service prohibited; parental responsibility; no Code prohibition against unaccompanied minors	Not mentioned; not required by Code	Not mentioned; not required by Code	Not mentioned; not required by Code	Conditions built into definitions and classifications
Northfield	Service prohibited; parental responsibility; no Code prohibition against unaccompanied minors	Not mentioned; not required by Code	Not mentioned; not required by Code	Not mentioned; not required by Code	Conditions built into definitions and classifications Restaurant = “full service dining establishment;” no requirement for complete meals
Wilmette	Service prohibited; parental responsibility; no Code prohibition against unaccompanied minors	Not required; can be imposed in disciplinary	Not mentioned; not required by Code	Not mentioned; not required by Code	Conditions built into definitions and classifications Minimum size for restaurants; service without meals, but only while complete meals are offered
Glenview	Ineligible for license if majority of customers are minors or principal business is selling school books and supplies, food, etc. to minors	Required since 2009	Not mentioned; not required by Code	Not mentioned; not required by Code	Conditions built into definitions and classifications Additional conditions may be imposed by Commissioner, if approved by Village Board resolution
Northbrook	Minors prohibited without parent or guardian	Required for supervisor, managers and employees who mix or serve alcoholic beverages	Not mentioned; not required by Code	Not mentioned; not required by Code	Conditions built into definitions and classifications Additional conditions may be imposed by Commissioner, if approved by Village Board resolution

Municipality	Minors	BASSET*	Waiver or Release	Probationary or Limited License	Other Conditions
Highland Park	Service prohibited; parental responsibility; no Code prohibition against unaccompanied minors	Required for supervisor, managers and employees who mix or serve alcoholic beverages	Not mentioned; not required by Code	Not mentioned; not required by Code	Conditions built into definitions and classifications
Evanston	Service prohibited; parental responsibility; no Code prohibition against unaccompanied minors	Required for all owners and site-managers, and	Conditional licensee waives any right to a hearing and consents to summary and automatic revocation of the conditional license upon notice from City that the fingerprint checks render the licensee ineligible	Conditional license permitted only pending fingerprint check	Conditions built into definitions and classifications City Council can overturn denial of license by ordinance

* Beverage Alcohol Sellers and Servers Education and Training (BASSET) certified by the State of Illinois Liquor Control Commission

Table of Food Service Establishments

Name	Type of Service / Classification	Liquor License or Eligibility
Avli Ristorante	Full service restaurant	A-1, TV, Package
Café Aroma	Full service restaurant	A-1, Sidewalk
Corner Cooks / Jerry's	Full service restaurant	A-1, Sidewalk
Kyoto	Full service restaurant	A
Lemongrass	Full service restaurant	A
Little Lan's	Full service restaurant	A
Little Ricky's	Full service restaurant	A-1, TV, Sidewalk
Michael	Full service restaurant	A
Mirani's	Full service restaurant	A-1, Sidewalk
O'Neil's	Full service restaurant	A-1
Trifecta Grill	Full service restaurant	A-1, TV
Winnetka Golf Course	Unique classification; food prepared off site	P
Winnetka Wine Shop		E-2, Sidewalk
Boris' Café	Diner	Not eligible
Café Buon Giorno	Diner	Not eligible
Marco Roma	Restaurant; not full service	Not eligible
Original Green Bay Café	Diner	Not eligible
Capt'n Nemo's	Fast food	Not eligible
D's Haute Dogs	Fast food	Not eligible
Love's Yogurt	Fast food	Not eligible
McDonald's	Fast food	Not eligible
Panera Bread	Fast food	Not eligible
Winnetka Beach Concession	Fast food	Not eligible
Winnetka Ice Rink Concession	Fast food	Not eligible
YoBubble	Fast food	Not eligible
Café Fleurette	Coffee shop; fast food	Not eligible
Caribou coffee	Coffee shop; fast food	Not eligible
Starbuck's	Coffee shop; fast food	Not eligible
Trueman	Pre-packaged specialty foods	Not eligible