City of Leavenworth, Kansas

January 1, 2015 - December 31, 2015

Kansas Permit No: M-MO12-SN01

Federal Permit No: KSR044011

February 26, 2016

CITY OF LEAVENWORTH

Kansas Stormwater Annual Report Form for Municipal Separate Storm Sewer Systems (MS4s)

January 1, 2015 – December 31, 2015

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Section A
Local Government Information

KANSAS STORMWATER 2015 ANNUAL REPORT FORM FOR MUNICIPAL SEPARATE STORM SEWER SYSTEMS (MS4s)

Check box if this is a new name, address, phone, etc.

Permittee Information and Reporting Period

Permittee (Agency Name) Mailing Address: 1 City of Leavenworth, City Hall ☐

Mailing Address 2; City: 100 N Fifth Street, Leavenworth ☐

State Kansas ☐

Zip Code: 66048 ☐

Contact Person: Michael G. McDonald ☐

Contact E-Mail Address: mmcdonald@firstcity.org ☐

Contact Phone Number: 913-684-0375 ☐

Kansas Permit Number: M-M012-SN01 (Example) M – MC21 - SU01

Reporting Period covers activities from January 1, 2015 through December 31, 2015.

This annual report must be submitted to the Kansas Department of Health and Environment (KDHE) by February 28, 2016. This annual report must be submitted as a word or PDF file to KDHE on a standard compact disk (CD). A paper copy of the report may, in addition to the CD, be submitted if the permittee so desires but is not required.

B. Executive Summary

Append an executive summary to this report which briefly covers the major aspects of the MS4 stormwater management program enacted during the year. In completing the executive summary, the preparer should address the following questions:

1. Were there any aspects of the program that appeared especially effective at reducing pollutants in your stormwater discharge?
2. Were there any aspects of the program that provided unsatisfactory results?
3. What was the most successful part of the program?
4. What was the most challenging aspect of the program?
5. Describe any City/County area MS4 clean-ups and the participation.
6. Describe the elected officials' participation in the stormwater pollution elimination.
7. Describe the collaboration with other organizations to eliminate stormwater pollution.

The executive summary does not need to be extensive and detailed. It is anticipated the executive summaries will range from one half of a page to two pages in length depending on the scope of the program.

Section B
Executive Summary

CITY OF LEAVENWORTH

Kansas Stormwater Annual Report Form for Municipal Separate Storm Sewer Systems
January 1, 2015 – December 31, 2015

SECTION 1: EXECUTIVE SUMMARY

To satisfy of the requirements of NPDES permit, this annual report summarizes the City of Leavenworth's plans and actions to reduce the discharge of pollutants from the municipal separate storm sewer system (MS4) to the maximum extent practicable, to protect water quality, and to meet the appropriate water quality requirements of the Clean Water Act. The information contained within this report was obtained through interviews with city staff, review of permits and projects from 2015, and examining publications made available to the citizens of Leavenworth. These discussions with office and field personnel from the Public Works and other Departments highlights the key aspects and define the current state of the stormwater management plan and provide insight into future improvements to the stormwater quality standards.

City staff communicated the awareness of water quality with increased efforts in several areas during 2015. This increased level of activity was a result of comments from the 2013 EPA inspection, adoption of stormwater guidelines in early 2015 as well as a product of staff awareness through training and education. The importance of construction site runoff control was communicated to developers and contractors through establishment of a "Land Disturbance Permit" (LDP) requirement for nearly all construction activities. The implementation of the LDP was coordinated with information distributed to local development and contracting firms and a group meeting with contractors at City Hall.

The City continued improved clean-up of Sanitary Sewer Overflow (SSO) situations on both public and private property. The aggressive commercial grease trap inspection program by the building inspectors continued with on-site inspections review of maintenance records.

The city water quality sampling program for Three and Five-Mile Creeks continued. Six storms were sampled in 2015. The most challenging part of the sampling program was determining when to send the employees into the field. The nature of the run-off patterns in Leavenworth are that the streams are quick to rise and fall in response to rainfall, and with the short duration events in 2015 it was not always possible to sample within the "rising stream" as required.

Several local governments in Leavenworth County share weather information from local weather stations. This information is often compiled into charts and graphs that provide insight to the local weather patterns and distributed via email to those who have expressed an interest.

Stormwater quality and runoff control from construction projects continues to be addressed during the planning phase of projects. This begins at the review by the "Development Review Committee", which provides general advice and guidance to applicants and other staff on most projects prior to the design process. Stormwater quantity and quality issues are discussed. The creation of the "Land Disturbance Permit" (LDP) process includes standard drawings and acknowledgements by owners and/or contractors related to their responsibilities for managing water quality from their site.

Review of construction drawing by city staff has proven especially effective at reducing pollutants in stormwater by ensuring large and small projects attempt some measure of action. Plan reviews include evaluations of both the construction site erosion control plan and the drainage plan of the development. Addressing stormwater issues early in the design process has ensured that Best Management Practices (BMPs) are well suited for the site and adequate information is included in the plans for construction.

Leavenworth has been focused on incorporating BMPs such as native plantings and filter strips into construction plans as most developments occupy existing lots with existing drainage systems. Public Works staff has encouraged the use of filter strips, roughened textures on concrete drainage channels and similar work on multiple development projects. Several city projects in 2015 included sediment traps at inlet openings to allow particles from small rainfall events to be exposed to UV solar light and other environmental forces to accelerate degradation of pollutants. This focus has results in effective pollutant removal, low costs and low-cost maintenance efforts being required.

One of the least effective parts of the stormwater management plan lies with managing existing BMPs on private developments. Lack of maintenance to detention ponds by Home Associations continues to be a concern by both the HOA's and the City. Failure to maintain these systems can decrease the functionality of these critical stormwater infrastructure components over time and adversely impact water quality as well. In response the city will formally contact owners of these facilities to reinforce the importance of their responsibility to properly maintain these ponds.

The inspection and enforcement of the LDP and grease trap regulations has found that while initial compliance is very good, the on-going maintenance and self-inspection of these facilities is lacking. Staff is following–up by contacting the various parties involved to resolve the issues and improve compliance. City staff will be proposing ordinances related to fees and fines for these activities in 2016.

Efforts to reach out and educate the citizens of Leavenworth through media such as the city website, the local cable television station (Channel 2), Facebook, and Twitter have increased public awareness of environmental issues in general. The Adopt-A-Park program has been a very popular way to increase public awareness. Staff has been contacted by Boy Scouts and schools regarding appropriate projects with some being followed through to completion.

Stormwater guidelines adopted by the City Commission in March 2015 were augmented by the creation of the "Land Disturbance Permit" at the same time. This further increases the focus on control of erosion and pollution from all construction sites.

CITY OF LEAVENWORTH
Kansas Stormwater Annual Report Form for Municipal Separate Storm Sewer Systems
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Stormwater Management Program (Section C-E)

C. Stormwater Management Program

	Yes	No	Not Applicable
	Place a check mark in the appropriate box.		
1. Has the Stormwater Management Program (SMP) been developed?	X		
2. Has the SMP been modified during this reporting period?	X		
3. If the answer to question 2 above was "yes", has the modified SMP been submitted to KDHE for approval?		X	

If the answer to item 3 is "No" a copy of the modified SMP must be submitted with this annual report. If it is anticipated a measurable goal cannot be met in the next year the SMP should be modified and submitted to KDHE for approval. The modifications may include different BMPs and/or revised goals to avoid being in a position of non-compliance.

SMP Submitted with this Annual Report as Appendix E

D. Total Maximum Daily Load (TMDL) Best Management Practices

The permit requires the implementation of these BMPs prior to October 1, 2006

	Yes	No	Not Applicable
	Place a check mark in the appropriate box.		
1. Were any best management practices (BMPs) intended to attenuate the discharge of TMDL regulated pollutants implemented? See your permit to determine if TMDL regulated pollutants are listed for the receiving stream affected by your stormwater system.			X

2. List all of the BMPs intended to attenuate the discharge of TMDL regulated pollutants as identified in the SMP and provide the requested information on the following table on the following pages.

D. Total Maximum Daily Load (TMDL) Best Management Practices (Table)

BMP ID NUMBER	Brief BMP Description	Regulated TMDL Parameter	Measurable Goal(s)	Progress Achieving Goal(s) (Measured Result)

E. Stormwater Management Program Requirements (Six Minimum Control Measures)

1. Public Education and Outreach (Table)

List all of the public education and outreach BMPs as identified in the SMP and provide the requested information in the following table.

BMP ID Number	Brief BMP Description	Measurable Goal(s)	Progress Achieving Goal(s) (Measured Result)
1.1	Ensure the Stormwater Master Plan is available to the Public	Provide copies of the Stormwater Master Plan for viewing at the Public Library.	The Stormwater Master Plan has remained available to the public at the Leavenworth Public Library. This has been shown to NOT be an effective comunication toll, but will be maintained in an effort toward transparency
1.2	Maintain a Library of Stormwater Educational Materials.	Distribute brochures and make them available to the public.	This year's "City Connection" newsletters have highlighted *Adopt-a- Park Program, Legacy Tree Program and the construction of detention basins.* Parks Department has increased visibility and enforcement of the "dog doo" rules at parks and reports it has been a successful program.
1.3	Provide Information to Citizens regarding the City of Leavenworth Solid Waste Division.	Distribute trash bags to citizens with proper disposal handout.	Trash bags are distributed twice per year with additional bags available at the City offices. Flyers available through the City advertise the brush site, the recycling center, Free First Saturdays, and trash regulations.
1.4	Issue Press Release Regarding Local Stormwater Issues	Complete and send out monthly Press Releases to local media outlets.	Information regarding solid waste collection scheduling, snow removal operations, the Spring Clean Up, leaf collection program and general updates on stormwater issues are now also being released through social media such as Twitter and Facebook in addition to Leavenworth Residents.

1.5	Show Stormwater Information on Local cable TV Station	Broadcast community forums, in which continued water quality discussions take place	City Commission meetings are broadcast live, and repeat broadcast throughout the week. Meetings are also provided via a YouTube Link
1.6	Provide Educational Stormwater Information on City Website and social media sites.	Establish a series of informational articles addressing topics on Stormwater education.	The City website provides an electronic version of the City Connection as well information on the Public Works Department for easy access to work schedules and regulations. The updated Stormwater Design Manual, Land disturbance permit and other guidelines are available on-line

2. Public Involvement and Participation (Table)

List all of the public involvement and participation BMPs as identified in the SMP and provide the requested information in the following table.

BMP ID Number	Brief BMP Description	Measurable Goal(s)	Progress Achieving Goal(s) (Measured Result)
2.1	Hold Public Meetings Regarding Stormwater Issues.	Provide the public an opportunity to discuss related Water Quality topics.	On-going stormwater issues are discussed at City Planning Commission and City Commission Meetings in an Open Forum Environment, broadcast live on Cable TV, and rebroadcast several times, and covered in the Leavenworth Times (local print media). Multiple meetings regarding EPA issues and CIP drainage projects occurred in 2015.
2.2	Improve Lines of Communication with the Public.	Integrate contemporary methods of providing and receiving information to the Public.	The City Public Information Officer uses press releases, Facebook, Twitter, Youtube and other methods to distribute information regarding City services, current City projects, and educational material. City staff email addresses and phone numbers are available on the City website.
2.3	Develop a Stormwater Stenciling Program.	Advertise to the Public the importance of Stormwater Management and the need for storm drain stenciling within the City.	Local volunteers such as the Boy Scouts have helped stencil storm inlets throughout the City in the past. City did not receive contact on this type of project in 2015. City has revised specifications for inlets to now require "stenciling" be stamped into the concrete tops.
2.4	Continue to Maintain and Clean Trash and Debris from Local Streams.	Establish an Adopt a Stream program	City crews continue to clean streams on public property throughout the City. Volunteers have been especially effective on the Annual Spring Clean Up Day at removing Trash from City and Public Property. 2015 saw 1206 volunteers in clean-up activity and 378 using drop-off services. Eleven parks have been adopted through the Adopt a Park program which provides organizations the opportunity to clean and keep specific parks. No new parks were adopted in 2015. Boy Scouts cleaned debris in Three Mile Creek, coordinated by the Parks Department.

2.5	Establish a Reforestation Program	Continue to promote [illegible] Day to increase community inovlvement.	The City of Leavenworth continues to be part of the Tree City USA program sponsored by the Arbor Day Foundation. The Legacy Tree Program allows for a tree to be planted and dedicated in public spaces. Arbor Day is celebrated yearly. 12 Legacy trees were planted in 2015.
2.6	Collect rainfall and streamflow data to analyze citizen complaints	Increase data sources to include more streamflow data and weather stations	Davis Pro Weather stations have been installed at 4 locations citywideThe data is available to all on the internet and upon request. This information has been used to assist in evaluating runoff for projects and citizen concerns. Increased data allows for City staff to better analyze flooding events and address the concerns of the public. The City also has several portable digital depth recorders used to monitor performance of streams and detention basins. City has coordinated weather collection data with Leavenworth County, Lansing and Basehor. City Engineer taught a class at UMKC related to data acquisition as performed by the City. An occasional email is distributed to interested persons on significant weather events, often integrating the depth data in the creeks with rainfall data in spreadsheets and graphs. Other subjects have included rainfall generally, wind speed and direction, temperature anomalies, etc. City PIO makes occasional use of this data, and others have distributed it internally to their companies.

3. Illicit Discharge Detection and Elimination

The permit requires the implementation of these BMPs prior to October 1, 2007.

Place a check mark in the appropriate box.

Explain each item below in following table.	Yes	No	Not Applicable
1. Has a program/plan been developed and is it presently implemented to detect and address illicit/prohibited discharges into the MS4?	X		
2. Has a map of the MS4 been developed, showing the location of all outfalls, either pipes or open channel drainage, showing names and location of all streams or lakes receiving discharges from the outfalls?	X		
3. The permit requires the permittee enact ordinances Resolutions or regulations. Has an ordinances, resolutions or regulations to prohibit non-stormwater discharges into the storm system been enacted? Effective Date: ___March 2015_____ Has the ordinance, resolution or regulation been modified? Effective Date: _____	X		
4. Has the ordinance, resolution or regulation and/or modification been submitted to KDHE for approval?	X		
5. Have public employees, business, and the general public been informed of the hazards associated with illegal discharges and improper disposal of waste?	X		
6. Have public employees, business, and the general public been informed of the hazards associated with illegal discharges and improper disposal of waste?	X		
7. Have stormwater inlets & detention ponds been inspected?	X		
8. Are restaurant waste grease areas inspected?	X		
9. Are septic systems inspected?		X	
10. Are the streets swept frequently?	X		
11. Is there a yard waste management program?	X		
12. Are snow removal activities inspected?	X		

13. List all of the illicit discharge detection and elimination BMPs as identified in the SMP and provide the requested information in the table on the following pages.

3. Illicit Discharge Detection and Elimination (Table)

BMP ID Number	Brief BMP Description	Measurable Goal(s)	Progress Achieving Goal(s) (Measured Result)
3.1	Stormsewer Mapping	Continue to update existing stormsewer structures as well as add new development structures to the city mapping systems.	Map of the existing storm sewer network is COMPLETE. Data collection continues using GPS receiver and invert information collected by opening all manholes. The GIS system has location information on essentially all (99%+) of the facilities, (structures, ponds, outfalls, etc.) with approx. 95% of the system having been physically verified with GPS equipment. Detailed technical information is verified by field measurement and is about 90% complete. Mapping will continue on new systems and collection of limited technical data. The map and GIS database are available to city users via the city Intranet and to design engineers by delivery of DVD or PDD. Overall system maps are available to the public at the City Clerk's Office, with approximately ten requests for complete or partial mapping being received in 2015. Indications are that the requests are primarily from owners, developers or engineers considering some type of development project.
3.2	Stormsewer Maintenance and Inspection	Provide dry weather storm sewer inspection.	A 2 Person Crew is dedicated to storm sewer inspection full-time. The crew provides on-going review of storm infrastructure, assists with GPS inspection, responds to public complaints, and provides maintenance for the storm system.

3.3.1	Inspection of Sanitary Sewer Systems	Inspect residential and commercial sanitary systems for improper discharge into storm drains.	The Sewer TV system and Pole Camera info[illegible]on is integrated into the GIS system. The camera crew works with Streets Division and Storm Sewer Crew to evaluate problems identified during other maintenance activities
		Inspect sanitary sewer system to reduce number and volume associated with SSO	City completed a substantial flow monitoring study for I/I reduction efforts. An on-going I/I rediction effort continues, work in 2015 was delayed to 2016, and additional work is scheduled for 2016.
		Coordinate SSO events between Wastewater Staff, Building Officials and Engineering.	All SSO events are shared between the noted staff members. Follow-up inspection by TV and/or, Building Inspector is typical. Recording keeping improved to reflect ultimate resolution of SSO. Annual meeting was held with Engineering Staff to review status of SSO locations and "High Maintenance Lines" for possible projects to reduce SSO events.
3.3.2	Commercial Grease Trap Inspection Program	Review status of commercial grease traps through record review and physical inspection.	City began formal inspection efforts of commercial grease traps in 2015. A combination of notifications, phycisal inspections and request for records resulted in five new installations and improved performance in many others.

3.4	Procedural Training for City Staff	City staff shall atte[illegible]nnual continuing educational programs.	City inspection staff attends continuing edu[illegible]nal programs as required. City forces (Parks and Public Works) attend certification courses for herbicides and pesticides. Recent contact with EPA has identified additional training and procedures are necessary to adequately inspect construction sites. Engineering staff has attended several related training events Additional training will take place throughout 2016. Training will be expanded to the general workforce to improve awareness of erosion and pollution issues in 2016
3.5	Establish a Program for Household Hazardous Waste Disposal.	Provide pick up for household hazardous waste on a regular Basis	Used motor oil may be dropped off at the City's Recycling Center and all other household hazardous-waste may be dropped off at the Leavenworth County Transfer Station. City collects HHW on City-wide clean-up events.

4. Construction Site Stormwater Runoff Control

The permit requires the implementation of these BMPs prior to October 1, 2007.

Explain each item below in following table.	Yes	No	Not Applicable
	Place a check mark in the appropriate box.		
1. The permit requires the permittee to enact ordinances, resolutions or regulations. Has an ordinance, resolutions or regulation to address construction site runoff from new development and redevelopment projects been enacted? Effective Date: ___March 2015_____	X		
2. Has a copy of the ordinance, resolution or regulation been submitted to KDHE as required by the permit?	X		
3. Has a procedure or program been developed requiring construction site owners and/or operators to implement appropriate erosion and sediment control best management practices?	X		
4. Has a procedure or program been developed requiring construction site owners and/or operators to control waste such as discarded building materials, concrete truck washout, chemicals, paint, litter and sanitary waste at construction sites likely to cause adverse impacts to water quality?	X		
5. Has a procedure been developed and implemented requiring site plan review of erosion control and debris container locations incorporating consideration of potential water quality impacts?	X		
6. After review, is a construction site permit issued?	X		
7. Has a procedure been developed for the receipt and consideration of information submitted by the public?	X		
8. Has a procedure been developed and implemented for construction site inspection and enforcement of the control measures?	X		
9. Are construction site inspection and enforcement actions successful?	X		
10. Are site owners and/or operators provided instruction On proper construction site erosion and waste control?	X		

11. List all the construction site stormwater runoff control BMPs as identified in the SMP and provide the requested information in the table on the following pages.

4. Construction Site Stormwater Runoff Control (Table)

BMP ID Number	Brief BMP Description	Measurable Goal(s)	Progress Achieving Goal(s) (Measured Result)
4.1	Construction Specifications and Standard Details.	Continue to develop and update the City specifications and design criteria.	City Commission approved the stormwater guidelines in March 2015. These are based on APWA and MARC guidelines.
4.2	BMP Fact Sheet	Develop BMP Guidelines and Distribute Materials to Developers.	Adopted BMP guidelines that are part of the adopted stormwater design guidelines are available on city website and distributed to developers, builders and engineers. The MARC BMP Manual and APWA design guidelines are also readily available online.
4.3	Construction Drawing Review	Require City review of all construction projects to ensure design addresses stormwater concerns.	All new residential and commercial developments are reviewed by City staff for stormwater concerns. BMPs have been incorporated into new development by consulting firms. NOI permits are required on projects that disturb areas in excess of 1 acre or require that a Storm Water Pollution Prevention Plan (SWPPP) be developed. Beginning in June 2015 all construction projects must obtain a "Land Disturbance Permit" that requires specific measures be identified to address pollution and erosion. A total of 169 permits were issued in 2015.
4.4	Pre-Construction Meetings with Owner and Contractor.	Require meetings with owner and contractor prior to commencement of grading operations.	Pre-construction meetings have been conducted by City staff with contractors and developers on all new developments to discuss the implementation of proper erosion controls and pollution prevention.

4.5	Construction Site Inspection and Enforcement	Increase the frequency of inspections and develop a site checklist	City inspection staff checks construction sites a minimum of once a week. In addition, after a half inch or greater rainfall the site's BMPs functionality are checked. Stop work orders are issued if site erosion control measures are not in compliance and remedied in a timely manner. Five stop-work orders were issued in 2015 until the situation was corrected Temporary controls remain onsite until an acceptable grass stand is established and the permit closed. Random checks on contractor logs are conducted as well.
4.6	Staff Training	Conduct monthly meetings with inspection staff and provide training to new staff	EPA visit in 2013 identified that additional staff training related to construction practices and Inspection activities is necessary. Expectations have been reviewed with staff Staff training occurred in 2015 and will continue. The status of the LDP program is discussed at weekly staff meetings, and periodic training and presentations on related topics occurred throughout 2015. Additional training for other city forces (Code Enforcement, Parks Department, Street Division) will occur in 2016.

5. Post-Construction Site Stormwater Management in New Development and Redevelopment.

The permit requires the implementation of these BMPs prior to October 1, 2007.

Explain each item below in following table.	Place a check mark in the appropriate box. Yes	No
1. The permit requires the permittee to enact a program to address post-construction site stormwater runoff from new development and redevelopment. The program developed to manage stormwater in new development and redevelopment projects must include the following elements: a. Strategies which include a combination of structural and/or Non-structural BMPs, b. Measures to ensure adequate long-term operation and maintenance of BMPs, c. Site Owner or operator name and telephone number Responsible to ensure adequate long-term operation Maintenance of BMPs, d. BMPs to prevent or minimize adverse water impacts.		
2. Has a post-construction stormwater runoff program been Implemented?	X	
3. Has post-construction sites been inspected?	X	
4. Have there been post-construction violations?	X	
5. List all the post-construction site stormwater management in new development and redevelopment BMPs as identified in the SMP and provide the requested information in the table on the following pages.		

5. Post-Construction Site Stormwater Management in New De[illegible]pment and Redevelopment Table

BMP ID Number	Brief BMP Description	Measurable Goal(s)	Progress Achieving Goal(s) (Measured Result)
5.1	Construction Site Inspection and Maintenance of Long Term Controls.	Increase inspections	Issuance of an Land Distrubance Permit requires inspection by owner/contractor. City also inspects on a bi-weekly schedule following construciton to ensure BMP's such as gutter-buddies remain in working order until ground cover is established. Projects that meet requirements are issued a certificate of compliance. City has been working on informing detention pond owners on their responsibility of maintaining permanent facilities.
5.2	Protect sensitive areas, such as wetlands and riparian areas	Maintain or increase open space.	The City purchased additional properties in flood prone areas in 2015. These acquired properties act to prevent development in the floodplain and in general improve water quality. The Stormwater Guidelines includes references to stream buffers along creeks within the City to decrease the encroachment of developments into riparian areas.
5.3	Promote non-structural best management practices.	Minimize impervious surfaces and disturbance of soils and vegetation.	City staff have focused on encouraging developers to minimize grading impacts, provide tree preservation, and address project BMP's early in the plan review process. The Land Disturbance Permit formalizes the type of BMP's to be built by the developer

5.4	Construction Drawing Review.	Require city review of all construction projects to ensure design addresses post construction storm water concerns.	All new residential and commercial developments are reviewed by City Staff. Most projects will be reviewed by the Development Review Committee for general comments. Project site plans are reviewed by Engineering for compliance. Additional measures addressing Stormwater Quality have been incorporated into the updated City guidelines, particularly the requirement for a Land Disturbance Permit.
5.5	Analyze Existing Structural BMP Performances.	Evaluate local detention pond performances.	The City is utilizing level recorders and limited water quality testing to evaluate the performance of selected detention ponds during storm events for water quantity concerns. City began water quality testing on several basins in 2015.

6. Municipal Pollution Prevention/Housekeeping.

The permit requires the implementation of these BMPs prior to October 1, 2007.

Place a check mark in the appropriate box.

Explain each item below in following table.	Yes	No
1. The permit requires the permittee to enact a program to address Pollution Prevention/Good Housekeeping for Municipal Operations.	X	
2. Has an operation & maintenance program to reduce Pollutant runoff and an audits /inspection program been adopted?	X	
3. Has a municipal employee training program been established?	X	
4. Are oil, hazardous wastes, chemicals and municipal debris properly deposed?		
5. Are snow and ice removal material and chemicals properly managed to prevent runoff?	X	
6. Are municipal streets swept on a regular basis?	X	
7. Are municipal stormwater inlets and drains inspected and cleaned?	X	
8. Are municipal snow piles controlled drainage to prevent runoff pollution?	X	

List all the Municipal Pollution Prevention/Housekeeping BMPs as identified in the SMP and provide the requested information on the table on the following pages.

7. *PHASE I OPERATORS ONLY* - Monitoring Industrial and High Risk Run-off

Place a check mark in the appropriate box.

	Yes	No
1. Has the permitee developed and maintained a list of the municipal industrial facilities contributing to the pollutant loading to the municipal storm sewer system?		
2. Has at least two municipal industrial facilities on the list had inspection and sampling conducted?		

If the answer to items 1 an 2 is "No" provide a statement on the Phase I operator form Appendix B as to why monitoring and control has not occurred.

Complete Monitoring form in Appendix B.

6. Municipal Pollution Prevention/Housekeeping Table

BMP ID Number	Brief BMP Description	Measurable Goal(s)	Progress Achieving Goal(s) (Measured Result)
6.1	Storm Sewer and Catch Basin Cleaning.	Inspect and clean all storm sewer inlets on a quarterly basis.	Two Full Time employees utilize the City's vacuum truck to remove debris from storm sewer inlets and performed several inlet repair projects . Other city forces area assigned to inlet inspection on occasion. The City has contracted for repairs to several storm structures. Debris was removed from inlet openings on at least 1000 occasions in 2015
6.2	Street Sweeping	Increase street sweeping rotations throughout the City.	Arterial streets are required to be cleaned on a monthly basis, and residential streets must be swept at least twice per year. Leavenworth's crews have met these goals and have cleaned ALL streets a minimum of 4 times in 2015. GPS tracker installed in two street sweepers for most of the sweeping season assists in managing the sweeping program. Two sweepers generated 525 tons of debris while sweeping for 2028 hours in 2015
6.3.1	Snow Removal Operations.	Upgrade the City's Snow removal equipment.	The salt trucks are ground speed controlled which allows for a more precise application rate of the salt/sand mix. Mix ratio is modified to reduce the volume of salt and materials applied to the roadways. City has moved toward more salt/sand rather than all salt for most storms. Review of application rates finds that they are within guidelines. Staff is also becoming more familiar with the controls of the spreaders to ensure proper application of sand and salt. GPS trackers are installed in four key snow removal vehicles. All salt and sand is stored in covered structures.

6.3.2	Evaluate Snow Disposal Area and salt loading areas	Ensure Runoff and Melting snow is controlled from areas to avoid direct runoff to creek.	City identified possible erosion-prone areas from snow disposal area and constructed berms in 2015 to reduce direct runoff of melting snow to creeks in the spring City identified potential issues related to the salt loading area at the Service Center as current containment practices appear only partially effective. A project will be developed to ensure better runoff control.
6.4	Leaf Pick Up.	Establish a City wide program offering leaf pick up.	Leaf collection is scheduled in half of the City each year (alternating). Other disposal options are available to the public - free brush site use and regular refuse collection.
6.5	Review City Facilities for pollution and erosion concerns	Conduct Annual Inspection of key improved City Property Inspect selected city properties	Annually evaluate key city properties for pollution and erosion concerns, make recommendations related to maintenance and/or capital improvements (City Hall, Community Center, Municipal Service Center, WWTP, Parks Shop, Library) Inspect at least two additional city properties to evaluate for pollution and erosion issues, typically parks, leaf/brush disposal areas, snow disposal areas and other unimproved city owned properties

Record Keeping and Reporting (Section F, Items 1-5)

- **Narrative Related to Section F, Items 1-5**
- **Additional Information for Section F, Item 3**
  - **Difficulty in Sampling in a Rising Stream**
  - **Difficulty in measuring Streamflow**
  - **Simplistic review of Water Quality data from 2014 and 2015**
- **Salt Usage Graph**
- **Street Sweeping Graph**
- **GIS based inlet outfall inspection Chart**
- **Representative examples of staff training**
  - 4/29/2015 Stormwater Management Certificate of Attendance Justin Stewart , Hal Burdette
  - 4/30/2015 Stormwater Runoff Reduction from Rainwater Harvesting and Low-Water Crossing Design and Use of Articulated Concrete Block Training: Justin Stewart
  - Street Division certification for pesticide application

F. Recordkeeping and Reporting

Attach a report which addresses the following subjects:

1. A general assessment of the appropriateness of the various BMPs included for each of the major program elements as follows:
   a. TMDL regulated pollutants (Appendix A contains TMDL Report Forms)
   b. Public Education and Outreach
   c. Public Involvement and Participation
   d. Illicit Discharge Detection and Elimination
   e. Construction Site Stormwater Runoff Control
   f. Post-Construction Site Stormwater Management in New Development and Redevelopment
   g. Pollution Prevention/Good Housekeeping for Municipal Operations

   Issues which may be addressed include:
   a. Are the BMPs appropriate for local population?
   b. Are the BMPs appropriate for the pollution sources?
   c. Are there specific concerns related to the local receiving waters that may justify a change in BMPs?

2. An assessment of the effectiveness of the BMPs towards achieving the statutory goal of reducing the discharge of pollutants to the Maximum Extent Practicable (MEP).

3. Provide a summary of results of information collected and analyzed, if any, during the reporting period, including any monitoring data used to assess the success of the SMP.

4. Provide a summary of the planned changes in stormwater activities which are scheduled to be undertaken during the next annual reporting cycle. This should address the implementation of new BMPs and/or the deletion of BMPs and include a projected schedule for the month or quarter when the BMP will be either implemented or discontinued. Please note a revised SMP should be submitted for KDHE approval if BMPs are revised.

5. Provide a list of other municipalities/contractors, if any, which will be responsible for implementing any of the program areas of the SMP.

Section F: Recordkeeping and Reporting

1. *A general assessment of the appropriateness of the various BMPs included for each of the major program elements as follows:*
    a. **TMDL Regulated Pollutants.** Not Applicable

    b. Public Education and Outreach. Stormwater information is disseminated to the public through numerous channels such as the city newsletter, press releases, posting documents on the city website, and placing reference material at the Public Library. For news and distribution of relevant material associated with storm debris collection or flood recovery efforts, Facebook, Twitter, television and YouTube are being utilized by the Public Information Officer to reach a larger population in a timely manner. Considering all of these avenues to reach the public, the city's attempt to provide its citizens with updated material is very effective. Updated videos and information would increase the effectiveness of this means of communication. A review of materials placed at the library showed that there had been little to no use of them.

    c. **Public Involvement and Participation.** The city engages the public by calling for volunteers to work on local initiatives through the several lines of communication discussed earlier. The Annual Spring Clean Up has been effective in reducing pollution as well increasing the public awareness of stormwater BMPs and other city programs. Free drop-off of large items on Free Saturdays continues to be a popular program. Calls for civic organizations to clean and make improvements to city parks throughout the year are being made through an established Adopt-a-Park program with twenty-one parks currently adopted. Arbor Day is observed yearly and the city continues to be part of the Tree City USA program. An Adopt-a-Stream program has not been established however cleaning along streams has occurred in public spaces through the Spring Clean-up and spontaneous citizen efforts coordinated with through the Parks Department. Brochures and newsletters are published throughout the year that include code enforcement information and more information about any discarded debris and the proper place to discard it.

    City receives occasional calls from groups such as Boy Scouts related to public service projects. One of these projects removed a significant amount of debris between 6th Street and 7th Street along Three-Mile Creek.

    Related activities in 2015 included the Annual Spring Clean-up Program held April 18, 2015 which had an increased number of participants with total 1,200 volunteers picking up trash throughout the City, the Legacy Tree Program saw an additional twelve trees

planted in 2014, and the city participated in the County-wide clean-up effort on October 17, 2014

In addition - The Leavenworth Times newspaper published an article informing the public on green ways of household hazardous waste collection and informing them of the Recycling Center to keep waste from "dumping down the drains" and the importance of it not entering our water.

d. **Illicit Discharge Detection and Elimination.** In order to control improper disposal of waste to the storm sewer system, the City of Leavenworth makes material available through flyers and online regarding household hazardous waste and its proper disposal. Wastewater Superintendent has worked with Public Information Officer and representatives of Fort Leavenworth to distribute information for disposal of outdated medicines. This has also been posted to the Webpage. Parks Department reports that the "Pick up Your Dog Doo" plan continues to be a very effective at the parks where it has been implemented.

Storm sewers are examined with the city's camera truck which allows for sewer lines to be videotaped and searched for improper connections or line failures. The purchase of a "Pole Cam" in 2014 continues to facilitate a much quicker inspection time. The city has completed the storm sewer map and it is available on the GIS system and as a paper map (upon request). Technical information on the map continues to be verified through use of physical inspection and hand held GPS, particularly to correctly note diameters and locations of storm sewer structures. The final GIS database will include size, horizontal location as well as invert and top elevations for all storm structures and outfalls.

The city has an ongoing cleaning and CCTV program for the sanitary sewer lines. This work has identified several locations that will repaired as part of the current effort to reduce Inflow and Infiltration. There is much better coordination between the CCTV effort and the I/I effort than in previous years.

The twenty-six creek crossings by the sanitary sewer system are inspected at least three times each year. This includes regularly scheduled inspections as well as after heavy rainfall events.

In 2013 the City began requiring all exterior clean-out caps on sanitary sewer lines be "screw caps" rather than "press-on caps". This has reduced the number of SSO events that release sewer water to environment, and has had the intended consequence that

property owners maintain their sewer service lines to avoid sewer back-ups into the homes.

The City began inspection of commercial facilities with grease traps (or who might/should have grease traps) inspection program in 2014. This program is a combination of inspection and education to ensure that the grease traps are properly maintained which helps to prevent blocked sewer lines, which prevents sanitary sewer water from entering the environment. This has resulted in at least one institution installing the correct grease trap, and others increasing their maintenance effort.

In 2015 the City followed up the initial contact with grease trap owners in 2014 with multiple requests for inspection records. While some businesses are able to comply when notified, others have had to be contacted multiple times for results. Several businesses have been physically inspected by city inspectors to verify grease trap operations. In general – the education and awareness portion of the plan seems to be effective, however routine maintenance of the grease traps varies considerably. On-site inspections were effective in meeting program goals of awareness and education.

It is likely that additional ordinances specific to grease trap maintenance will be necessary for greater compliance. It will be necessary to coordinate this with other city departments before it can be implemented.

City employees are reminded at staff meetings and safety meetings to report any activity that is questionable to their supervisor and/or the City Engineer Office. The maps identify all storm water facilities and outfalls and are used by employees and supervisors to evaluate concerns identified in the field.

e. **Construction Site Stormwater Runoff Control.** City implemented a "Land Disturbance Permit" (LDP) in early 2015. This was in response to concerns raised by EPA in their report on the 2013 inspection. The City has formalized many of the processes that are involved in Construction Site Runoff Control. A copy of the LDP process is included with this report. The LDP has been very successful ensuring owners and contractors know their responsibilities, and has dramatically reduced erosion and sedimentation from construction sites.

Enforcing the LDP is time consuming during both office and field review requirements. City is evaluating several digital alternatives to better manage staff time to ensure the permits are being complied with.

Plan review and construction site inspection are the city's first line of defense in protecting water quality in developing areas. The initial planning process for large and small developments includes a formal focus on stormwater quantity, quality and control measures as part of the Development Review Committee meeting with project sponsors and developers. Staff comments on plans reviewed are submitted in writing.

Weekly meetings are held in the Public Works office to review stormwater issues on current city and developer projects both in the design and construction phase.

The city guidelines related to stormwater quantity and quality issued in draft form in 2014 were approved by the City Commission in early 2015. They rely upon the technical work completed in other documents – particularly the MARC BMP Manual, APWA Section 5600 and City of Leavenworth Stormwater Master Plan 1995.

City staff has attended a variety of training and educational events to become more effective in addressing the construction site runoff situation. This includes attendance at regional classes, vender demonstrations and review of documentation in use by other municipalities.

f. **Post-Construction Site Stormwater Management in New Development and Redevelopment.** City implemented a "Land Disturbance Permit" (LDP) in early 2015. This was in response to concerns raised by EPA in their report on the 2013 inspection. The City has formalized many of the processes that are involved in Post-Construction Stormwater Management. A copy of the LDP process is included with this report. The LDP has been very successful ensuring owners and contractors know their responsibilities, resulting in dramatically reduced erosion and sedimentation from construction sites after the construction is complete.

On City funded projects, contractors are responsible for landscaping for 2 years following construction rather than the previous period of one year. This practice ensures that an acceptable grass stand is established in the area to stabilize soils and increase infiltration by reducing runoff velocity.

On most developer funded project the city requires that the approved plans be followed. This typically requires maintaining erosion control measures until a minimum of revegetation of the site is met, and maintaining all other BMP activity. The permit is completed with issuance of a certificate once the post construction measures are fully implemented. The City has increased periodic inspection of post-construction sites to ensure compliance with the regulations by reviewing the status of active projects at weekly staff meetings.

Also, the city has notified several detention pond owners in order to inform them of proper maintenance procedures and requirements. This program needs to be more aggressively pursued to be effective.

g. **Pollution Prevention/Good Housekeeping for Municipal Operations.** The leaf collection program continues in the Fall (curbside pick-up is one-half of the city each year), more efficient application of salt and sand to the roadways through better equipment, street sweeping operations, and extended sweeping season are all effective in decreasing pollutants from entering the storm sewer system. Beyond these steps the city has 2 full time employees dedicated to the cleaning of storm inlet structures with a vacuum truck (and occasional augmentation from other workers). At least 1000 inlets were inspected and openings cleaned in 2015, and an additional 883 visited by the GPS locating crew.

The addition of the ground speed control systems on the spreaders has improved consistency of application rates and they remain within the recommended rates of application. The street sweeping program has exceeded performance standards. City ensures chemicals (including salt) are stored in covered facilities, and that all personnel using herbicides/pesticides are trained appropriately. The City offers free disposal of grass and leaves, and free drop-off of recyclable goods is available.

City staff reviewed the general state of water quality management selected city facilities in late 2015. Two items were identified and action taken:

- The snow disposal area used when snow is trucked from the downtown area had a detention berm constructed around the perimeter of the site to reduce any direct runoff as the snow melts. Additional work was done to improve truck access to the site which reduced the disturbance to the gravel surface of the disposal area.

- The salt/sand operational area at the Municipal Service Center area was evaluated for functionality of containment of run-off from storage and truck loading. In general the site functions well, but substantial degradation of creek banks from erosion was noticed. City forces cleared vegetation that obstructed the view of the creek and installed silt fence. A project that will improve water quality for the salt/sand area and reduce erosion of the creek banks is expected to be completed in 2016.

The results of the limited inspection of city facilities indicated that a greater effort needs to be in-place to evaluate ALL city facilities. Additional facilities will be evaluated in 2016, and it will be proposed to expand the program to all city property.

The city installed a small water quality feature on selected stormwater inlets in 2014, and continued with an additional sixteen inlets in 2015. Many new or reconstructed inlets have a sufficiently wide throat to form "directional vanes" in the concrete to assist in efficient water movement to the inlet. The dimensions are generally about 3" wide, 3" deep and 18"-24" long. The city modified these vanes to have a closed lower end to trap sediment from low flow events. The intent is that the Solar UV radiation will degrade any pollutants, and the sediment will wash out under heavy rains to be replaced with sediment from the next low flow event. Visual inspection by city staff indicates that these modified vanes are working as intended.

Further Discussion of BMP's in general

City opinion is that the BMP approach to the current level of stormwater activity in Leavenworth is entirely appropriate. They address the main concerns of the city: water quantity, water quality and construction site run-off. The implementation of the LDP has improved erosion and runoff during and after construction on many projects. The aggressive street sweeping program catches much of the salt and sand from winter operations before the spring rains. Grease trap and detention basin inspection are new important programs. Staff is aware of the significance of the stormwater issues reviewed by KDHE and seeks to ensure compliance by having an empowered staff and opportunities for the public to comment or become involved.

The paragraph above notes that the BMP's are appropriate to the City. However, it is apparent that the current Stormwater Management Plan can be updated to reflect the current city approach to BMP's and stormwater. A revised plan will be submitted with these changes as part of the 2015 Annual Report.

2. ***An assessment of the effectiveness of the BMP's towards achieving the statutory goal of reducing the discharge of pollutants to the Maximum Extent Practicable (MEP).***

The City of Leavenworth has evaluated the functionality of various types of BMPs in Leavenworth while preparing for the adoption of an updated stormwater design manual. BMP overall effectiveness, economy, and general upkeep needs will drive BMP selection on future developments in Leavenworth. For instance, most in-situ soils in Leavenworth have low permeability which has led the Public Works staff to favor BMPs focused more on pollutant removal rather than stormwater infiltration. Recently constructed detention basins and bank stabilization projects have proven stable in normal rains. The storm of July 6th 2015 (3"-4" of

rain in an hour) did damage bank protection rip-rap on Five-Mile Creek at the treatment plant, and Three-Mile Creek between Esplanade and 2nd Street. Both of these locations have projects budgeted in the 2016 CIP for repairs.

The successful operation of ground speed control on salt spreaders and performance of the street sweeping program have improved water quality of discharges to the creeks and rivers.

The increased focus on the construction site monitoring program has been generally effective. The city is seeking more effective methods to efficiently inspect these permits.

The increased number of programs and greater inspection effort have made it clear that without enforcement there is minimal effort on the part of owners and contractors on complying with record keeping. An effort in 2016 will be to create better ordinances related to compliance in these areas.

3. ***Provide a summary of results of information collected and analyzed, if any, during the reporting period used to assess the success of the SMP.***

Stormwater from the MS4 has been tested during five events in 2015. Additional testing in selected detention basins and over the winter months has occurred as well.

Stream Testing dates in 2016 are shown below:

- May 5th
- May 14th
- June 3rd
- July 20
- October 31
- November 5th

A summary of the results is included in the Appendix A along with several detailed graphs and charts in Appendix C.

The city also monitored several detention basins to evaluate performance. This information is communicated back to the designer in most cases, and adjustments made if necessary to the outfall structure.

In general the city observed the following during this process

1. **The stream stage is extremely sensitive to rainfall intensity and duration.** It was difficult to have all of the samples taken during a "rising Stream" stage. A report of summarizing these observations is included with this section. Key concerns are
    a. It will require substantial investment in equipment and staffing to operate a testing environment that can reliably take samples in rising stream stages.
    b. City has not performed a literature search to determine if water quality is known to vary between rising and falling stages

2. **Measuring Stream Volume is difficult.** City has used manual methods and "stage-discharge" charts to estimate volume while sampling. There are significant differences between the methods. A report summarizing these concerns is included with this section.

3. **Differences in water quality data are difficult to interpret.** A very simplistic analysis shows that in 2014 – water quality was improved by flowing through the City of Leavenworth. This was NOT TRUE in 2015. In 2015 some storms saw better water quality after passing through Leavenworth, and at other times not. This improvement (or not) varied between Three and Five-Mile Creek on occasion. The tables below are greatly simplified from the more complex table in this section. The detailed information is in the appendices.

Three Mile Creek - 4 event 2014

	NC/Better	Worse
Total Phosphorus	1	3
Ortho Phosphate	0	2
Nitrate+Nitrite	2	2
Total Kjeldahl Nitrogen	2	2
Total Suspended Solids	3	1
Turbidity	4	0
E.Coli		
	12	10

Five-Mile Creek - 4 event 2014

	NC/Better	Worse
Total Phosphorus	3	1
Ortho Phosphate	2	0
Nitrate+Nitrite	0	4
Total Kjeldahl Nitrogen	4	0
Total Suspended Solids	2	2
Turbidity	2	2
E.Coli		
	13	9

Three Mile Creek - 6 event 2015

	NC/Better	Worse
Total Phosphorus	1	5
Ortho Phosphate	3	3
Nitrate+Nitrite	2	4
Total Kjeldahl Nitrogen	3	3
Total Suspended Solids	3	3
Turbidity	2	4
E.Coli	0	6
	14	28

Five-Mile Creek - 6 event 2015

	NC/Better	Worse
Total Phosphorus	2	4
Ortho Phosphate	5	1
Nitrate+Nitrite	0	6
Total Kjeldahl Nitrogen	4	2
Total Suspended Solids	2	4
Turbidity	3	3
E.Coli	5	1
	21	21

4. ***Provide a summary of the planned minor changes in stormwater activities to accomplish the SMP designated goals that are scheduled to be undertaken during the next annual reporting cycle.***

   The City expects to perform the following changes in 2016:

   1. A revised Stormwater Management Program has been submitted with this Annual Reprot
   2. Consider revisions to the "Stormwater Guidelines" especially related to effective implementation, and consider implementation of a fee and fine schedule.
   3. Intensify the commercial Grease Trap Program – especially for maintenance records. Consider a fine schedule for Grease Trap maintenance.
   4. Begin the Detention Pond information effort. Owners will be contacted directly to promote the importance of functioning detention facilities and proper maintenance to local home associations to improve pond operation and reduce erosion. Initial contact will be by mail prior to June 1.
   5. City will continue to observe performance of selected detention ponds and related facilities during the heavy rainfall season. City will evaluate hardware and software to create some level of automation related to stream stage and sampling.
   6. Increase staff training related to construction site inspection and post construction inspection activities throughout the year. Increase exposure of related staff members from building inspection and code enforcement to stormwater issues.
   7. Seek opportunities with community groups to improve awareness of stormwater issues
   8. Evaluate at least two city facilities for stormwater quality and quantity concerns. Prepare a report with recommendations.

5. ***Provide a list of other municipalities/contractors, if any, which will be responsible for implementing any of the program areas of the SMP.***

   None

City of Leavenworth
MS4 Annual Report
January 6, 2015

Section F, Item 3, Topic 1

Difficulty in obtaining samples in the rising stream

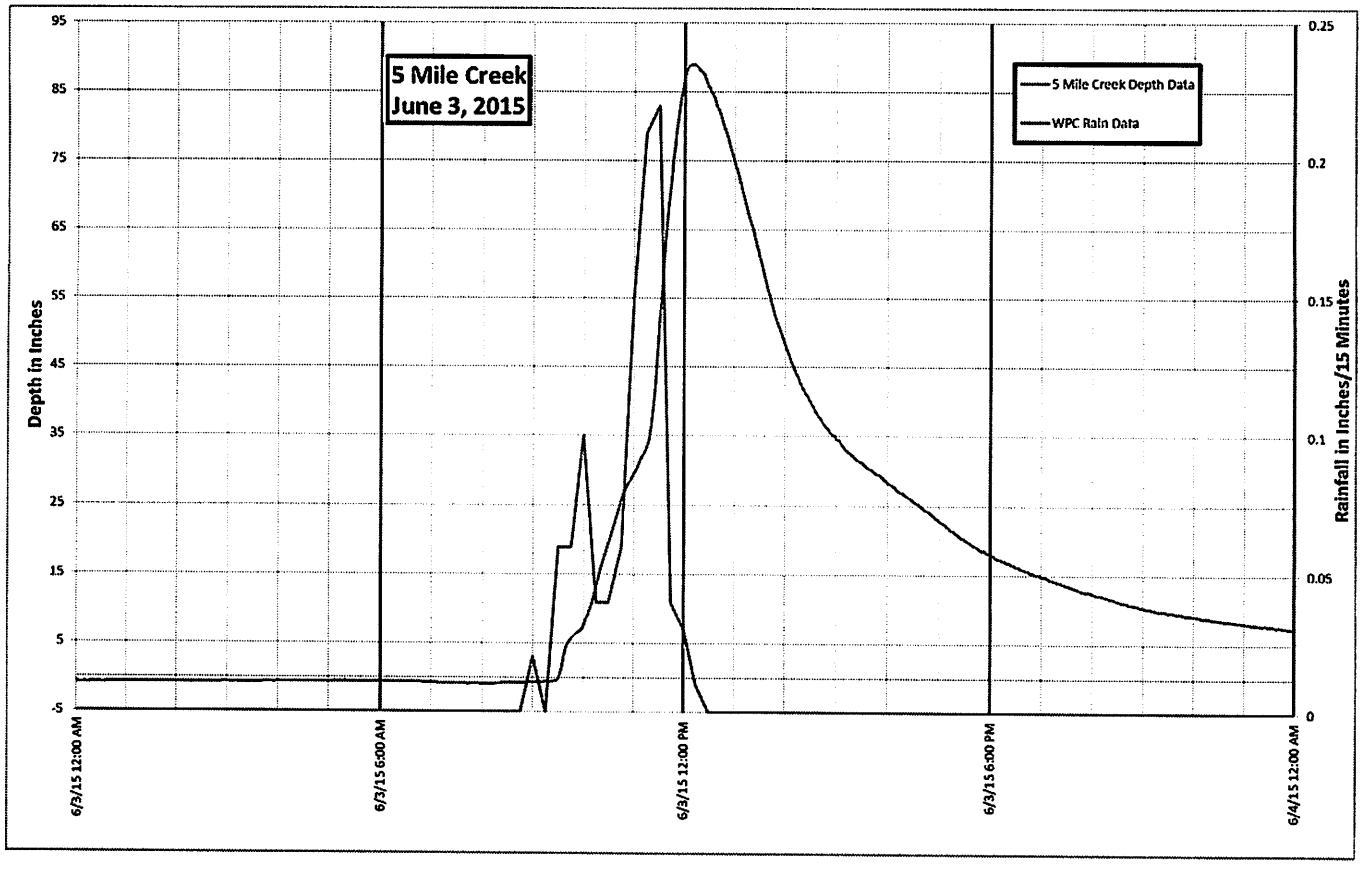
The City has conducted two years of sampling effort as part of the MS4 permit.

It has been difficult to have the sampling team obtain samples from a rising stream stage of both Three-Mile and Five-Mile Creek. The table below indicates the time-frames associated with peak of rainfall, peak stream stage and sample time. Staff can determine the amount of rain that has fallen in (usually) four locations within the city to within fifteen minutes of the current time if the rainfall is occurring during "awake" hours, typically 6:00 AM to 11:00 PM.

	Three Mile Creek			
Storm	15 min. Peak Rain	Creek Peak	Sample Time	24 Rainfall inch
5-May	7:15 PM	8:00 PM	8:30 AM	1.02
14-May	2:45 AM	5:00 AM	10:00 AM	0.52
3-Jun	11:15 AM	12:00 PM	12:15 PM	1.22
20-Jul	4:00 AM	5:30 AM	8:30 AM	0.64
31-Oct	10:00 PM	12:15 AM	8:30 AM	0.85

	Five-Mile Creek			
Storm	15 min. Peak Rain	Creek Peak	Sample Time	24 Rainfall inch
5-May	7:45 PM	12:15 AM	9:30 AM	1.44
14-May	3:00 AM	5:00 AM	10:00 AM	0.59
3-Jun	11:30 AM	11:45 AM	1:00 PM	1.04
20-Jul	4:15 AM	5:00 AM	9:30 AM	0.75
31-Oct	10:00 PM	2:00 AM	9:00 AM	0.27

The graphs show the relationship between rainfall and stream stage. The two main streams in Leavenworth respond quickly and dramatically in both the rising and falling stages. This sensitivity greatly impacts the ability of the samples to be taken at rising stream stages at both up and downstream locations.



Factors that influence this situation

- Intensity rainfall and rainfall timing, especially when it will end
- Responsiveness of stream to rainfall
- Time of day (heavy rainfall events during the day have a better chance of meeting the goal)
- Day of week (weekdays have a better chance of meeting the goal)
- Distance between sampling points (even the hour it takes to travel to all four sites reduce stage dramatically)

It is understood that KDHE and the City are interested in determining the impact of city activity on quality of water flowing through the city. It is also expected that water quality varies by month of the year. The following methods have been identified as being likely to result in focused information. The city will continue to seek cost effective methods of meeting the KDHE goals by focusing on variations of option 2 below.

1. Install a semi-permanent stream gage that is connected to a semi-permanent automatic sampler. The sampler would be activated by the stream gage, and draw samples at set intervals until the stream recedes. The key samples could be sent for laboratory analysis (or all of them for that matter). Buying equipment and installation cost of a sampling station would be approximately $20,000 to $40,000 each, plus the cost of sampling, and there are four locations in the City of Leavenworth, or

2. Have the sampling team prepare to run the sample route at the first sign of rain when the total is forecast to be over 0.5". Once all areas have at least 0.25", run the route. If it is still raining, run it again. Stop running the route when stage levels are decreasing. Send the best set of samples in the rising stages to the laboratory (or send them all). This method creates the need for a LOT of sampling gear, increases record keeping complexity, and removes key staff from the daily workforce.

City of Leavenworth
MS4 Annual Report
January 8, 2015

Section F, Item 3, Topic 2

Difficulty in measuring streamflow (volume)

The City has conducted two years of sampling effort as part of the MS4 permit. During this time it has been necessary to determine the volume of water in the stream to calculate the total loading of "pollutants" such as suspended solids, nitrogen and such. The city prepared for the initial sampling effort by determining the elevation of the bottom of the channel at each site, and the elevation of the reference point so that the depth of the flow could be determined. Sightlines were cleared and distances measured so that a floating object could be thrown to a known point and the travel time determined to calculate velocity. In addition a short video in each direction was taken and included in the digital files.

Accuracy of the manual flow volume calculations was a concern. Water Resource Solutions Inc. was contracted to provide Stage-Discharge curves for all sampling locations. This provided a more repeatable calculation that requires only the depth of the flow. These charts were used in the 2014 and 2015 annual reports.

There are dramatic differences between the calculated flow and the flow from the stage-discharge charts. It is not clear which is more accurate. The concern of the city is that with a distributed network of data gathering across the state (all Phase I and Phase II cities) and no "approved" formal process to determine flow quantity – it is entirely possible (in-fact quite likely) that all of the flow volume data collected in the last two years is unreliable, and possibly useless. It is strongly suggested that KDHE review any flow ***volume*** data collected under this sampling program to ensure that it is sufficiently accurate to meet the goal. The City of Leavenworth does have a video record of each sampling event to allow some level of independent verification if necessary.

Flow Volume Calculations - CFS								
2015	**Three Mile Creek - Downstream**		**Three Mile Creek - Upstream**		**Five-Mile Creek - Downstream**		**Five-Mile Creek - Upstream**	
Storm	Chart	Manual	Chart	Manual	Chart	Manual	Chart	Manual
5-May	190	39	300	26	180	89	30	12
14-May	45	28	40	18	150	96	35	9
3-Jun	7700	3080	1300	569	1900	714	330	74
20-Jul	N/A	58	45	23	N/A	59	30	19
31-Oct	0	0	30	8	135	55	20	8
5-Nov	140	64	500	52	600	179	35	21

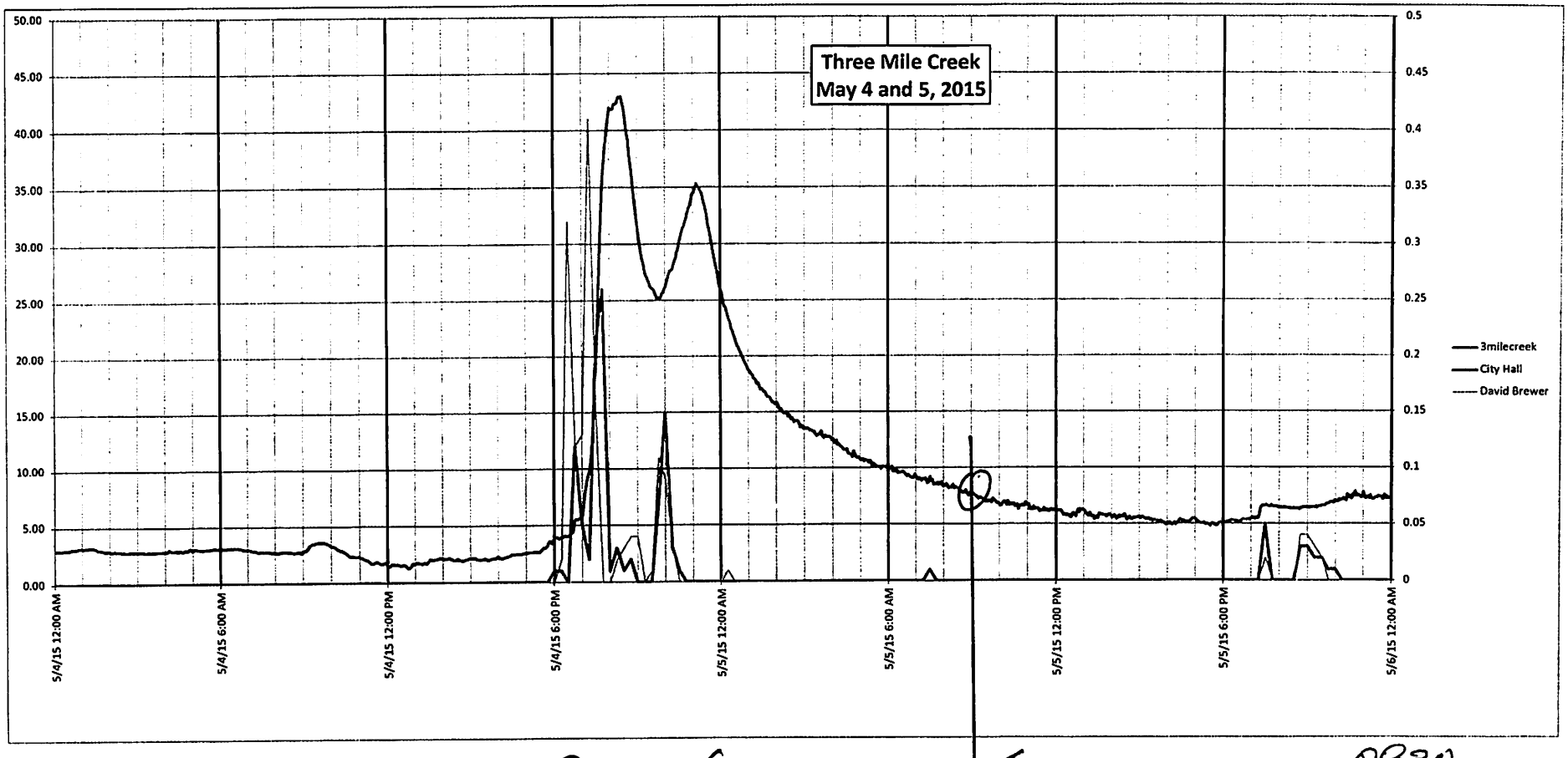
It is understood that KDHE and the City are interested in determining the impact of city activity on quality of water flowing through the city. It is misleading to simply use the concentration of "pollutants" as the basis to make decisions without accurate flow data. KDHE is urged to identify approved methods to determine follow volume. City will be evaluating improvements related to option #2 and #3 below.

The City has identified the following as methods that can be used to more accurately measure streamflow

1. Gather more accurate data at sampling location at each event.
    a. Verify flow width through use of plumb bob or similar
    b. Use a velocity probe and take multiple measurements.

2. Review and refine current techniques.
    a. Discuss with flow measurement professionals
    b. Modify standard procedures if necessary

3. Review the field data and if appropriate – revise the Stage-Discharge graphs.



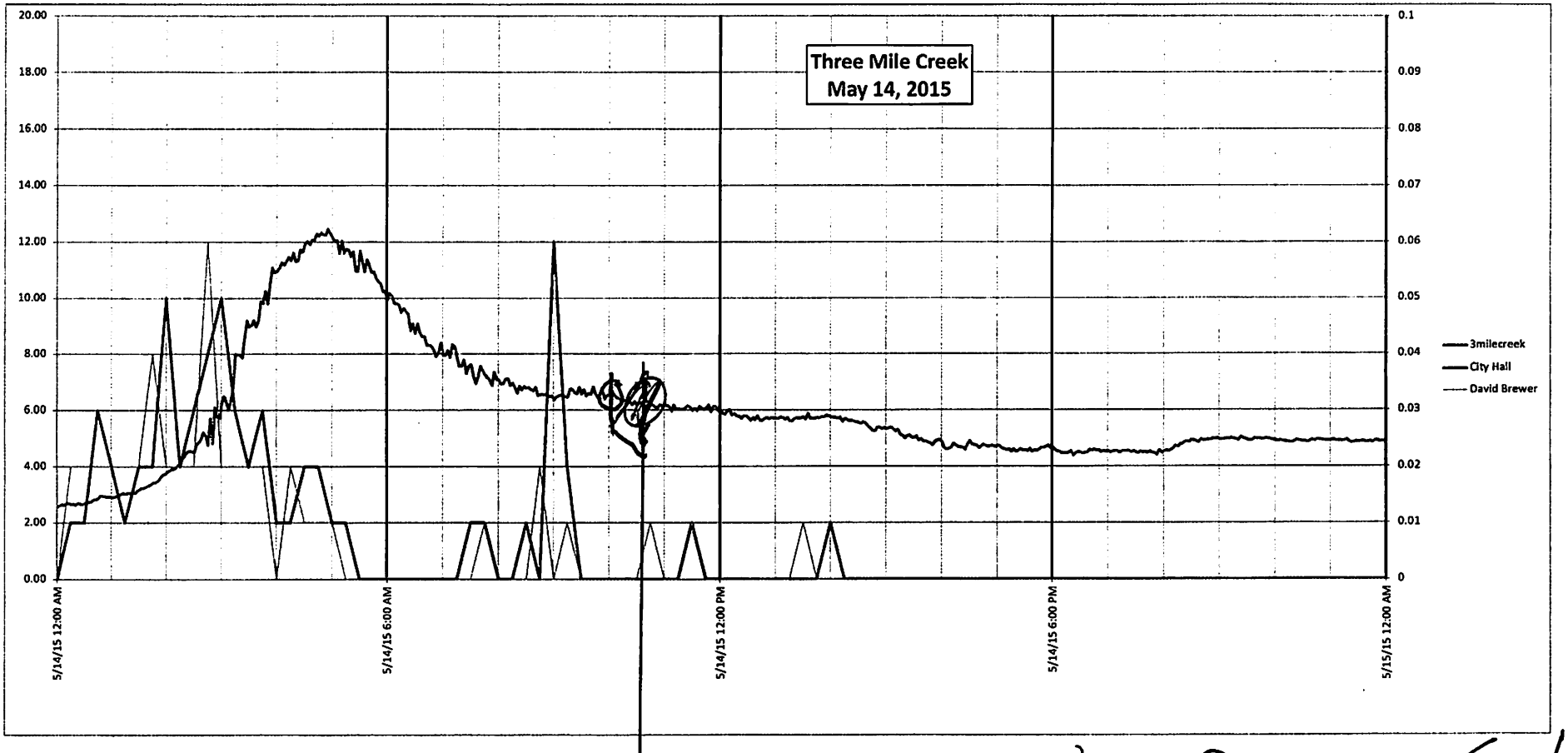
Rain at Sample

City Hall 0.75

David Brewer 1.28

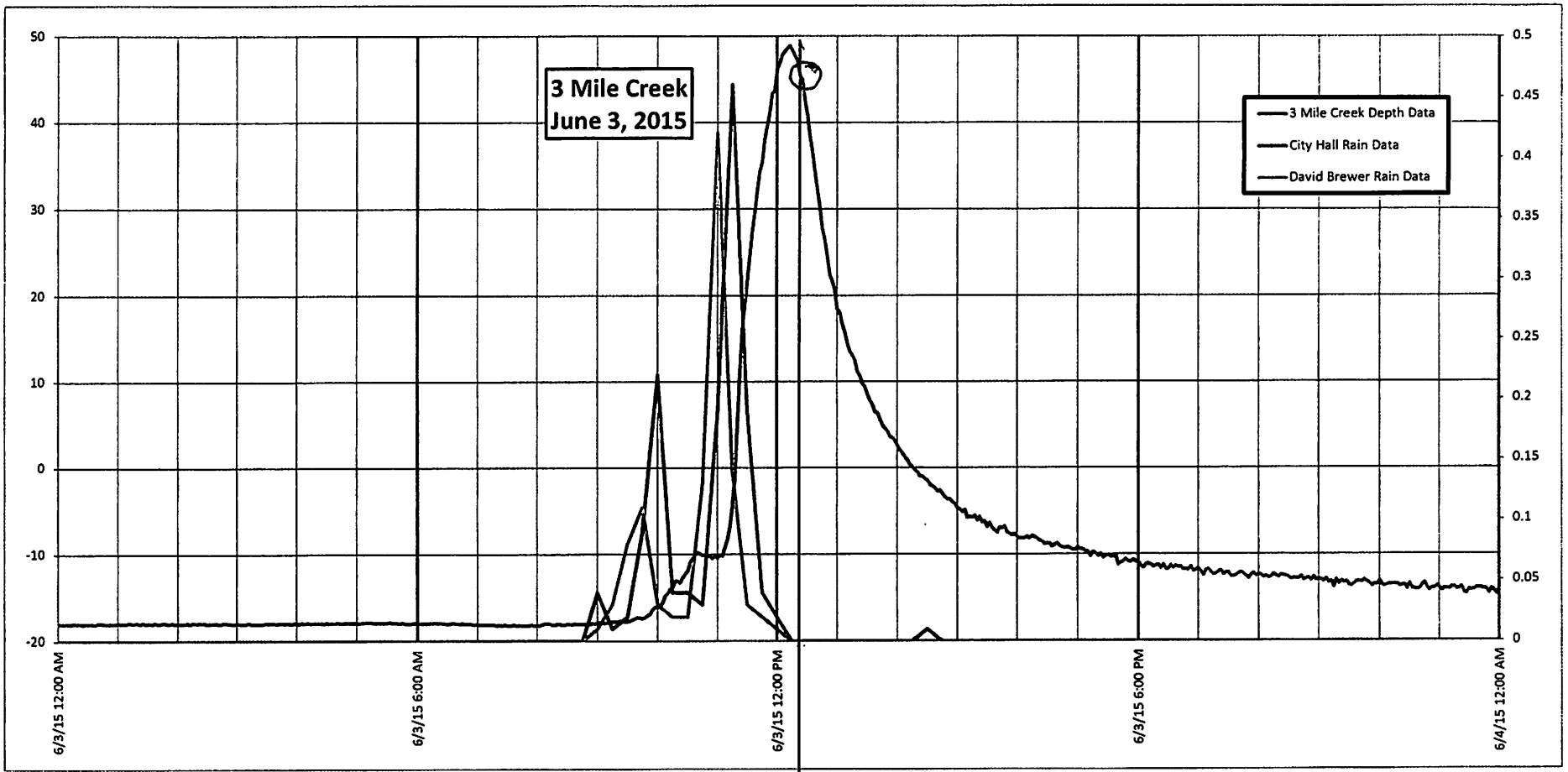
Sampling 0830

May 5, 2015



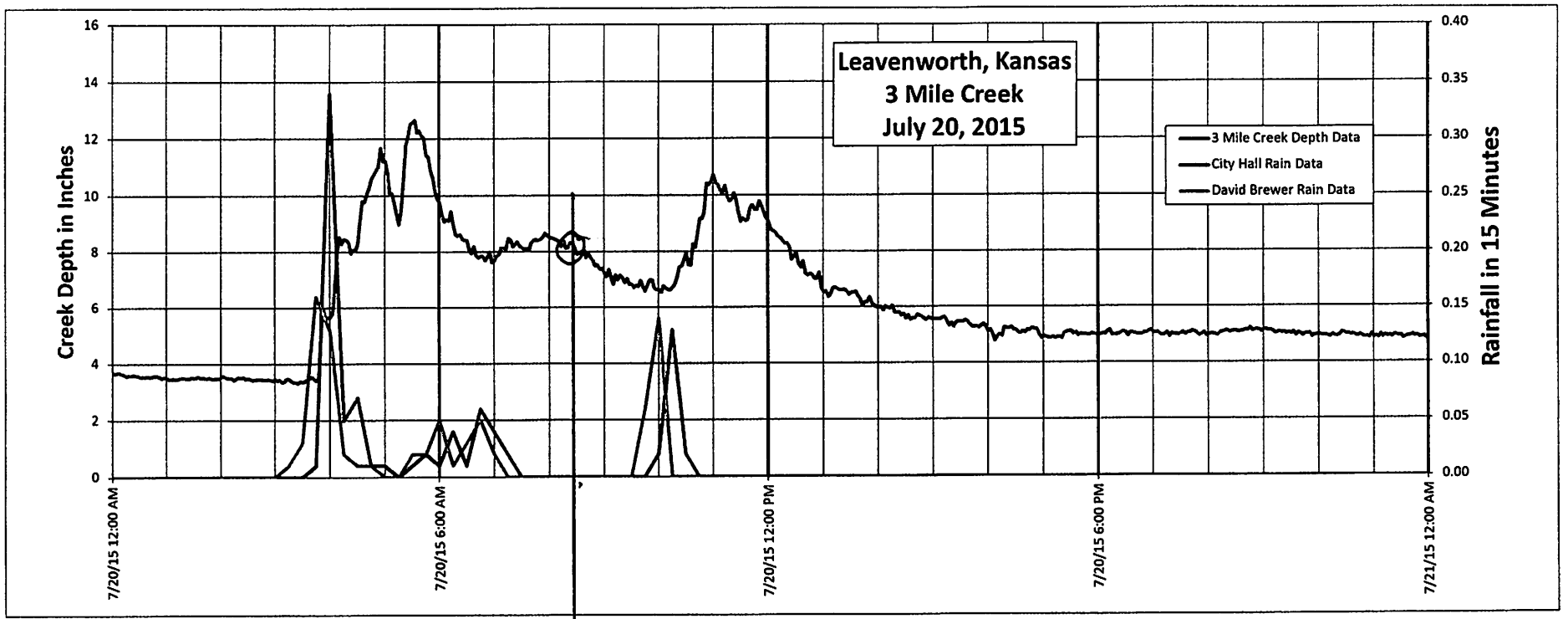
SAMPLING ~~10:00~~ 10:10
MAY 14, 2015

RAINFALL AT SAMPLING
CITY HALL 0.58
DAVID BREWER 0.46



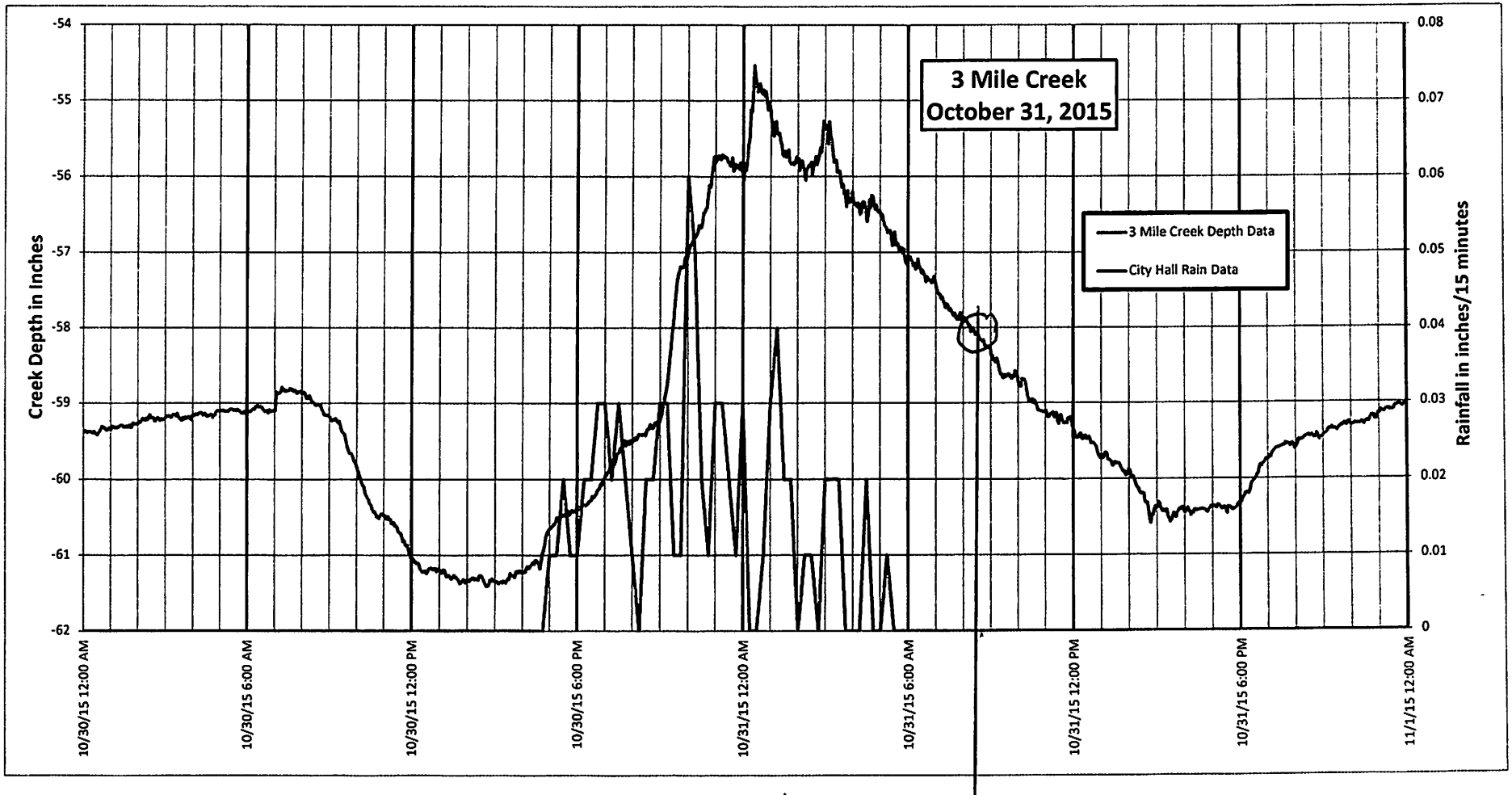
June 3, 1230
SAMPLES

RAIN AT SAMPLING
CITY HALL 1.39"
DAVID BREWER 1.05



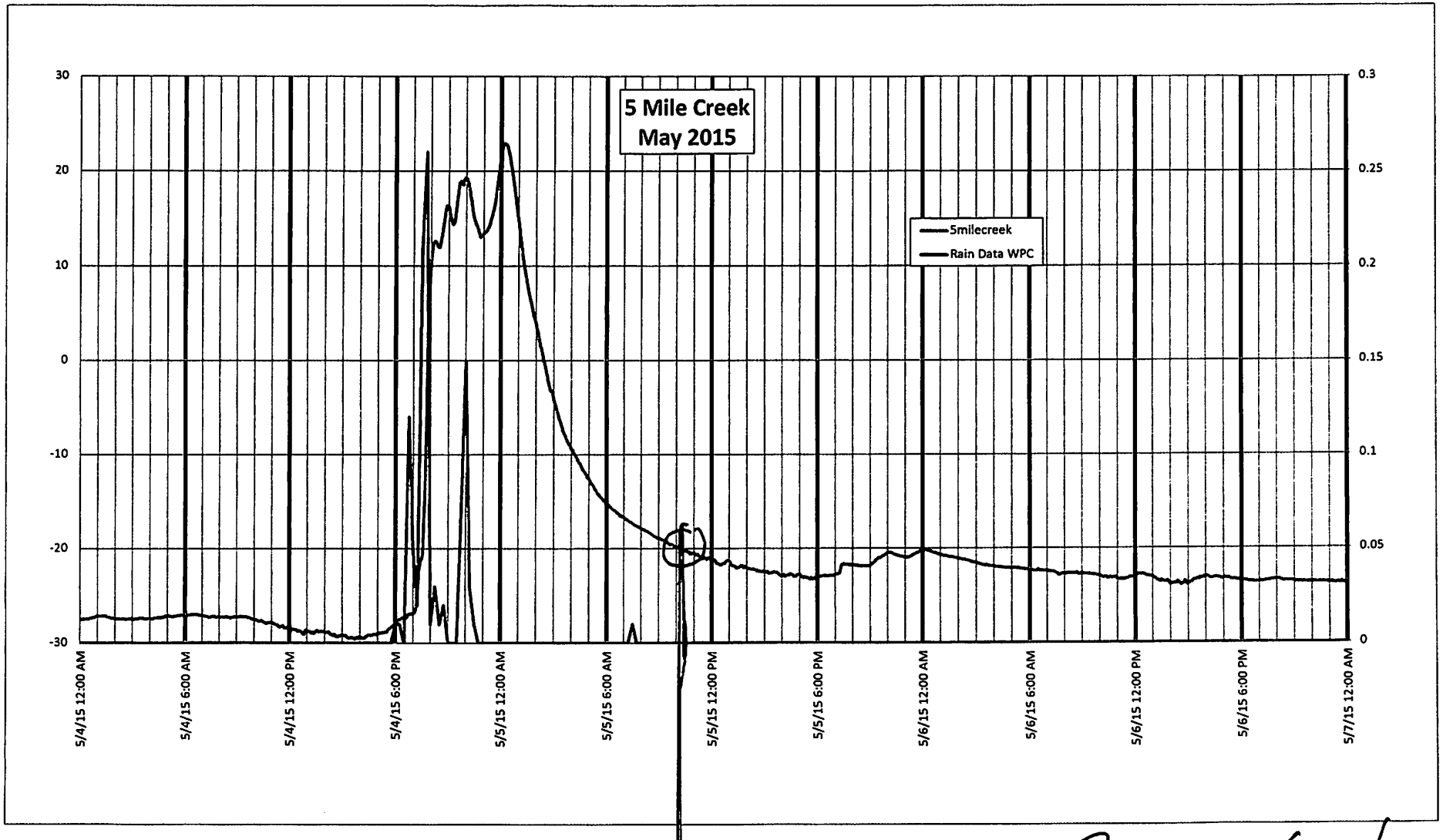
July 20, 2015
SAMPLING 8:30

RAIN 7/20 ~~= 0.07~~
AT SAMPLING
CITY HALL 0.70
DAVID BREWER 0.57



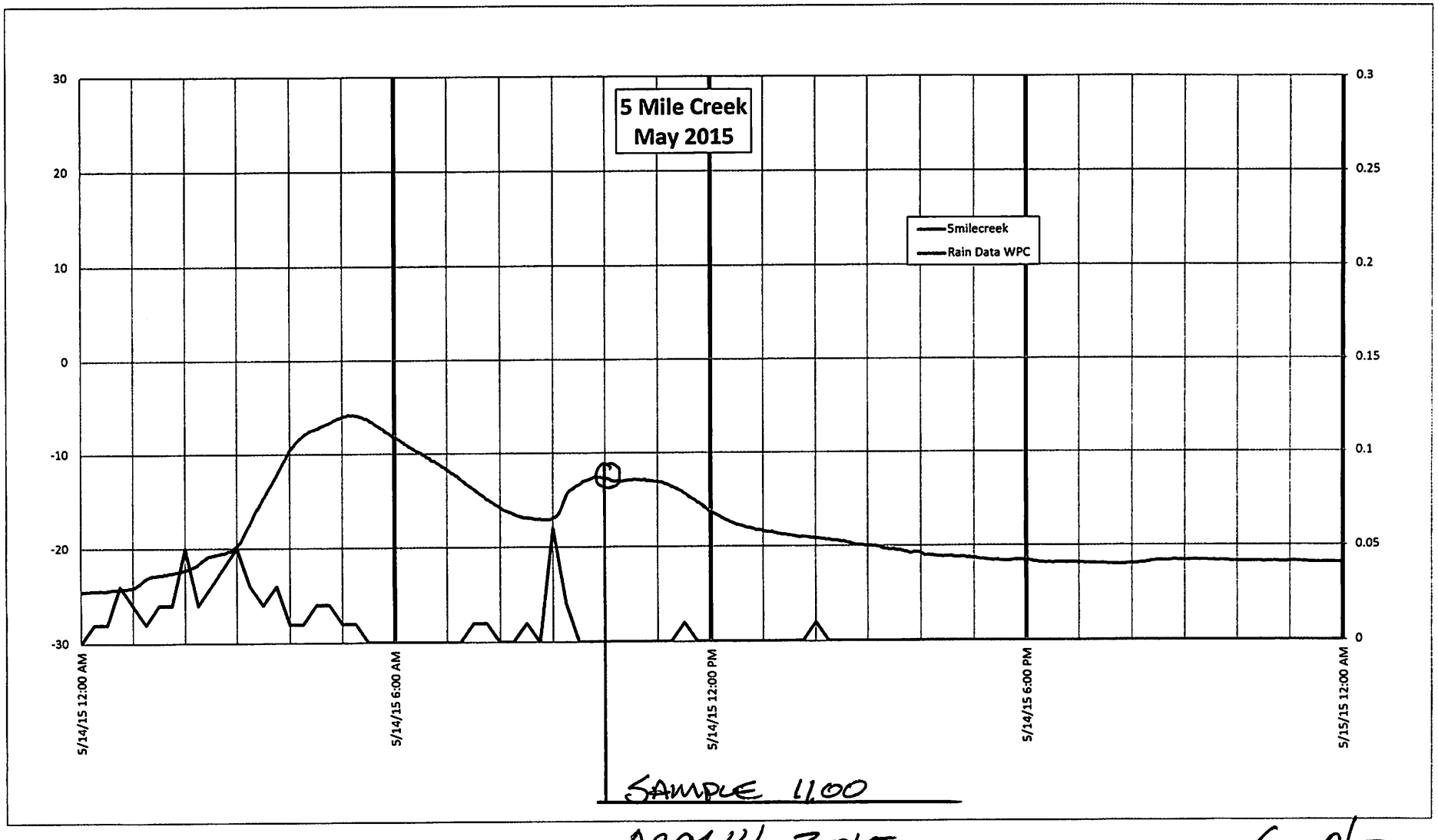
RAIN 10/30 -0.62
10/31 0.23

OCTOBER 31, 2015
SAMPLING 0830



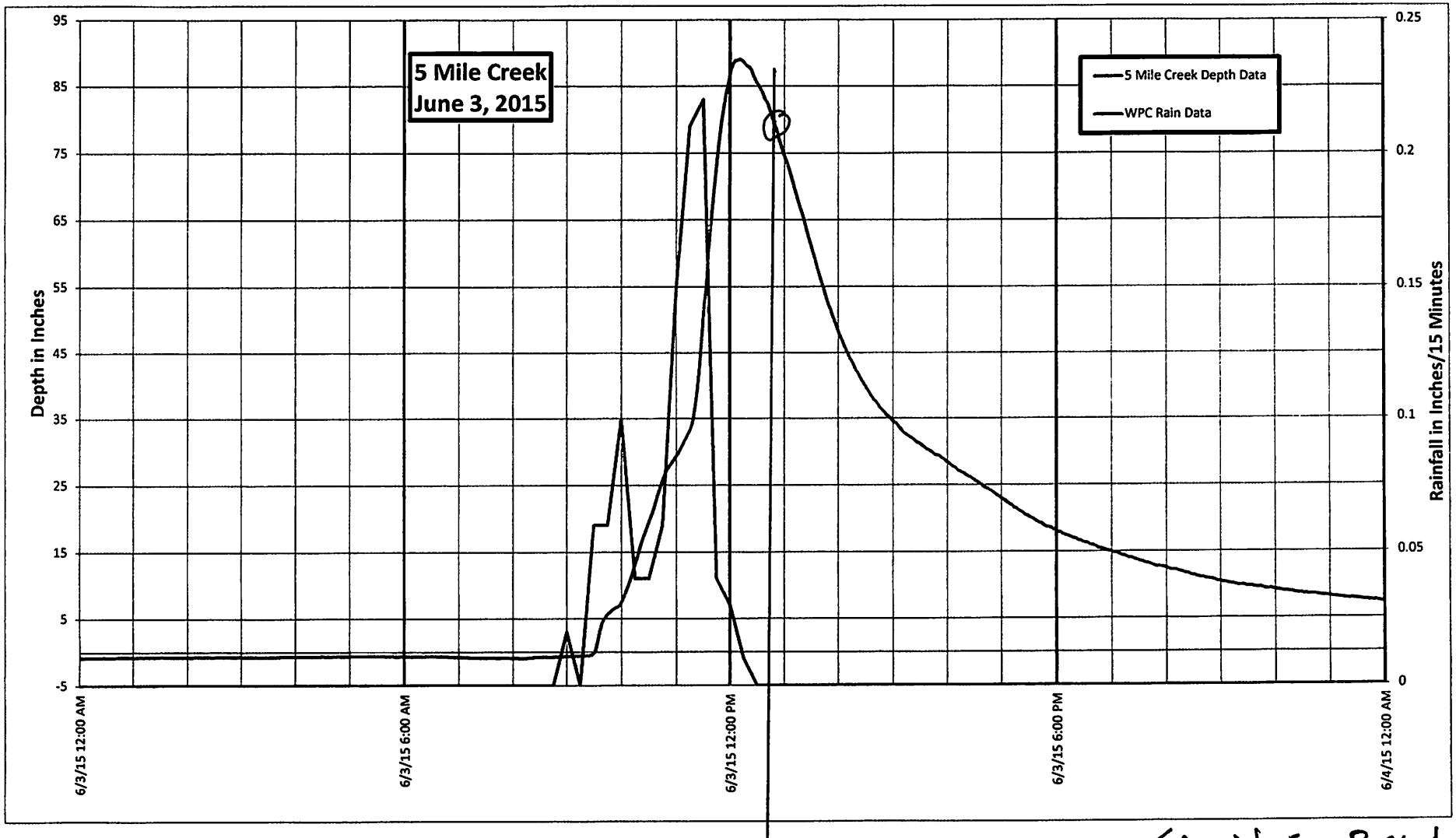
SAMPLE ~~1030~~ 0930
MAY 5, 2015

RAIN AT SAMPLE
WPC 1.44



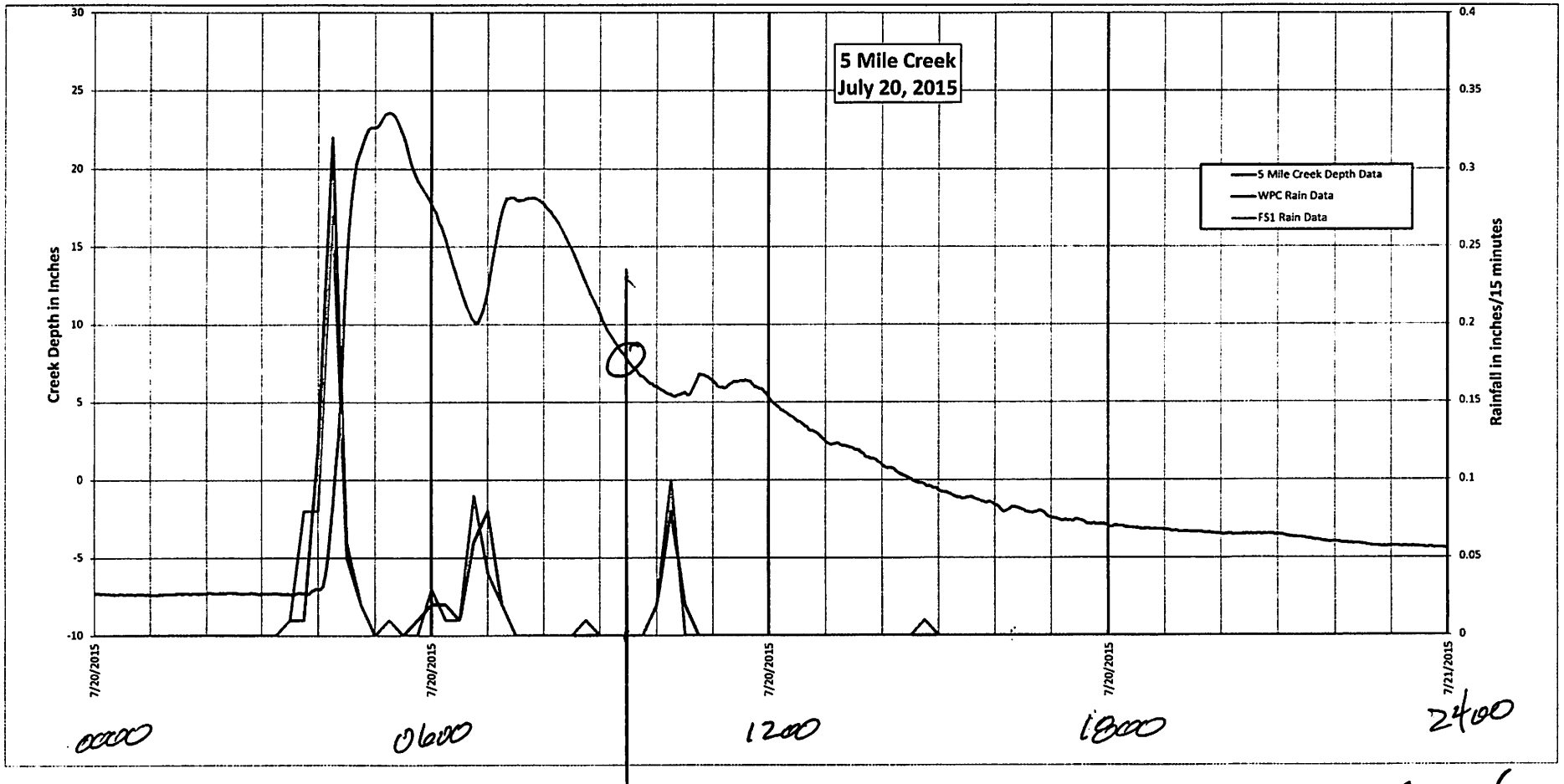
MAY 14, 2015

RAIN AT SAMPLE
WPC 0.59



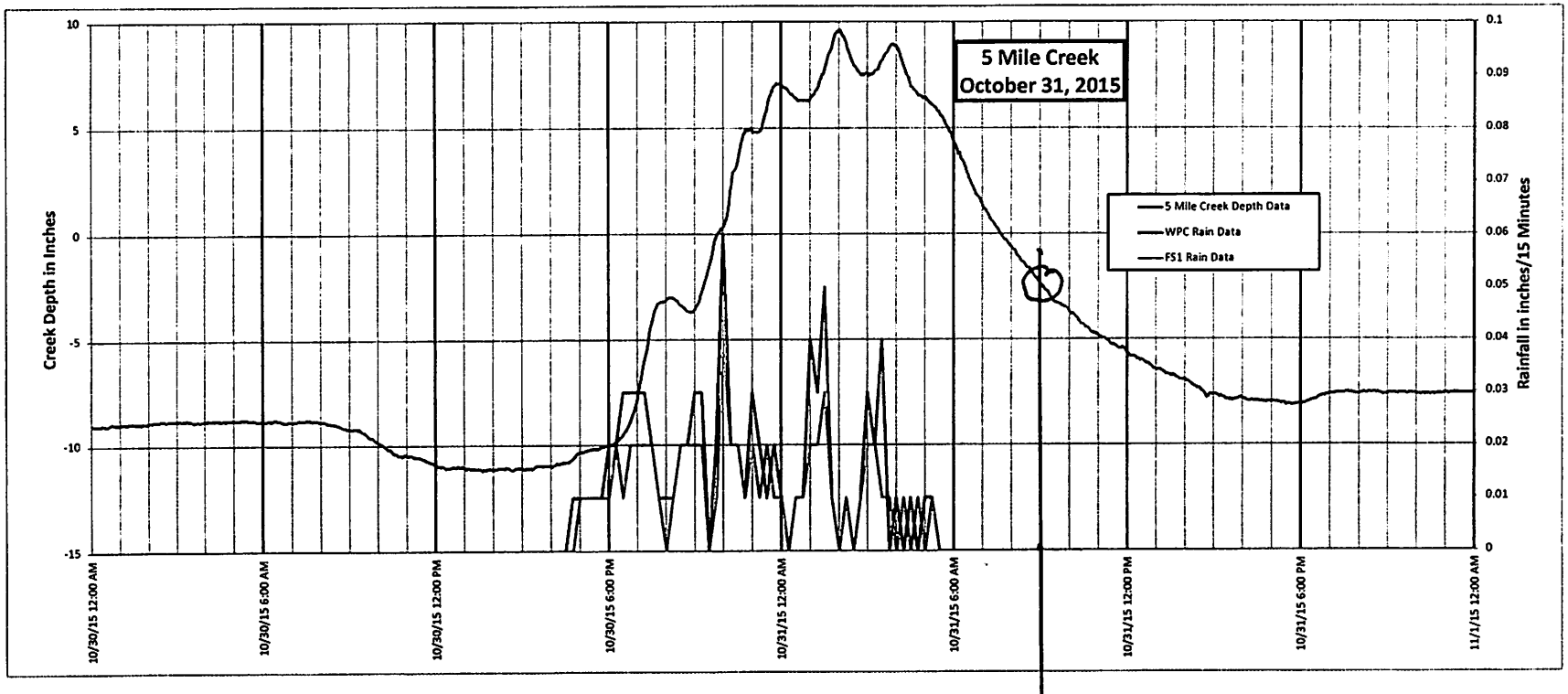
SAMPLE RAIN
WPC 1.04

June 3 2015
SAMPLE ~~1145~~ ~~APR 12015~~
1:00 PM



July 20, 2015
SAMPLING 0930

RAIN AT SAMPLE
WPC 0.77
FS1 0.73



RAIN AT SAMPLE

WPC 0.31

FS1 0.22

OCTOBER 31, 2015
0900 SAMPLING

City of Leavenworth

Comparison of calculated flow rates

8-Jan-16

Flow Volume Calculations - CFS								
2015	**Three Mile Creek - Downstream**		**Three Mile Creek - Upstream**		**Five-Mile Creek - Downstream**		**Five-Mile Creek - Upstream**	
Storm	Chart	Manual	Chart	Manual	Chart	Manual	Chart	Manual
5-May	190	39	300	26	180	89	30	12
14-May	45	28	40	18	150	96	35	9
3-Jun	7700	3080	1300	569	1900	714	330	74
20-Jul	N/A	58	45	23	N/A	59	30	19
31-Oct	0	0	30	8	135	55	20	8
5-Nov	140	64	500	52	600	179	35	21

Flow Volume Calculations - CFS								
2014	**Three Mile Creek - Downstream**		**Three Mile Creek - Upstream**		**Five-Mile Creek - Downstream**		**Five-Mile Creek - Upstream**	
Storm	Chart	Manual	Chart	Manual	Chart	Manual	Chart	Manual
2-Apr	190		200		800		1020	
12-May	190		200		660		880	
1-Oct	200		40		800		1100	
2-Oct	750		45		265		3100	

City of Leavenworth

Time Difference between Peak Flow and Sampling Time

6-Jan-16

	Three Mile Creek			
Storm	15 min. Peak Rain	Creek Peak	Sample Time	24 Rainfall inch
5-May	7:15 PM	8:00 PM	8:30 AM	1.02
14-May	2:45 AM	5:00 AM	10:00 AM	0.52
3-Jun	11:15 AM	12:00 PM	12:15 PM	1.22
20-Jul	4:00 AM	5:30 AM	8:30 AM	0.64
31-Oct	10:00 PM	12:15 AM	8:30 AM	0.85

	Five-Mile Creek			
Storm	15 min. Peak Rain	Creek Peak	Sample Time	24 Rainfall inch
5-May	7:45 PM	12:15 AM	9:30 AM	1.44
14-May	3:00 AM	5:00 AM	10:00 AM	0.59
3-Jun	11:30 AM	11:45 AM	1:00 PM	1.04
20-Jul	4:15 AM	5:00 AM	9:30 AM	0.75
31-Oct	10:00 PM	2:00 AM	9:00 AM	0.27

City of Leavenworth

2015 Stormwater Sampling Summary

(Note - in calculating CFS - the rating curve was used rather than the observed velocities)

2015		May 5 2015			May 14 2015			June 3 2015			July 20 2015			October 31 2015			November 5 2015		
		West Upstream	East Downstream		West Upstream	East Downstream		West Upstream	East Downstream		West Upstream	East Downstream		West Upstream	East Downstream		West Upstream	East Downstream	
Three Mile Creek	CFS	300	190		40	45		1300	7700		45	n/a (1)		30	0		500	140	
Total Phosphorus	mg/l	0.14	0.24	w	0.15	0.23	w	1.1	2.4	w	0.34	0.18	b	0.19	0.42	w	2.4	0.76	w
Ortho Phosphate	mg/l	ND	ND	x	ND	ND	x	0.11	0.15	w	0.12	0.11	b	0.18	0.24	w	0.13	0.18	w
Nitrate+Nitrite	mg/l	0.33	0.94	w	0.27	0.37	w	0.27	0.33	w	0.39	0.61	w	0.4	0.38	b	0.47	0.31	b
Total Kjeldahl Nitrogen	mg/l	0.88	1.5	w	0.81	0.88	w	3	6.3	w	1.3	0.7	b	0.77	0.7	b	31.1	ND	b
Total Suspended Solids	mg/l	90	98	w	60	81	w	1380	1570	b	322	157	b	18	41	w	2870	402	b
Turbidity	NTU	87.3	117	w	47.4	57	w	804	1380	w	273	100	b	8.6	10.2	w	1320	69.8	b
E.Coli	col/100ml	2247	3873	w	866	9090	w	12997	98700	w	20980	13540	w	3448	5172	w	34500	42800	w

Three Mile Creek - 6 event 2015	NC/Better	Worse
Total Phosphorus	1	5
Ortho Phosphate	3	3
Nitrate+Nitrite	2	4
Total Kjeldahl Nitrogen	3	3
Total Suspended Solids	3	3
Turbidity	2	4
E.Coli	0	6
	14	28

2015		May 5 2015			May 14 2015			June 3 2015			July 20 2015			October 31 2015			November 5 2015		
		West Upstream	East Downstream		West Upstream	East Downstream		West Upstream	East Downstream		West Upstream	East Downstream		West Upstream	East Downstream		West Upstream	East Downstream	
Five Mile Creek	CFS	30	150		35	150		330	1900		30	n/a (1)		20	135		35	600	
Total Phosphorus	mg/l	0.18	0.34	w	0.29	0.13	b	2.4	1.6	b	0.47	0.19	b	0.14	0.13	b	0.19	0.68	w
Ortho Phosphate	mg/l	ND	ND	x	ND	ND	x	0.11	0.14	w	0.15	ND	b	0.14	0.14	x	0.12	0.15	w
Nitrate+Nitrite	mg/l	0.22	0.46	w	0.12	0.23	w	0.21	0.28	w	0.42	0.47	w	ND	0.19	w	0.13	0.24	w
Total Kjeldahl Nitrogen	mg/l	1.3	2.1	w	1.3	0.84	b	7.3	4.8	b	1.8	0.89	b	0.54	ND	b	0.5	12.2	w
Total Suspended Solids	mg/l	113	165	w	136	65	b	1540	2110	w	480	201	b	11	25	w	49	392	w
Turbidity	NTU	146	231	w	100	28.5	b	1660	1220	b	404	134	b	5.3	13.1	w	27.2	138	w
E.Coli	col/100ml	12997	17329	w	17800	7540	b	90800	52100	b	77010	61310	b	1421	2613	w	19863	2851	b

(1) Missouri River Backed up

Five-Mile Creek - 6 event 2015	NC/Better	Worse
Total Phosphorus	2	4
Ortho Phosphate	5	1
Nitrate+Nitrite	0	6
Total Kjeldahl Nitrogen	4	2
Total Suspended Solids	2	4
Turbidity	3	3
E.Coli	5	1
	21	21

2014		April 24 2014			May 12 2014			October 1 2014			October 2 2014		
		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream	
Three Mile Creek	CFS	200	190		200	190		200	190		45	750	
Total Phosphorus	mg/l	0.32	0.55	w	0.42	0.61	w	1.5	0.79	b	0.6	0.67	w
Ortho Phosphate	mg/l							0.19	0.2	w	0.16	0.19	w
Nitrate+Nitrite	mg/l	0.5	0.42	b	0.69	0.69	x	0.56	0.57	w	0.3	0.73	w
Total Kjeldahl Nitrogen	mg/l	1	1.1	w	0.7	2.4	b	2.8	2.6	b	2.1	2.5	w
Total Suspended Solids	mg/l	303	242	b	165	440	w	1370	508	b	480	465	b
Turbidity	NTU	294	112	b	276	274	b	530	260	b	313	239	b
E.Coli	col/100ml	12997	3448	b	10500	14100	w	19863	72700	w	9208	37900	w
Dissolved Oxygen	mg/l	6.3	3.3		6.1	4.6							

Three Mile Creek - 4 event 2014	NC/Better	Worse
Total Phosphorus	1	3
Ortho Phosphate	0	2
Nitrate+Nitrite	2	2
Total Kjeldahl Nitrogen	2	2
Total Suspended Solids	3	1
Turbidity	4	0
E.Coli		
	12	10

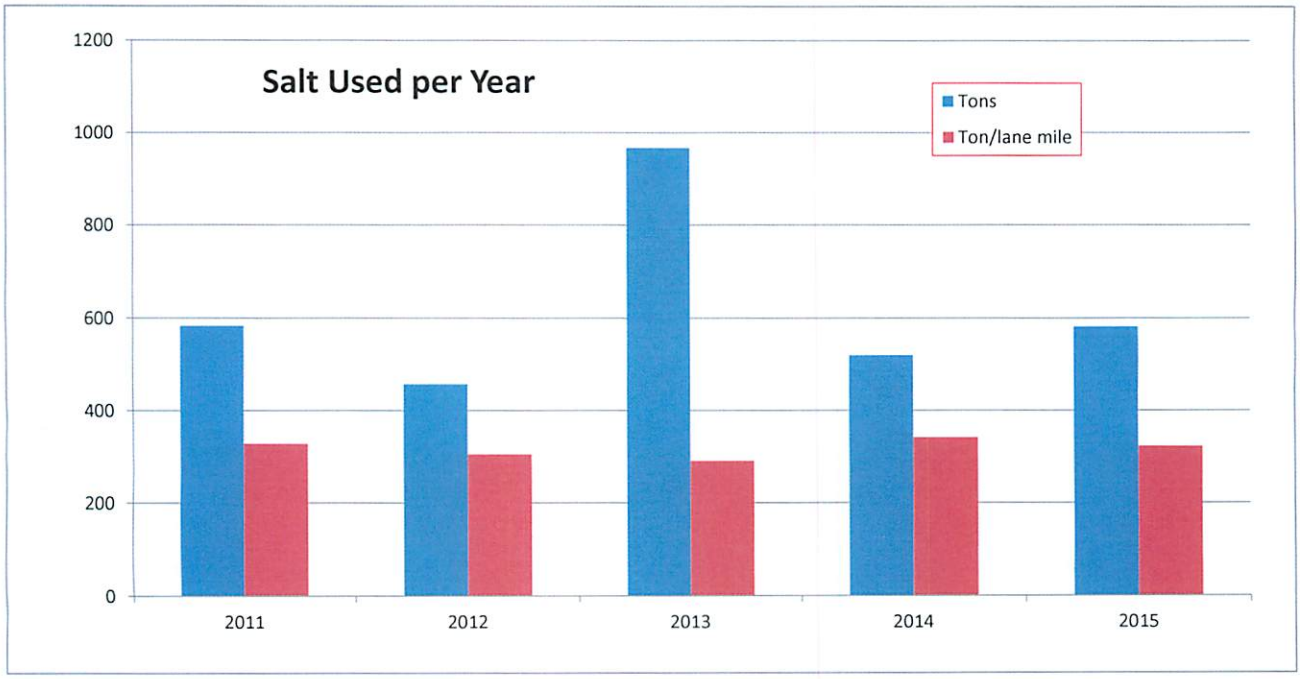
2014		April 24 2014			May 12 2014			October 1 2014			October 2 2014		
		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream	
Five Mile Creek	CFS	1020	800		880	660		1100	800		3100	265	
Total Phosphorus	mg/l	0.13	0.54	w	0.34	0.28	b	0.66	0.63	b	1.5	1.1	b
Ortho Phosphate	mg/l							0.2	0.18	b	0.24	0.22	b
Nitrate+Nitrite	mg/l	0.21	0.34	w	0.29	0.32	w	0.3	0.5	w	0.32	0.41	w
Total Kjeldahl Nitrogen	mg/l	0.69	0.56	b	1.8	1.6	b	1.3	1.3	x	4.4	3	b
Total Suspended Solids	mg/l	54	485	w	300	226	b	356	472	w	1510	1480	b
Turbidity	NTU	22.5	261	w	199	193	b	241	263	w	488	438	b
E.Coli	col/100ml	1872	3255	w	8660	8660	x	88600	30900	b	63100	59100	b
Dissolved Oxygen	mg/l	6.7	4.9		5.5	5.1							

Five-Mile Creek - 4 event 2014	NC/Better	Worse
Total Phosphorus	3	1
Ortho Phosphate	2	0
Nitrate+Nitrite	0	4
Total Kjeldahl Nitrogen	4	0
Total Suspended Solids	2	2
Turbidity	2	2
E.Coli		
	13	9

City of Leavenworth

January 5, 2016

Salt Used		
Year	Tons	Ton/lane mile
2011	583	328
2012	457	305
2013	967	291
2014	520	342
2015	582	323



City of Leavenworth

January 5, 2016

Street Sweeping				
	Hours			
	3333	3332	Total Hours	Tons
2013	907	555	1462	418.91
2014	1012	522	1534	338.28
2015	1043	985	2028	525.29

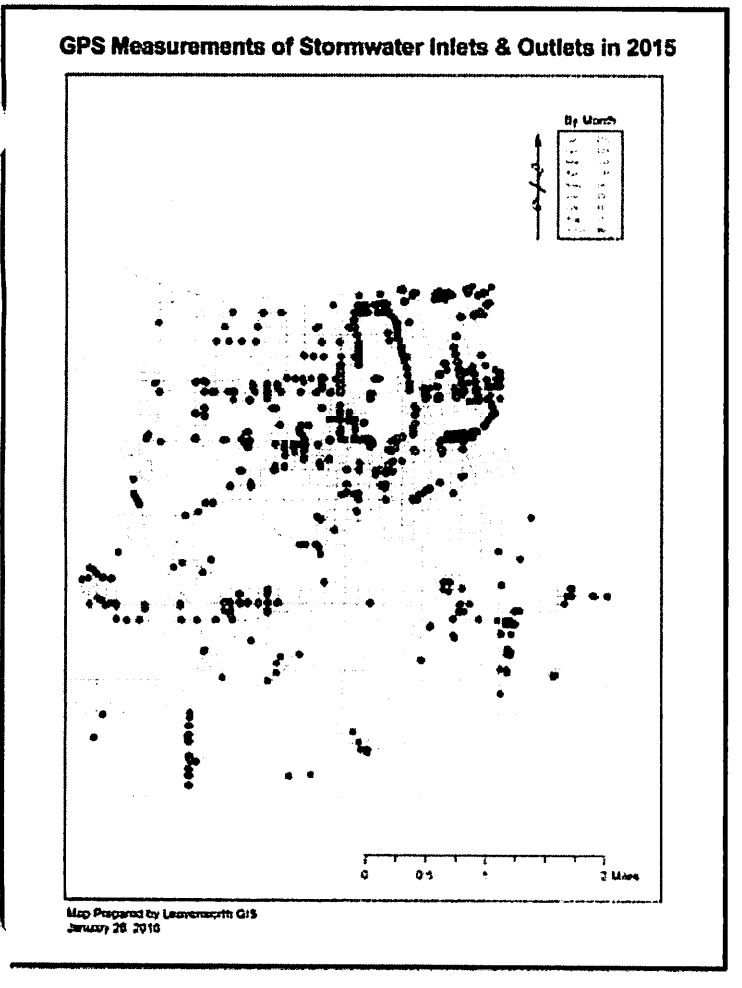
Mike McDonald

From: David Griffith
Sent: Thursday, January 28, 2016 1:50 PM
To: Mike McDonald
Subject: RE: Draft 2015 KDHE Stormwater Annual Report
Attachments: 2015 GPS Stormwater Shots.jpg

For your report... (or just the total)

I took 883 GPS measurements of stormwater inlets and outlets in 2015

Jan	255
Feb	129
Mar	203
Apr	193
May	34
Jun	29
July	14
Aug	26
Total	883



Kansas Department of Agriculture, AR and Licensing, 1320 Research Park Drive, Manhattan, KS 66502 (785) 564-6700

----- ATTENTION -----

This is a three-part document:
The middle portion of this document is your OFFICIAL AUTHORIZATION from the Kansas Department of Agriculture.

The bottom third of this document is your POCKET CARD (if applicable).

BECKY BEAVER
607 N 10TH ST
LEAVENWORTH, KS 66048

CUT ALONG THE **HEAVY** LINES

Kansas Department of Agriculture, Manhattan, Kansas

certifies

BECKY BEAVER

has met the requirements for

Commercial Pesticide Applicator Certification under the KANSAS PESTICIDE LAW

and is hereby granted

Commercial Pesticide Applicator Certification Number: 26042

constituting authorization to apply and supervise the application of pesticides in the categories indicated hereon.

Issue and Expiration Dates:

07-08-2015 12-31-2017

Expiring: 12-31-2017
GEN

Jackie McClaskey
Jackie McClaskey
Secretary of Agriculture

Kansas Department of Agriculture, AR and Licensing, 1320 Research Park Drive, Manhattan, KS 66502 (785) 564-6700 agriculture.ks.gov

CUT ALONG THE **HEAVY** LINES

POCKET CARD

Kansas Department of Agriculture certifies

BECKY BEAVER

and hereby grants

Commercial Pesticide Applicator Certification Number: 26042

Issue and Expiration Dates:

07-08-2015 12-31-2017

See detailed Information

KANSAS DEPARTMENT OF AGRICULTURE
AR and Licensing
1320 Research Park Drive
Manhattan, KS 66502
(785) 564-6700 Fax (785) 564-7490
ARandLicensing@kda.ks.gov agriculture.ks.gov

Detailed Information:

Expiring: 12-31-2017
GEN

Jackie McClaskey
Jackie McClaskey, Secretary of Agriculture

K.A.R. 4-13-15 requires that a certified applicator shall produce a certificate or pocket card when requested to do so by any customer, law enforcement official, the Secretary, or any authorized representative of the Secretary

Revised 06/23/2014
License Ccert
http://agriculture.ks.gov

JUSTIN STEWART
CITY OF LEAVENWORTH
100 N 5TH ST
LEAVENWORTH, KS 66048

Certificate of Attendance

HalfMoon Education Inc. certifies that on April 29, 2015,
JUSTIN STEWART completed

Stormwater Management 2015

This live lecture presentation was conducted at the
Holiday Inn Hotel & Suites, Overland Park, Kansas.

This seminar offers up to 6.5 HSW continuing education hours to architects and landscape architects and 6.5 PDHs to professional engineers in most states, including Kansas and Missouri.

This course has been approved by the American Institute of Architects for 6.5 HSW Learning Units (Provider No. J885) and the Landscape Architect Continuing Education System for 6.5 HSW PDHs. HalfMoon Education Inc. is an approved continuing education sponsor for architects in Florida and is deemed an approved sponsor for architects and landscape architects in New York. HalfMoon Education Inc. is an approved continuing education sponsor for engineers in Florida, Indiana, Louisiana, Maryland, New Jersey, New York (NYSED Sponsor No: 35), North Carolina, and North Dakota.

Faculty:
James F. Freeman III, Katherin Steinbacher, Rob Carrothers, Brent Johnson

Seminar Sponsor:

HalfMoon Education Inc.
P.O. Box 278
Altoona, WI 54720
(715) 835-5900
www.halfmoonseminars.org

Authorized Representative:

Douglas E. Chapman
Continuing Education Director

HAROLD BURDETTE
CITY OF LEAVENWORTH
100 N 5TH ST
LEAVENWORTH, KS 66048

Certificate of Attendance

HalfMoon Education Inc. certifies that on April 29, 2015,
HAROLD BURDETTE completed

Stormwater Management 2015

This live lecture presentation was conducted at the
Holiday Inn Hotel & Suites, Overland Park, Kansas.

This seminar offers up to 6.5 HSW continuing education hours to architects and landscape architects and 6.5 PDHs to professional engineers in most states, including Kansas and Missouri.

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Faculty:
James F. Freeman III, Katherin Steinbacher, Rob Carrothers, Brent Johnson

Seminar Sponsor:

HalfMoon Education Inc.
P.O. Box 278
Altoona, WI 54720
(715) 835-5900
www.halfmoonseminars.org

Authorized Representative:

Douglas E. Chapman
Continuing Education Director

civil + structural ENGINEER

zweig group

CONTINUING EDUCATION AIA

Certificate of Completion

This is to certify that

Justin Stewart

participated in

Practical Factors Related to the Inspection, Evaluation and Load Rating of Installed Culverts

Friday, May 1, 2015
1 Learning Unit Hours

CONTECH ENGINEERED SOLUTIONS

Ryan Renard rrenard@zweiggroup.com

38 W. Trenton Ave. Fayetteville, AR 72701

Zweig Group is an Approved Provider by the American Institute of Architects Continuing Education System.
Provider Number: J317

civil + structural
ENGINEER

zweig group

CONTINUING EDUCATION AIA

Certificate of Completion

This is to certify that

Justin Stewart

participated in

Modeling Stormwater Runoff Reduction from Rainwater Harvesting

Thursday, April 30, 2015
1 Learning Unit Hours

CONTECH
ENGINEERED SOLUTIONS

Ryan Renard renard@zweiggroup.com

38 W. Trenton Ave. Fayetteville, AR 72701

Zweig Group is an Approved Provider by the American Institute of Architects Continuing Education System.
Provider Number: J317

civil + structural
ENGINEER

zweig group

CONTINUING EDUCATION AIA

Certificate of Completion

This is to certify that

Justin Stewart

participated in

Low-Water Crossing Design & Use of Articulated Concrete Block

Thursday, April 30, 2015
1 Learning Unit Hours

CONTECH
ENGINEERED SOLUTIONS

Ryan Renard rrenard@zweiggroup.com

38 W. Trenton Ave. Fayetteville, AR 72701

Zweig Group is an Approved Provider by the American Institute of Architects Continuing Education System.
Provider Number: J317

The Watershed Academy
Web-Based Training Program

www.epa.gov/watertrain

Watershed Management Training Certificate

is awarded to

Claudia D. Larkin

for successful completion of fifteen Web-based training modules on the fundamentals of watershed management.

Anne C. Weinberg

Anne C. Weinberg, Director, Watershed Academy

05-19-15P03:15 RCVD

Emergency Management Institute

FEMA

This Certificate of Achievement is to acknowledge that

CLAUDIA D LARKIN

has reaffirmed a dedication to serve in times of crisis through continued professional development and completion of the independent study course:

IS-00454
Fundamentals of Risk Management

Issued this 30th Day of March, 2015

Tony Russell
Superintendent
Emergency Management Institute

0.2 IACET CEU

Claudia Larkin

From: Croft, Rebecca D <becca.croft@atkinsglobal.com>
Sent: Thursday, May 30, 2013 6:55 PM
To: Claudia Larkin
Subject: STARR Online Training CEC Notification

Certificate of Attendance

This is to certify that

Claudia Larkin

attended the online training session

Biggert-Waters NFIP Reform Act of 2012 on 5/22/2013

and is eligible for 1 credit hour(s).

STARR
Strategic Alliance for Risk Reduction

If you are a Certified Floodplain Manager (CFM®), ASFPM has been notified of your eligibility for Continuing Education Credit and you should see it posted to your online profile in the near future.

Please save this email for your records or forward to other agencies for credit.

Becca Croft, CFM
Senior Planner | STARR - FEMA Region X Service Center

STARR - Strategic Alliance for Risk Reduction

20700 44th Ave W, Suite 110, Lynnwood, WA 98036 | Tel: (425) 329-3699 | Cell: (541) 890-7899
Email: becca.croft@starr-team.com | Web: www.starr-team.com

Claudia Larkin

From: Croft, Rebecca D <becca.croft@atkinsglobal.com>
Sent: Thursday, May 30, 2013 6:55 PM
To: Claudia Larkin
Subject: STARR Online Training CEC Notification

Certificate of Attendance

This is to certify that

Claudia Larkin

attended the online training session
Using DFIRMS and Other Digital Flood Data on 5/15/2013
and is eligible for 1 credit hour(s).

STARR
Strategic Alliance for Risk Reduction

If you are a Certified Floodplain Manager (CFM®), ASFPM has been notified of your eligibility for Continuing Education Credit and you should see it posted to your online profile in the near future.

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Becca Croft, CFM
Senior Planner | STARR - FEMA Region X Service Center

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20700 44th Ave W, Suite 110, Lynnwood, WA 98036 | Tel: (425) 329-3699 | Cell: (541) 890-7899
Email: becca.croft@starr-team.com | Web: www.starr-team.com

Claudia Larkin

From: Croft, Rebecca D <becca.croft@atkinsglobal.com>
Sent: Monday, May 06, 2013 2:58 PM
To: Claudia Larkin
Subject: STARR Online Training Certificate of Attendance

Certificate of Attendance

This is to certify that

Claudia Larkin

attended the online training session

MT-1 Basics

hosted by STARR, on 4/25/2013.

This online training included 1 hour(s) of instruction.

STARR
Strategic Alliance for Risk Reduction

If you are a Certified Floodplain Manager (CFM®), ASFPM has been notified of your eligibility for Continuing Education Credit and you should see it posted to your online profile in the near future.

Please save this email for your records or forward to other agencies for credit hours.

Becca Croft, CFM
Senior Planner | STARR - FEMA Region X Service Center

STARR - Strategic Alliance for Risk Reduction

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Email: becca.croft@starr-team.com | Web: www.starr-team.com

Claudia Larkin

From: Croft, Rebecca D <becca.croft@atkinsglobal.com>
Sent: Thursday, May 30, 2013 6:55 PM
To: Claudia Larkin
Subject: STARR Online Training CEC Notification

Certificate of Attendance

This is to certify that

Claudia Larkin

attended the online training session
Determining BFE on 5/23/2013
and is eligible for 1 credit hour(s).

STARR
Strategic Alliance for Risk Reduction

If you are a Certified Floodplain Manager (CFM®), ASFPM has been notified of your eligibility for Continuing Education Credit and you should see it posted to your online profile in the near future.

Please save this email for your records or forward to other agencies for credit.

Becca Croft, CFM
Senior Planner | STARR - FEMA Region X Service Center

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20700 44th Ave W, Suite 110, Lynnwood, WA 98036 | Tel: (425) 329-3699 | Cell: (541) 890-7899
Email: becca.croft@starr-team.com | Web: www.starr-team.com

G. Certification

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

Signature of Permittee: _____ Date Signed: 2-23-16
(Legally responsible person)

Name (printed): Paul Kramer Title: City Manager

40 CFR 122.22 Signatories to permit applications and reports.
(a) Application. All permit applications shall be signed by either a principal executive officer or ranking elected official.

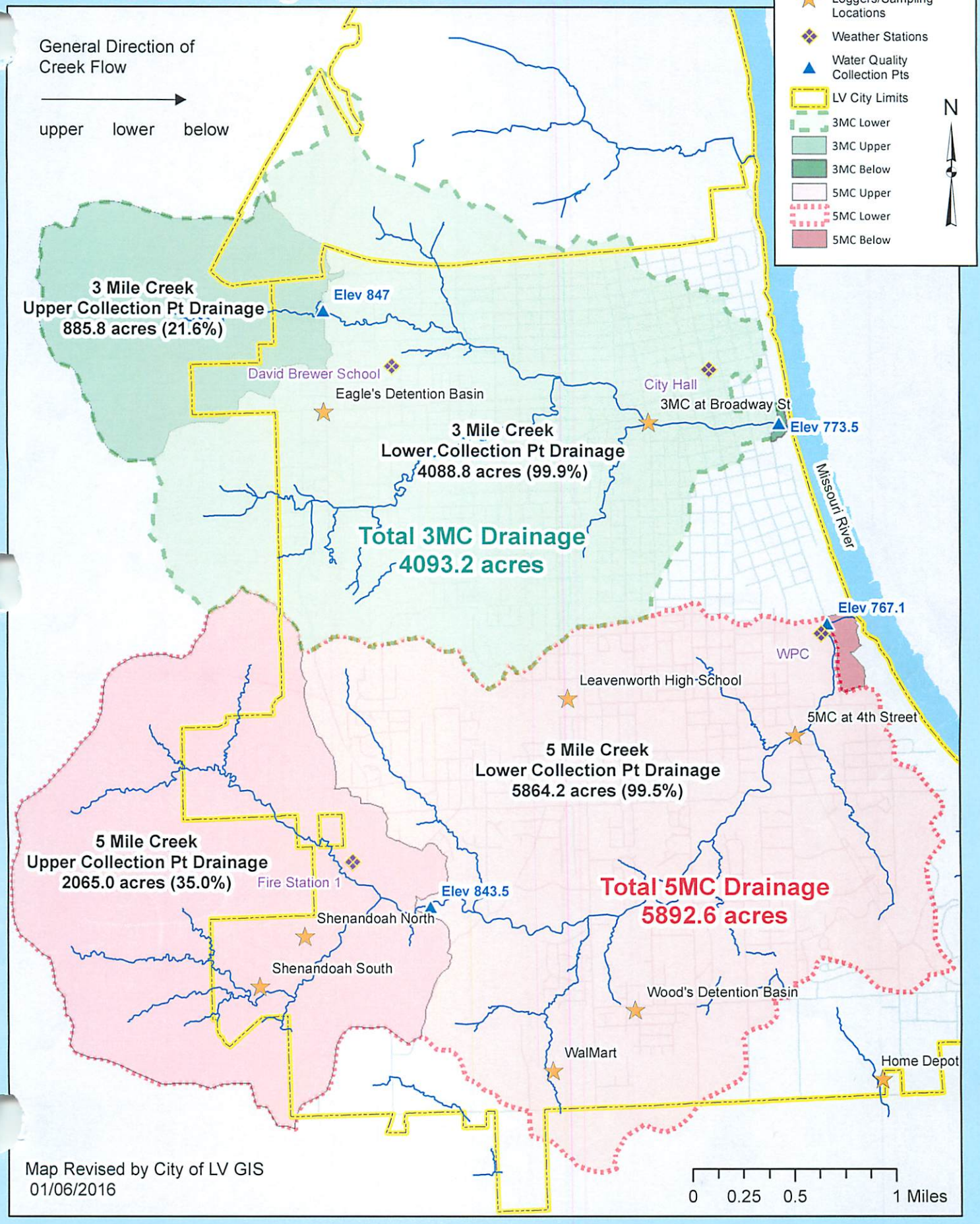
All reports required by permits, and other information requested by the Director shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person.
Submit this report to:

KANSAS DEPARTMENT OF HEALTH & ENVIRONMENT
Municipal Programs Section
000 SW Jackson Street, Suite 420
Topeka, Kansas 66612-1367

Appendix A
Summary of Sampling Data

- **Summary of Water Quality Data (six storms)**
- **Flow Observation Summary**
- **Water Quality Monitoring Sheets**

City of Leavenworth, KS
Stormwater Management Data Collection



City of Leavenworth, Kansas

Water Quality Collection Points

Location	Type	Measurement Location	Elevation	Additional Height	Baseline	LATITUDE	LONGITUDE
5MC West	Deck	@7th vert f/ east upstr edge	843.5	Handrail Elev = 848.3	848.3	39.28160093	-94.94268289
3MC West	Deck	@4th vert f/ north upstr edg	847.0	Handrail Elev = 848.1	848.1	39.32462470	-94.95067177
5MC East	Deck	@5th vert f/ north upstr edg	767.1	Deck Elev = 767.1	767.1	39.30099774	-94.90515459
3MC East	Deck	@4th vert f/ north upstr edg	773.5	Handrail Elev = 777.0	777.0	39.31544044	-94.90893167

City of Leavenworth GIS, January 6, 2016

Kansas FIPS 1501 North (Decimal Degrees)

Mike McDonald

From: Manuel Carrera
Sent: Friday, November 06, 2015 9:59 AM
To: Mike McDonald
Cc: Chuck Staples
Subject: storm event 11-5-15

	stream level	stream velocity	stream flow	distance to water surface
3 mile east	up/steady	rapid	13.27sec/50ft	23'11"
3 mile west	up/steady	rapid	18.02/50ft	18'11"
5 mile west	up/steady	normal	26.26sec/50ft	21'7"
5 mile east	up/steady	rapid	5.67sec/50ft	16'2"

Tim put the pictures and videos are on the W drive in folder Storm Event 3 & 5 mile creeks in 11-5-15 folder

Mike McDonald

:om: Manuel Carrera
ent: Tuesday, May 05, 2015 11:03 AM
To: Mike McDonald
Cc: Chuck Staples; Tim Guardado
Subject: storm event 5/5/15

	stream level	stream velocity	stream flow	distance to water surface
3 mile east	up/steady	rapid	12.81sec/50ft	23'8"
3 mile west	up/steady	rapid	19.10sec/50ft	19'2"
5 mile west	up/ steady	normal	37.41sec/50ft	21'8"
5 mile east	up/steady	rapid	11.43sec/50ft	17'6"

Pictures and videos are on the W drive in folder Storm Event 3 & 5 mile creeks in 5-5-15 folder

Mike McDonald

'om: Manuel Carrera
ent: Thursday, May 14, 2015 11:56 AM
'o: Mike McDonald
Cc: Chuck Staples; Tim Guardado
Subject: storm event 5/14/15

	stream level	stream velocity	stream flow	distance to water surface
3 mile east	up/steady	rapid	11.78sec/50ft	24'6"
3 mile west	up/steady	rapid	18.48sec/50ft	19'6"
5 mile west	up/ steady	normal	54.06sec/50ft	21'7"
5 mile east	up/steady	rapid	10.56sec/50ft	17'1"

Pictures and videos are on the W drive in folder Storm Event 3 & 5 mile creeks in 5-14-15 folder

Mike McDonald

From: Manuel Carrera
Sent: Monday, November 16, 2015 11:44 AM
To: Mike McDonald
Cc: Chuck Staples
Subject: FW: Storm Event 6/3/15

From: Manuel Carrera
Sent: Wednesday, June 03, 2015 2:01 PM
To: Mike McDonald
Cc: Chuck Staples; Tim Guardado
Subject: Storm Event 6/3/15

	stream level	stream velocity	stream flow	distance to water surface	Sample Time
3 mile east	up/steady	rapid	4.38sec/50ft	20'10"	1216
3 mile west	up/steady	rapid	11.91sec/50ft	17'9"	1234
5 mile west	up/ steady	rapid	10.81sec/50ft	18'11"	1248
5 mile east	up/steady	rapid	5.50sec/50ft	13'9"	1315

Pictures and videos are on the W drive in folder Storm Event 3 & 5 mile creeks in 6-3-15 folder

Mike McDonald

From: Manuel Carrera
Sent: Monday, July 20, 2015 11:51 AM
To: Mike McDonald
Cc: Chuck Staples
Subject: storm event 7-20-15

	stream level	stream velocity	stream flow	distance to water surface	Sample Time
3 mile east	up/steady	(river up) still, backwater at bridge	1:02.56min/50ft	22'11"	821
3 mile west	steady	normal	16.59sec/50ft	19'5"	850
5 mile west	steady	normal	28.69sec/50ft	21'9"	913
5 mile east	up/steady	(river up) still, backwater at bridge	1:15.06min/50ft	13'2"	1003

Pictures and videos are on the W drive in folder Storm Event 3 & 5 mile creeks in 7-20-15 folder

Mike McDonald

From: Manuel Carrera
Sent: Monday, November 02, 2015 2:47 PM
To: Mike McDonald; Mike Hooper
Cc: Chuck Staples; Tim Guardado
Subject: storm event 10-31-15

	stream level	stream velocity	stream flow	distance to water surface	Sample Time
3 mile east	normal	normal	30.56sec/50ft	25'8"	818
3 mile west	normal	normal	35.32sec/50ft	19'7"	841
5 mile west	normal	normal	56.94sec/50ft	22'	900
5 mile east	up/steady	rapid	9.25sec/50ft	17'7"	920

Tim put the pictures and videos are on the W drive in folder Storm Event 3 & 5 mile creeks in 10-31-15 folder

Three Mile Creek East (Downstream) looking East

May 5, 2015

May 14, 2015

June 3, 2015

July 20, 2015

October 31, 2015

November 5, 2015

Three Mile Creek East (Downstream) looking West

May 5, 2015

May 14, 2015

June 3, 2015

July 20, 2015

October 31, 2015

November 5, 2015

Three Mile Creek West (Upstream) looking East

May 5, 2015

May 14, 2015

June 3, 2015

July 20, 2015

October 31, 2015

November 5, 2015

Three Mile Creek West (Upstream) looking West

May 5, 2015

May 14, 2015

June 3, 2015

July 20, 2015

October 31, 2015

November 5, 2015

Five Mile Creek East (Downstream) looking East

May 5, 2015

May 14, 2015

June 3, 2015

July 20, 2015

October 31, 2015

November 5, 2015

Five Mile Creek East (Downstream) looking West

May 5, 2015

May 14, 2015

June 3, 2015

July 20, 2015

October 31, 2015

November 5, 2015

Five Mile Creek West (Upstream) looking West

May 5, 2015

May 14, 2015

June 3, 2015

July 20, 2015

October 31, 2015

November 5, 2015

Five Mile Creek West (Upstream) looking East

May 5, 2015

May 14, 2015

June 3, 2015

July 20, 2015

October 31, 2015

November 5, 2015

City of Leavenworth

2015 Stormwater Sampling Summary

(Note - in calculating CFS - the rating curve was used rather than the observed velocities)

2015		May 5 2015			May 14 2015			June 3 2015			July 20 2015			October 31 2015			November 5 2015		
		West	East		West	East		West	East		West	East		West	East		West	East	
		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream	
Three Mile Creek	CFS	300	190		40	45		1300	7700		45	n/a (1)		30	0		500	140	
Total Phosphorus	mg/l	0.14	0.24	w	0.15	0.23	w	1.1	2.4	w	0.34	0.18	b	0.19	0.42	w	2.4	0.76	w
Ortho Phosphate	mg/l	ND	ND	x	ND	ND	x	0.11	0.15	w	0.12	0.11	b	0.18	0.24	w	0.13	0.18	w
Nitrate+Nitrite	mg/l	0.33	0.94	w	0.27	0.37	w	0.27	0.33	w	0.39	0.61	w	0.4	0.38	b	0.47	0.31	b
Total Kjeldahl Nitrogen	mg/l	0.88	1.5	w	0.81	0.88	w	3	6.3	w	1.3	0.7	b	0.77	0.7	b	31.1	ND	b
Total Suspended Solids	mg/l	90	98	w	60	81	w	1380	1570	b	322	157	b	18	41	w	2870	402	b
Turbidity	NTU	87.3	117	w	47.4	57	w	804	1380	w	273	100	b	8.6	10.2	w	1320	69.8	b
E.Coli	col/100ml	2247	3873	w	866	9090	w	12997	98700	w	20980	13540	w	3448	5172	w	34500	42800	w

Three Mile Creek - 6 event 2015	NC/Better	Worse
Total Phosphorus	1	5
Ortho Phosphate	3	3
Nitrate+Nitrite	2	4
Total Kjeldahl Nitrogen	3	3
Total Suspended Solids	3	3
Turbidity	2	4
E.Coli	0	6
	14	28

2015		May 5 2015			May 14 2015			June 3 2015			July 20 2015			October 31 2015			November 5 2015		
		West	East		West	East		West	East		West	East		West	East		West	East	
		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream	
Five Mile Creek	CFS	30	150		35	150		330	1900		30	n/a (1)		20	135		35	600	
Total Phosphorus	mg/l	0.18	0.34	w	0.29	0.13	b	2.4	1.6	b	0.47	0.19	b	0.14	0.13	b	0.19	0.68	w
Ortho Phosphate	mg/l	ND	ND	x	ND	ND	x	0.11	0.14	w	0.15	ND	b	0.14	0.14	x	0.12	0.15	w
Nitrate+Nitrite	mg/l	0.22	0.46	w	0.12	0.23	w	0.21	0.28	w	0.42	0.47	w	ND	0.19	w	0.13	0.24	w
Total Kjeldahl Nitrogen	mg/l	1.3	2.1	w	1.3	0.84	b	7.3	4.8	b	1.8	0.89	b	0.54	ND	b	0.5	12.2	w
Total Suspended Solids	mg/l	113	165	w	136	65	b	1540	2110	w	480	201	b	11	25	w	49	392	w
Turbidity	NTU	146	231	w	100	28.5	b	1660	1220	b	404	134	b	5.3	13.1	w	27.2	138	w
E.Coli	col/100ml	12997	17329	w	17800	7540	b	90800	52100	b	77010	61310	b	1421	2613	w	19863	2851	b

(1) Missouri River Backed up

Five-Mile Creek - 6 event 2015	NC/Better	Worse
Total Phosphorus	2	4
Ortho Phosphate	5	1
Nitrate+Nitrite	0	6
Total Kjeldahl Nitrogen	4	2
Total Suspended Solids	2	4
Turbidity	3	3
E.Coli	5	1
	21	21

2014		April 24 2014			May 12 2014			October 1 2014			October 2 2014		
		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream	
Three Mile Creek	CFS	200	190		200	190		200	190		45	750	
Total Phosphorus	mg/l	0.32	0.55	w	0.42	0.61	w	1.5	0.79	b	0.6	0.67	w
Ortho Phosphate	mg/l							0.19	0.2	w	0.16	0.19	w
Nitrate+Nitrite	mg/l	0.5	0.42	b	0.69	0.69	x	0.56	0.57	w	0.3	0.73	w
Total Kjeldahl Nitrogen	mg/l	1	1.1	w	0.7	2.4	b	2.8	2.6	b	2.1	2.5	w
Total Suspended Solids	mg/l	303	242	b	165	440	w	1370	508	b	480	465	b
Turbidity	NTU	294	112	b	276	274	b	530	260	b	313	239	b
E.Coli	col/100ml	12997	3448	b	10500	14100	w	19863	72700	w	9208	37900	w
Dissolved Oxygen	mg/l	6.3	3.3		6.1	4.6							

Three Mile Creek - 4 event 2014	NC/Better	Worse
Total Phosphorus	1	3
Ortho Phosphate	0	2
Nitrate+Nitrite	2	2
Total Kjeldahl Nitrogen	2	2
Total Suspended Solids	3	1
Turbidity	4	0
E.Coli		
	12	10

2014		April 24 2014			May 12 2014			October 1 2014			October 2 2014		
		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream		Upstream	Downstream	
Five Mile Creek	CFS	1020	800		880	660		1100	800		3100	265	
Total Phosphorus	mg/l	0.13	0.54	w	0.34	0.28	b	0.66	0.63	b	1.5	1.1	b
Ortho Phosphate	mg/l							0.2	0.18	b	0.24	0.22	b
Nitrate+Nitrite	mg/l	0.21	0.34	w	0.29	0.32	w	0.3	0.5	w	0.32	0.41	w
Total Kjeldahl Nitrogen	mg/l	0.69	0.56	b	1.8	1.6	b	1.3	1.3	x	4.4	3	b
Total Suspended Solids	mg/l	54	485	w	300	226	b	356	472	w	1510	1480	b
Turbidity	NTU	22.5	261	w	199	193	b	241	263	w	488	438	b
E.Coli	col/100ml	1872	3255	w	8660	8660	x	88600	30900	b	63100	59100	b
Dissolved Oxygen	mg/l	6.7	4.9		5.5	5.1							

Five-Mile Creek - 4 event 2014	NC/Better	Worse
Total Phosphorus	3	1
Ortho Phosphate	2	0
Nitrate+Nitrite	0	4
Total Kjeldahl Nitrogen	4	0
Total Suspended Solids	2	2
Turbidity	2	2
E.Coli		
	13	9

APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 360 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 5/5/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.14	☒	☐
Ortho-Phosphate	< 0.1	☒	☐
Nitrate + Nitrite (mg/l)	0.33	☒	☐
Total Kjeldahl Nitrogen (mg/l)	0.88	☒	☐
Total Nitrogyn	1.2	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	90.0	☒	☐
Turbidity(NTU)	87.3	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	2247	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

* Any result shown in analytical report to be ND (non-detect) must be shown as < with the reporting/detection limit by the certified laboratory.

This form, Water Quality Results for Additional Sites Monitored, is intended for use by both Phase I and Phase MS4s.

NPDES permitted Phase I MS4s included Topeka: Unified Government of Wyandotte County and Kansas City, Kansas; and Wichita. All other NPDES permitted MS4s in Kansas are Phase II MS4s

APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 190 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 5/5/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.24	☒	☐
Ortho-Phosphate	< 0.1	☒	☐
Nitrate + Nitrite (mg/l)	0.94	☒	☐
Total Kjeldahl Nitrogen (mg/l)	1.52	☒	☐
Total Nitrogyn	2.5	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	98.0	☒	☐
Turbidity(NTU)	117	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	3873	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 30 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: Normal (Rapid/Normal, Still (backwater))

Sample Date: 5/5/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.18	☒	☐
Ortho-Phosphate	< 0.1	☒	☐
Nitrate + Nitrite (mg/l)	0.22	☒	☐
Total Kjeldahl Nitrogen (mg/l)	1.3	☒	☐
Total Nitrogyn	1.5	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	113	☒	☐
Turbidity(NTU)	146	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	12997	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 150 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 5/5/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.34	☒	☐
Ortho-Phosphate	< 0.1	☒	☐
Nitrate + Nitrite (mg/l)	0.46	☒	☐
Total Kjeldahl Nitrogen (mg/l)	2.1	☒	☐
Total Nitrogyn	2.6	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	165	☒	☐
Turbidity(NTU)	321	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	17329	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 40 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 5/14/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.15	☒	☐
Ortho-Phosphate	< 0.1	☒	☐
itrate + Nitrite (mg/l)	0.27	☒	☐
otal Kjeldahl Nitrogen (mg/l)	0.81	☒	☐
Total Nitrogen	1.1	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	60.0	☒	☐
Turbidity(NTU)	47.4	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	866	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 45 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 5/14/2015

Parameters & Units Required	Results*	Sample Type Grab	Composite
Total Phosphorus (mg/l)	0.23	☒	☐
Ortho-Phosphate	< 0.1	☒	☐
Nitrate + Nitrite (mg/l)	0.37	☒	☐
Total Kjeldahl Nitrogen (mg/l)	0.88	☒	☐
Total Nitrogen	1.3	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	81.0	☒	☐
Turbidity(NTU)	57.0	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	9090	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 35 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: NORMAL (Rapid/Normal, Still (backwater))

Sample Date: 5/14/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.29	☒	☐
Ortho-Phosphate	< 0.1	☒	☐
Nitrate + Nitrite (mg/l)	0.12	☒	☐
Total Kjeldahl Nitrogen (mg/l)	1.3	☒	☐
Total Nitrogen	1.4	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	136	☒	☐
Turbidity(NTU)	100	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	17800	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 150 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 5/14/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.13	☒	☐
Ortho-Phosphate	< 0.1	☒	☐
itrate + Nitrite (mg/l)	0.23	☒	☐
otal Kjeldahl Nitrogen (mg/l)	0.84	☒	☐
Total Nitrogen	1.1	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	65.0	☒	☐
Turbidity(NTU)	28.5	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	7540	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 1300 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 6/3/2015

Parameters & Units Required	Results*	Sample Type Grab	Composite
Total Phosphorus (mg/l)	1.1	☒	☐
Ortho-Phosphate	0.11	☒	☐
itrate + Nitrite (mg/l)	0.27	☒	☐
otal Kjeldahl Nitrogen (mg/l)	3.0	☒	☐
Total Nitrogen	3.2	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	1380	☒	☐
Turbidity(NTU)	804	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	12997	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: ~~UP/STE~~ 7700 CFS

Stream Level Conditions: UP/~~STEADY~~ (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 6/3/2015

Parameters & Units Required	Results*	Sample Type Grab	Composite
Total Phosphorus (mg/l)	2.4	☒	☐
Ortho-Phosphate	0.15	☒	☐
Nitrate + Nitrite (mg/l)	0.33	☒	☐
Total Kjeldahl Nitrogen (mg/l)	6.3	☒	☐
Total Nitrogen	6.6	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	1570	☒	☐
Turbidity(NTU)	1380	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	98700	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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This form, Water Quality Results for Additional Sites Monitored, is intended for use by both Phase I and Phase II MS4s.

NPDES permitted Phase I MS4s included Topeka: Unified Government of Wyandotte County and Kansas City, Kansas; and Wichita. All other NPDES permitted MS4s in Kansas are Phase II MS4s

APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 330 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 6/3/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	2.4	☒	☐
Ortho-Phosphate	0.11	☒	☐
Nitrate + Nitrite (mg/l)	0.21	☒	☐
Total Kjeldahl Nitrogen (mg/l)	7.3	☒	☐
Total Nitrogen	7.5	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	1540	☒	☐
Turbidity(NTU)	1660	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	90800	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 1900 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 6/3/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	1.6	☒	☐
Ortho-Phosphate	0.14	☒	☐
Nitrate + Nitrite (mg/l)	0.28	☒	☐
Total Kjeldahl Nitrogen (mg/l)	4.8	☒	☐
Total Nitrogen	5.1	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	2110	☒	☐
Turbidity(NTU)	1220	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	52100	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: ~~N/A~~ ~~#5~~ 45 CFS

Stream Level Conditions: STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: ~~STILL~~ NORMAL (Rapid/Normal, Still (backwater))
~~BACKWATER~~

Sample Date: 7/20/2015

Parameters & Units Required	Results*	Sample Type Grab	Composite
Total Phosphorus (mg/l)	0.34	☒	☐
Ortho-Phosphate	0.12	☒	☐
Nitrate + Nitrite (mg/l)	0.39	☒	☐
Total Kjeldahl Nitrogen (mg/l)	1.3	☒	☐
Total Nitrogen	1.7	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	322	☒	☐
Turbidity(NTU)	273	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	20980	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: N/A CFS

Stream Level Conditions: ~~STEEP~~ UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: STILL (Rapid/Normal, Still (backwater))
MO RIV BACKWATER

Sample Date: 7/20/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.18	☒	☐
Ortho-Phosphate	0.11	☒	☐
Nitrate + Nitrite (mg/l)	0.61	☒	☐
Total Kjeldahl Nitrogen (mg/l)	0.70	☒	☐
Total Nitrogen	1.3	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	157	☒	☐
Turbidity(NTU)	100	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	13540	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 30 CFS

Stream Level Conditions: STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: NORMAL (Rapid/Normal, Still (backwater))

Sample Date: 7/20/2015

Parameters & Units Required	Results*	Sample Type Grab	Composite
Total Phosphorus (mg/l)	0.47	☒	☐
Ortho-Phosphate	0.15	☒	☐
Nitrate + Nitrite (mg/l)	0.42	☒	☐
Total Kjeldahl Nitrogen (mg/l)	1.8	☒	☐
Total Nitrogen	2.2	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	480	☒	☐
Turbidity(NTU)	404	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	77010	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: N/A CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: STILL (Rapid/Normal, Still (backwater))
MO RIV BACKWATER

Sample Date: 7/20/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.19	☒	☐
Ortho-Phosphate	< 0.1	☒	☐
Nitrate + Nitrite (mg/l)	0.47	☒	☐
Total Kjeldahl Nitrogen (mg/l)	0.89	☒	☐
Total Nitrogen	1.4	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	201	☒	☐
Turbidity(NTU)	134	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	61310	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: Home Depot Basin

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☒ Stream: ☐

Estimated Stream Flow: _____ CFS

Stream Level Conditions: _____ (Rising, Falling, Steady)

Stream Velocity Conditions: _____ (Rapid/Normal, Still (backwater))

Sample Date: 7/20/2015

Parameters & Units Required	Results*	Sample Type Grab	Composite
Total Phosphorus (mg/l)	< 0.1	☒	☐
Ortho-Phosphate	< 0.1	☒	☐
itrate + Nitrite (mg/l)	0.58	☒	☐
otal Kjeldahl Nitrogen (mg/l)	< 0.5	☒	☐
Total Nitrogen	0.72	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	13.0	☒	☐
Turbidity(NTU)	1.6	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	19930	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 30 CFS

Stream Level Conditions: NORMAL (Rising, Falling, Steady)

Stream Velocity Conditions: NORMAL (Rapid/Normal, Still (backwater))

Sample Date: 10/31/2015

Parameters & Units Required	Results*	Sample Type Grab	Composite
Total Phosphorus (mg/l)	0.19	☒	☐
Ortho-Phosphate	0.18	☒	☐
Nitrate + Nitrite (mg/l)	0.4	☒	☐
Total Kjeldahl Nitrogen (mg/l)	0.77	☒	☐
Total Nitrogen	1.2	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	18.0	☒	☐
Turbidity(NTU)	8.6	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	3448	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 0 CFS

Stream Level Conditions: Normal (Rising, Falling, Steady)

Stream Velocity Conditions: Normal (Rapid/Normal, Still (backwater))

Sample Date: 10/31/2015

Parameters & Units Required	Results*	Sample Type Grab	Composite
Total Phosphorus (mg/l)	0.42	☒	☐
Ortho-Phosphate	0.24	☒	☐
Nitrate + Nitrite (mg/l)	0.38	☒	☐
Total Kjeldahl Nitrogen (mg/l)	0.7	☒	☐
Total Nitrogen	1.1	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	41.0	☒	☐
Turbidity(NTU)	10.2	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	5172	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 20 CFS

Stream Level Conditions: NORMAL (Rising, Falling, Steady)

Stream Velocity Conditions: NORMAL (Rapid/Normal, Still (backwater))

Sample Date: 10/31/2015

Parameters & Units Required	Results*	Sample Type Grab	Composite
Total Phosphorus (mg/l)	0.14	☒	☐
Ortho-Phosphate	0.14	☒	☐
Nitrate + Nitrite (mg/l)	< 0.1	☒	☐
Total Kjeldahl Nitrogen (mg/l)	0.54	☒	☐
Total Nitrogen	0.62	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	11.0	☒	☐
Turbidity(NTU)	5.3	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	1421	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 135 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 10/31/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.13	☒	☐
Ortho-Phosphate	0.14	☒	☐
Nitrate + Nitrite (mg/l)	0.19	☒	☐
Total Kjeldahl Nitrogen (mg/l)	< 0.1	☒	☐
Total Nitrogen	0.66	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	25.0	☒	☐
Turbidity(NTU)	13.1	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	2613	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 500 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 11/05/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	2.4	☒	☐
Ortho-Phosphate	0.13	☒	☐
Nitrate + Nitrite (mg/l)	0.47	☒	☐
Total Kjeldahl Nitrogen (mg/l)	31.1	☒	☐
Total Nitrogen	31.6	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	2870	☒	☐
Turbidity(NTU)	1320	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	34500	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 3 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 140 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 11/5/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.76	☒	☐
Ortho-Phosphate	0.18	☒	☐
Nitrate + Nitrite (mg/l)	0.31	☒	☐
Total Kjeldahl Nitrogen (mg/l)	< 0.1	☒	☐
Total Nitrogen	0.31	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	402	☒	☐
Turbidity(NTU)	69.8	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	42800	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile West

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 35 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: Normal (Rapid/Normal, Still (backwater))

Sample Date: 11/5/2015

Parameters & Units Required	Results*	Sample Type Grab	Composite
Total Phosphorus (mg/l)	0.19	☒	☐
Ortho-Phosphate	0.12	☒	☐
Nitrate + Nitrite (mg/l)	0.13	☒	☐
Total Kjeldahl Nitrogen (mg/l)	0.50	☒	☐
Total Nitrogen	0.63	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	49.0	☒	☐
Turbidity(NTU)	27.2	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	19863	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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APPENDIX A WATER MONITORING RESULTS

Additional Sites Monitored (Either surface waters, ground waters or flow within MS4)

Site Name: 5 Mile East

Site Number: _____

Event Rainfall Total: _____ Inches

Lake: ☐ Stream: ☒

Estimated Stream Flow: 600 CFS

Stream Level Conditions: UP/STEADY (Rising, Falling, Steady)

Stream Velocity Conditions: RAPID (Rapid/Normal, Still (backwater))

Sample Date: 11/5/2015

Parameters & Units Required	Results*	Sample Type Grab	Sample Type Composite
Total Phosphorus (mg/l)	0.68	☒	☐
Ortho-Phosphate	0.15	☒	☐
Nitrate + Nitrite (mg/l)	0.24	☒	☐
Total Kjeldahl Nitrogen (mg/l)	12.2	☒	☐
Total Nitrogen	12.5	Calculate	
Chlorophyll (µg/l)		☐	☐
Total Suspended Solids (mg/l)	392	☒	☐
Turbidity(NTU)	138	☒	☐
Secchi Disk (feet)		☐	☐
E. coli (col/100ml)	2851	☒	☐
Other		☐	☐
Other		☐	☐

Comments: _____

Footnotes and comments

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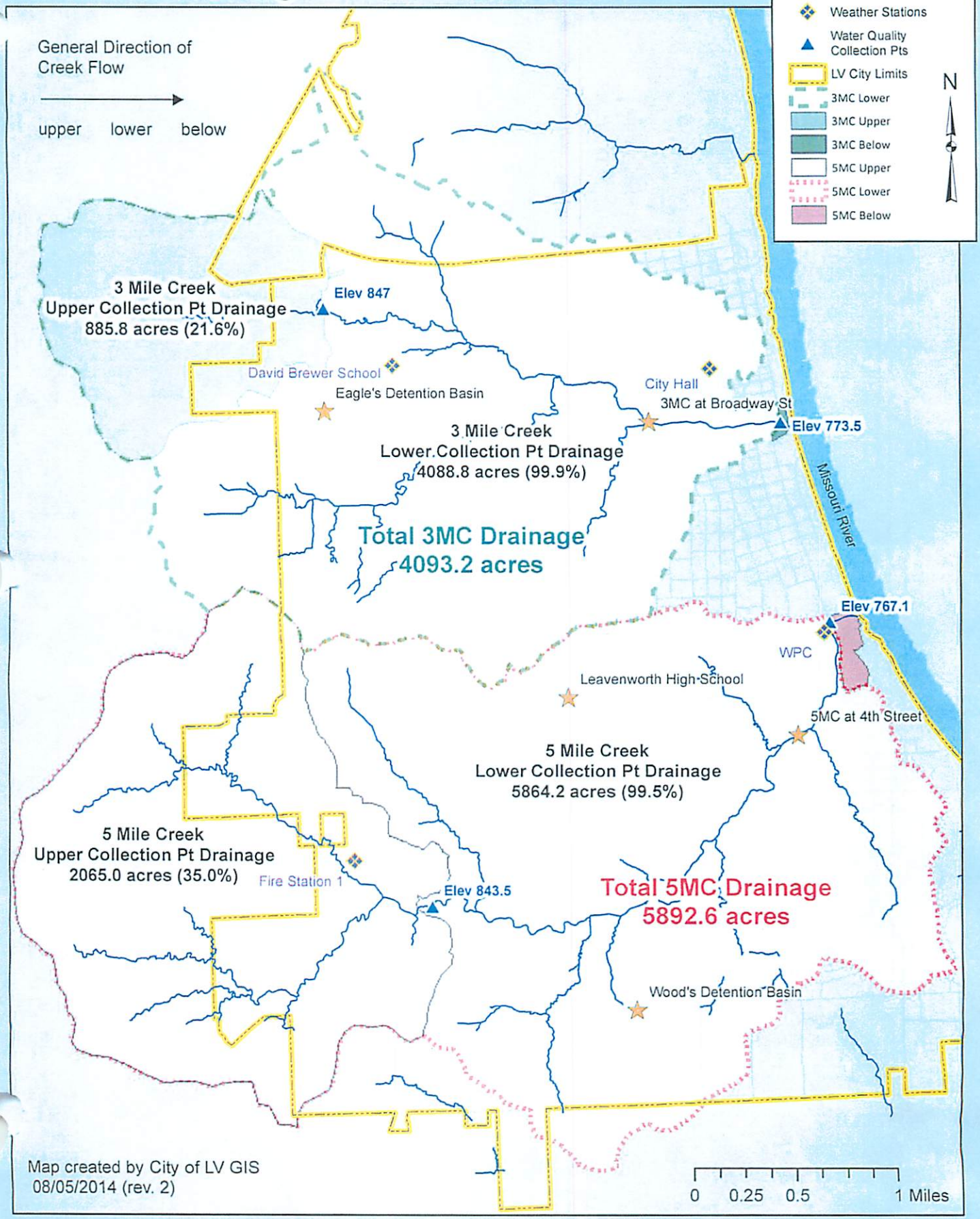
Appendix B – N/A

Appendix C
Selected Maps and Charts related to measurement of rainfall and stream stage with comments

- **Overview map of drainage basins, water quality sampling points, rain gauges and detention basins**
- **Selected graphs of Three-Mile and Five-Mile Creek with comments**
- **Selected Graphs of detention basins with comments**

City of Leavenworth, KS
Stormwater Management Data Collection



City of Leavenworth

February 26, 2015

Observations – Integrating Rainfall, Depth and Time Data

The City Engineers Office reviews data as it is obtained from the field monitors (rain gauges and depth data loggers). The data can is integrated into tables, charts, graphs and other useful/interesting presentations by an ad-hoc team of employees. This information is used for internal purposes and distributed to key city staff members including the City Manager and Public Information Officer. Selected data is also distributed to an informal group of interested observers by email for any insight or observations that they may have on the process and/or the results.

The attached emails and graphs are representative of the information distributed in this manner.

There have been occasional requests from others for the detailed data for further evaluation.

Mike McDonald

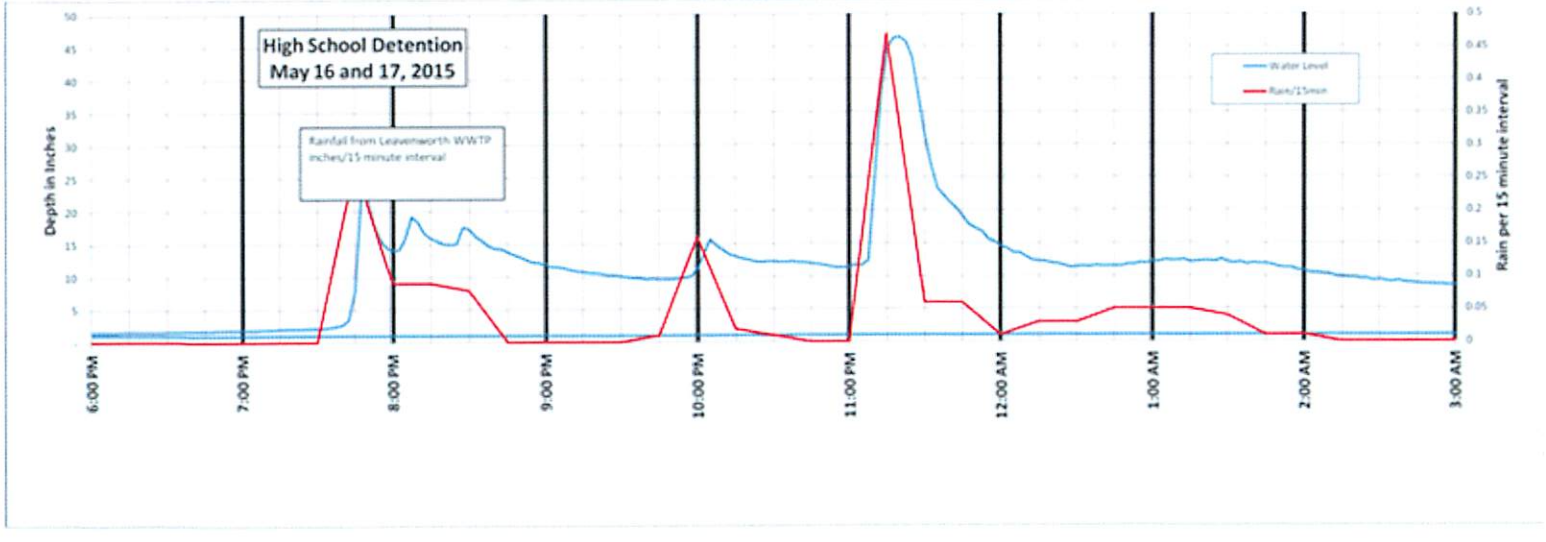
From: Mike McDonald
Sent: Friday, May 29, 2015 12:35 PM
To: Bill Yord; Bob Patzwald; brett@napiereng.com; Buchanan, Kimberly; Chuck Staples; Claudia Larkin; Cmagaha@leavenworthcounty.org; dave.stokka@usd453.org; David Griffith; Dedeke, Matt; Donald W. Baker P. E. D. WRE CPESC (DBaker@wrs-rc.com); Hal Burdette; Joel Mahnken; Justin Stewart; jyoung@lansing.ks.us; Kayla Manning; Ken Miller; Kevin.gullett@usd453.org; lauren@lexeco.com; Manuel Carrera; Melissa Bower; Mike Hooper; Mike McDonald (Home); Mitch Pleak; mspickelmier@leavenworthcounty.org; Ric.Johnson@wilsonco.com; Sara Croke; Tyler Pjesky
Subject: High School Detention - datalogger May 2015.xlsx
Attachments: High School Detention - datalogger May 2015.xlsx

Another interesting set of graphs –

The detention pond at High School at corner of Sherman and Gran (pic below) also responded to the rain –
Would be interesting to have the designer look at it and report if it is working as intended.

Graph below is the most interesting – if there is anyone that says there is never any water in the pond – there was nearly FOUR FEET over the datalogger for nearly 15 minutes, and over three feet for over 20 minutes (and our datalogger is NOT on the bottom of the pond!)

Mike



Mike McDonald

From: Mike McDonald
Sent: Friday, May 29, 2015 5:35 PM
To: Bill Yord; Bob Patzwald; brett@napiereng.com; Buchanan, Kimberly; Chuck Staples; Claudia Larkin; Cmagaha@leavenworthcounty.org; dave.stokka@usd453.org; David Griffith; Dedeke, Matt; Donald W. Baker P. E. D. WRE CPESC (DBaker@wrs-rc.com); Hal Burdette; Joel Mahnken; Justin Stewart; jyoung@lansing.ks.us; Kayla Manning; Ken Miller; Kevin.gullett@usd453.org; lauren@lexeco.com; Manuel Carrera; Melissa Bower; Mike Hooper; Mike McDonald (Home); Mitch Pleak; mspickelmier@leavenworthcounty.org; Ric.Johnson@wilsonco.com; Sara Croke; Tyler Pjesky
Subject: Three Mile Creek - Rainfall Dispersion

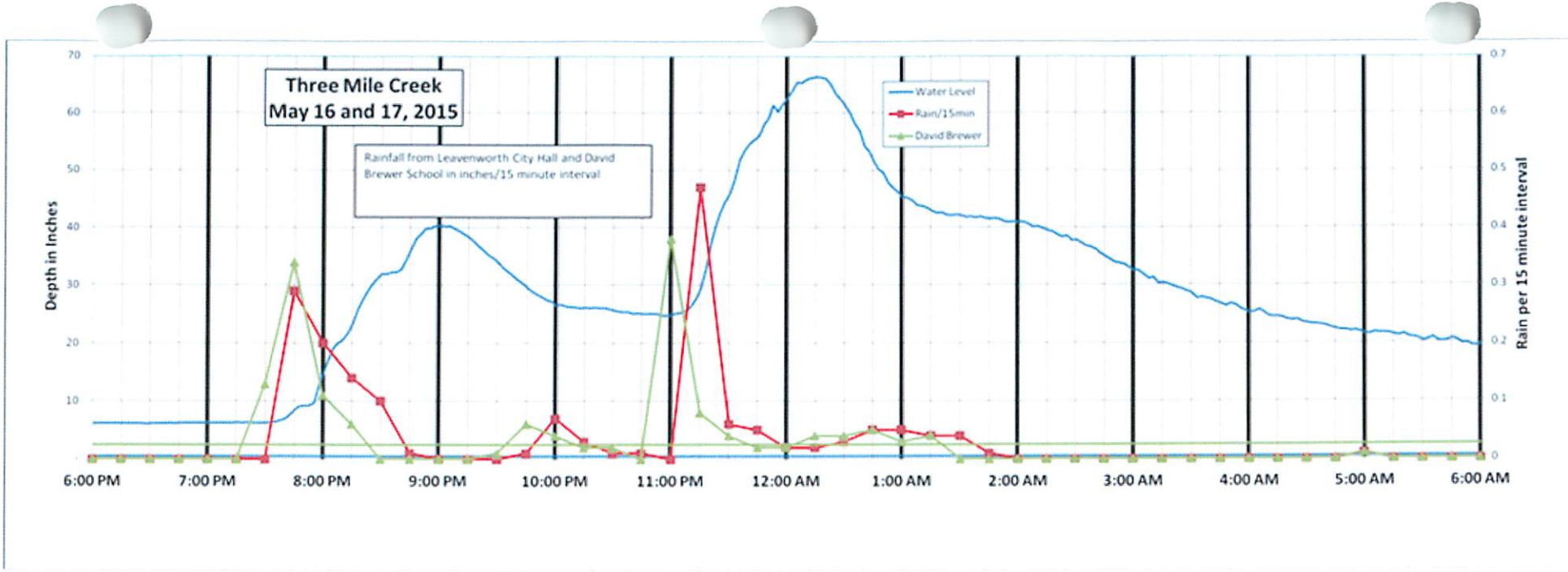
As I get a bit better on using Excel – I try different things – this was to see the spatial dispersion of rainfall as applies to Three Mile Creek.

City Hall is near the downstream end of Three Mile Creek.

David Brewer School Rain Gage is about 1.5 miles west of city hall, and the upper end of the drainage basin is about 1.5 miles west of David Brewer. Wanted to see if I can plot both rain gages on one graph without making it too complicated – seems to work OK.

In general – seems this storm happened the same in both places – but about 15 minutes later at City Hall.

Interesting – maybe even useful or insightful!



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100 N Fifth Street
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913-684-0375

Mike McDonald

From: Mike McDonald
Sent: Monday, August 24, 2015 11:45 AM
To: 'Bill Yord'; 'Bob Patzwald'; 'brett@napiereng.com'; 'Buchanan, Kimberly'; Chuck Staples; Claudia Larkin; 'Cmagaha@leavenworthcounty.org'; 'dave.stokka@usd453.org'; David Griffith; 'Dedeke, Matt'; 'Donald W. Baker P. E. D. WRE CPESC (DBaker@wrs-rc.com)'; 'greg@lexeco.com'; Hal Burdette; 'jfsanders39@hotmail.com'; 'Joel Mahnken'; Justin Stewart; 'jyoung@lansing.ks.us'; 'Katie Schleicher (kschleicher@trekkllc.com)'; 'Kayla Manning'; 'Ken Miller'; 'Kevin.gullett@usd453.org'; 'lauren@lexeco.com'; Manuel Carrera; 'Mark G. Wade (mwade@providenceic.com)'; Melissa Bower; Mike Hooper; 'Mike McDonald (Home)'; 'Mitch Pleak'; 'mspickelmier@leavenworthcounty.org'; 'Ric.Johnson@wilsonco.com'; Sara Croke; Steve Grant
Cc: Tom Morey (tom.morey@kda.ks.gov)
Subject: May 2015 - Three-Mile Creek - Some Rain and Flow Charts

Well – it has been a while since I sent anything out – and May is a bit of a redo – but this is the entire month!

I am streamlining the charting process as we now have seven locations!

Will be doing a similar graph for each site for May, June, July and August

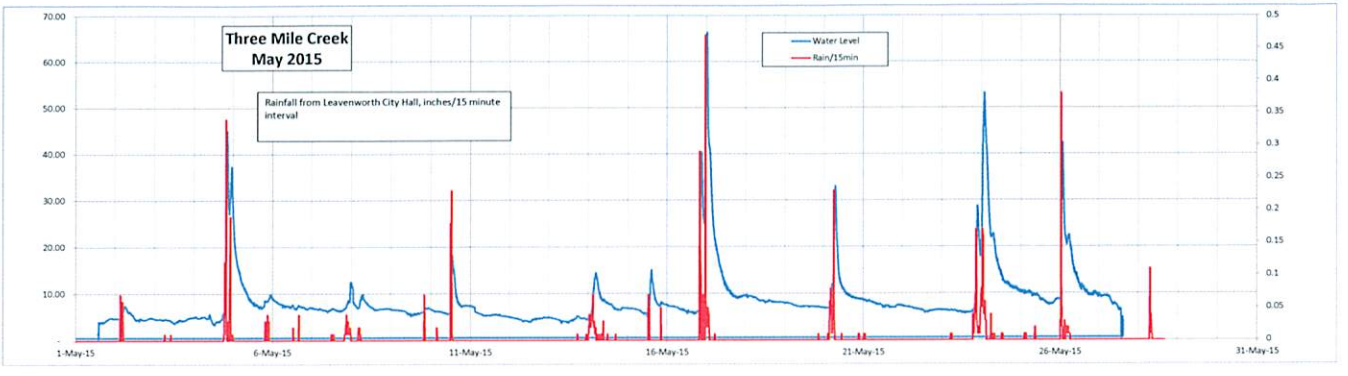
With a lot of rain – you get lots of graphs!

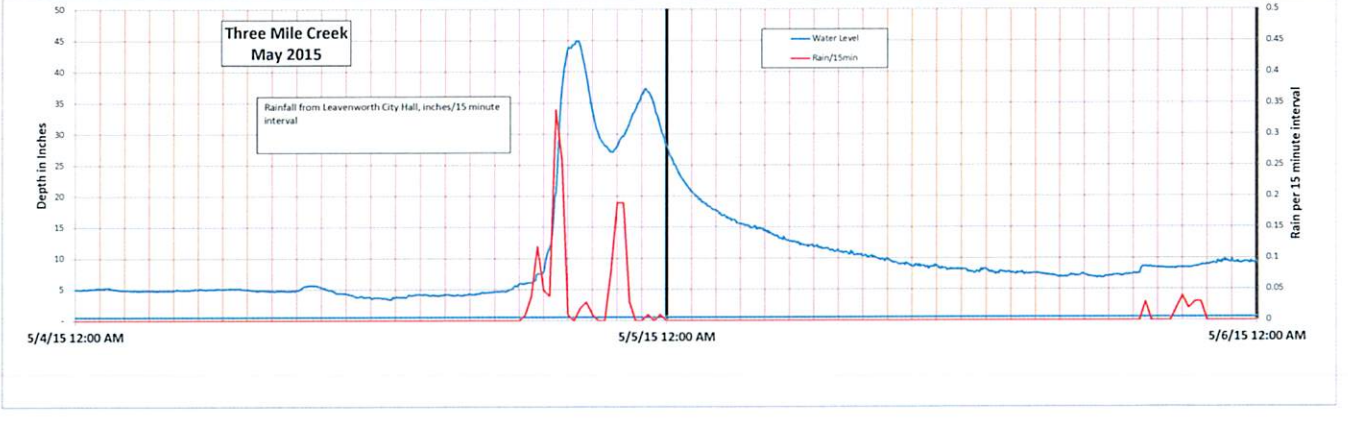
At some point I am supposed to study all this and prepare a report as part of my annual report – right now I can report

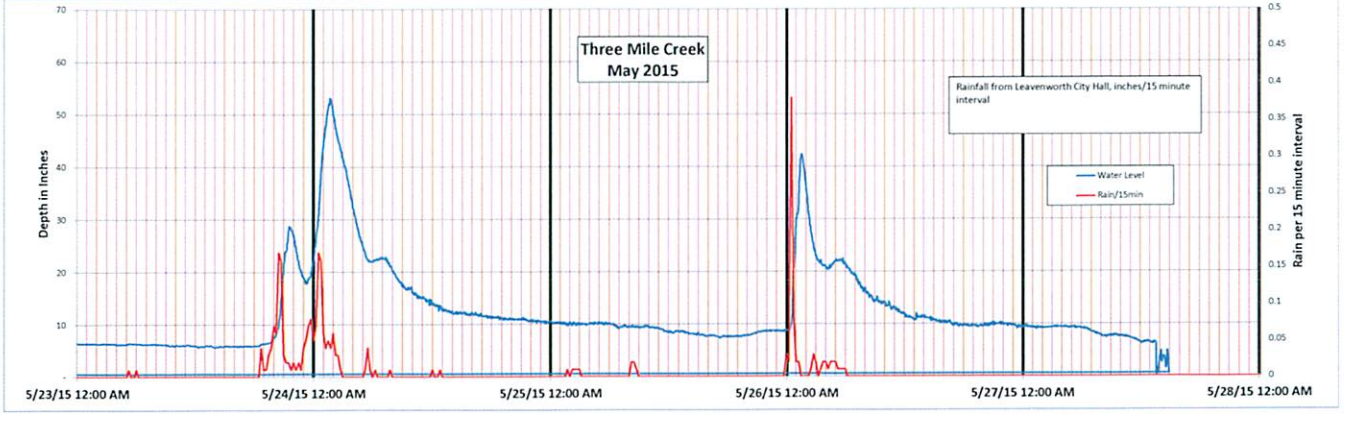
- it is actually pretty interesting!
- If it doesn't rain in the west half of the basin – we have not high water (but we knew that!)

Actual data available via email if you want it – about a 3mb file with these graphs in it.

Mike


Three Mile Creek
May 2015
Rainfall from Leavenworth City Hall, inches/15 minute interval
Water Level
Rain/15min
70.00
60.00
50.00
40.00
30.00
20.00
10.00
-
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1-May-15
6-May-15
11-May-15
16-May-15
21-May-15
26-May-15
31-May-15

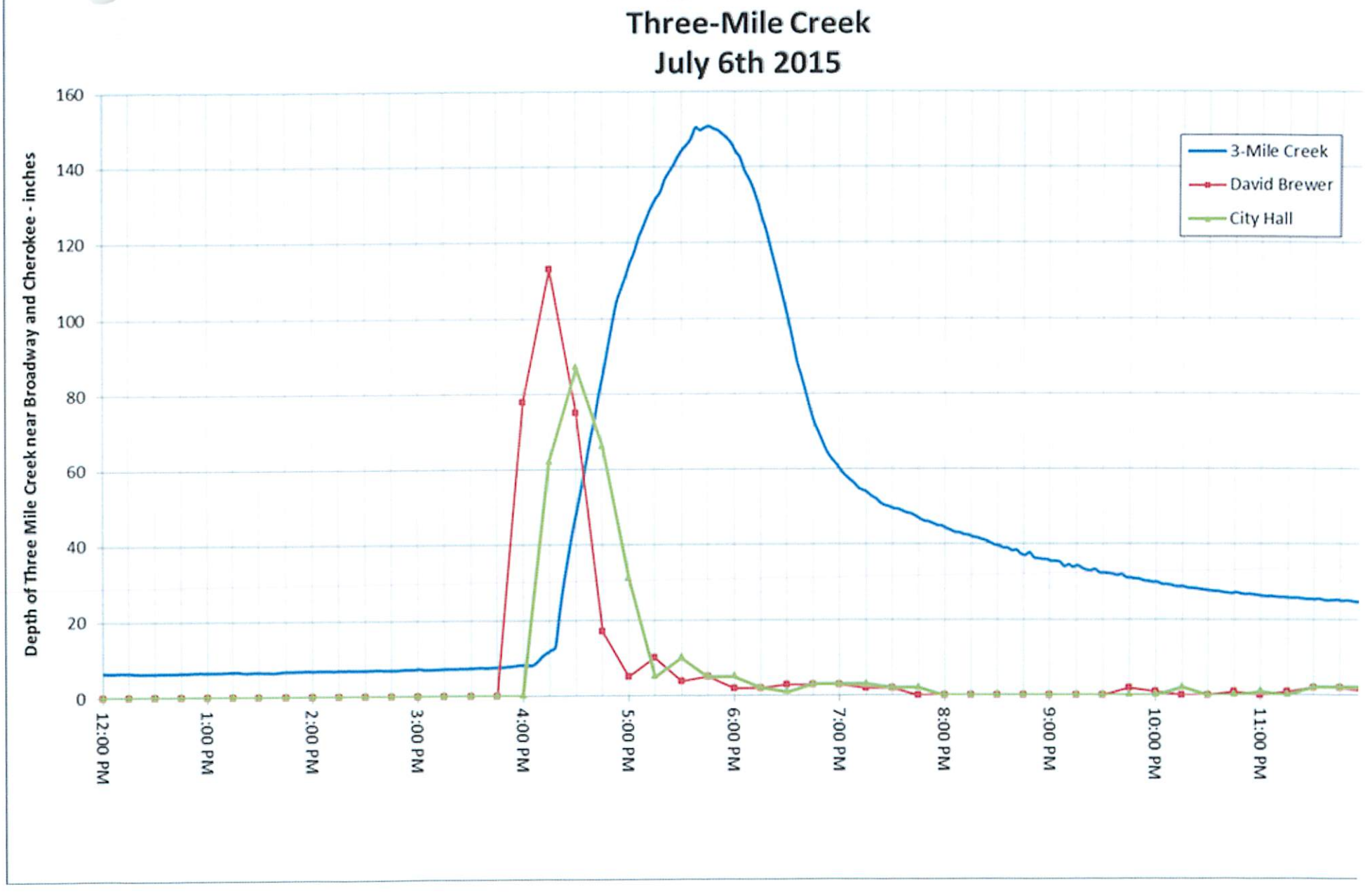

Three Mile Creek
May 2015
Rainfall from Leavenworth City Hall, inches/15 minute interval
Water Level
Rain/15min
Depth in Inches
Rain per 15 minute interval
50
45
40
35
30
25
20
15
10
5
-
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5/4/15 12:00 AM
5/5/15 12:00 AM
5/6/15 12:00 AM


Three Mile Creek
May 2015
Rainfall from Leavenworth City Hall, inches/15 minute interval
Water Level
Rain/15min
Depth in Inches
Rain per 15 minute interval
70
60
50
40
30
20
10
-
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5/23/15 12:00 AM
5/24/15 12:00 AM
5/25/15 12:00 AM
5/26/15 12:00 AM
5/27/15 12:00 AM
5/28/15 12:00 AM

Mike McDonald

From: Mike McDonald
Sent: Friday, July 10, 2015 4:39 PM
To: 'Bill Yord'; 'Bob Patzwald'; 'brett@napiereng.com'; 'Buchanan, Kimberly'; Chuck Staples; Claudia Larkin; 'Cmagaha@leavenworthcounty.org'; 'dave.stokka@usd453.org'; David Griffith; 'Dedeke, Matt'; 'Donald W. Baker P. E. D. WRE CPESC (DBaker@wrs-rc.com)'; 'greg@lexeco.com'; Hal Burdette; 'Joel Mahnken'; Justin Stewart; 'jyoung@lansing.ks.us'; 'Kayla Manning'; 'Ken Miller'; 'Kevin.gullett@usd453.org'; 'lauren@lexeco.com'; Manuel Carrera; 'Mark G. Wade (mwade@providenceic.com)'; Melissa Bower; Mike Hooper; 'Mike McDonald (Home)'; 'Mitch Pleak'; 'mspickelmier@leavenworthcounty.org'; 'Ric.Johnson@wilsonco.com'; Sara Croke; Steve Grant
Subject: Three Mile Creek chart july 6 2015.xlsx
Attachments: Three Mile Creek chart july 6 2015.xlsx

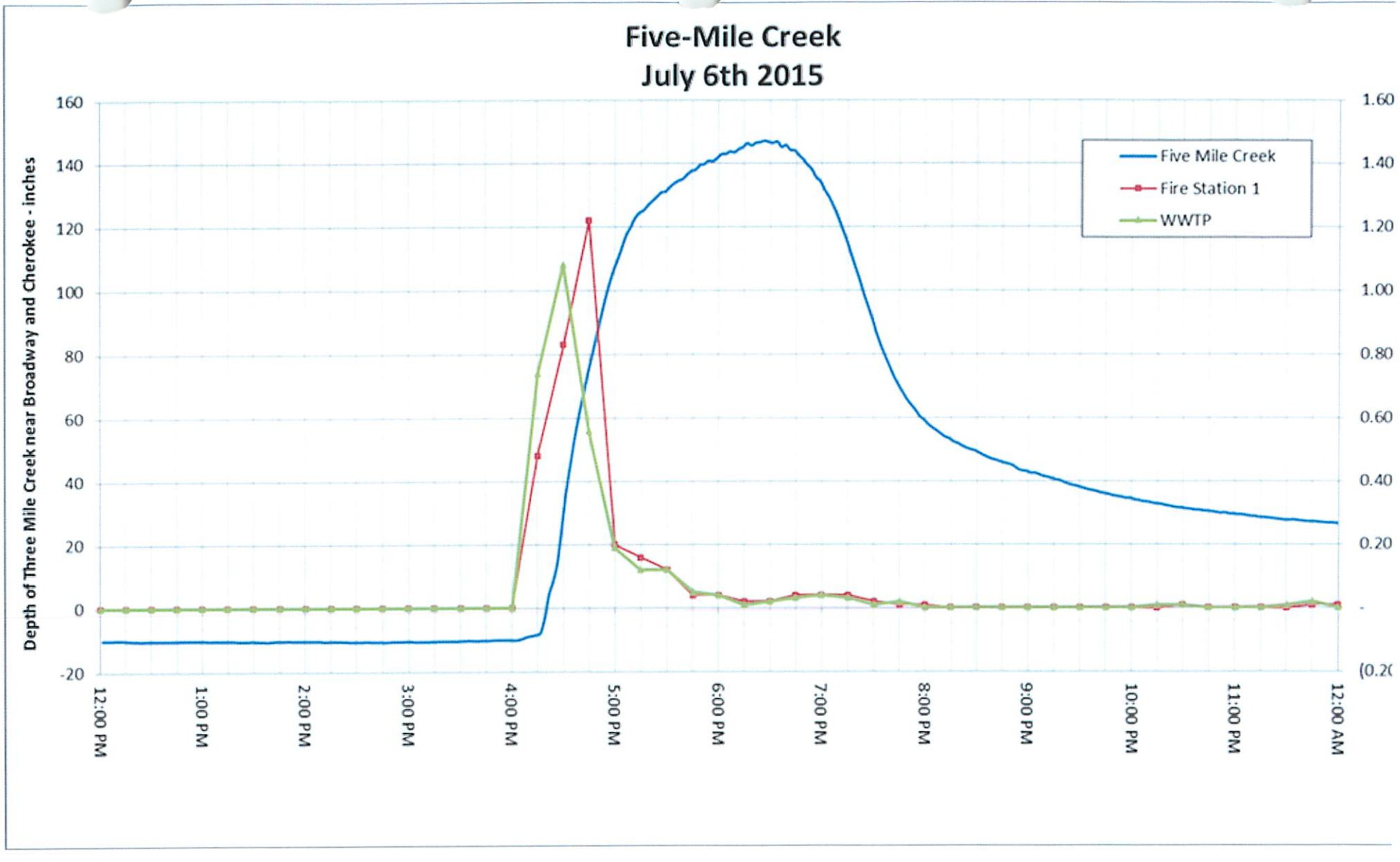
Trying out how to present interesting information
About a 25 year storm
Creek is extremely reactive!
Data attached if you want to play
Happy Weekend
Mike


Three-Mile Creek
July 6th 2015
Depth of Three Mile Creek near Broadway and Cherokee - inches
160
140
120
100
80
60
40
20
0
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
3-Mile Creek
David Brewer
City Hall

Mike McDonald

From: Mike McDonald
Sent: Monday, July 13, 2015 11:57 PM
To: Bill Yord; Bob Patzwald; brett@napiereng.com; Buchanan, Kimberly; Chuck Staples; Claudia Larkin; Cmagaha@leavenworthcounty.org; dave.stokka@usd453.org; David Griffith; Dedeke, Matt; Donald W. Baker P. E. D. WRE CPESC (DBaker@wrs-rc.com); greg@lexeco.com; Hal Burdette; Joel Mahnken; Justin Stewart; jyoung@lansing.ks.us; Kayla Manning; Ken Miller; Kevin.gullett@usd453.org; lauren@lexeco.com; Manuel Carrera; Mark G. Wade (mwade@providenceic.com); Melissa Bower; Mike Hooper; Mike McDonald (Home); Mitch Pleak; mspickelmier@leavenworthcounty.org; Ric.Johnson@wilsonco.com; Sara Croke; Steve Grant
Subject: Five Mile Creek - July 6 2015
Attachments: Five Mile Creek chart july 6 2015.xlsx

While there is interesting stuff on the tube – this is more interesting
Have good evening
Mike


Five-Mile Creek
July 6th 2015
Depth of Three Mile Creek near Broadway and Cherokee - inches
160
140
120
100
80
60
40
20
0
-20
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
-
(0.2(
12:00 PM
1:00 PM
2:00 PM
3:00 PM
4:00 PM
5:00 PM
6:00 PM
7:00 PM
8:00 PM
9:00 PM
10:00 PM
11:00 PM
12:00 AM
Five Mile Creek
Fire Station 1
WWTP

Mike McDonald

From: Mike McDonald
Sent: Friday, September 11, 2015 9:44 AM
To: 'Bill Yord'; 'Bob Patzwald'; 'brett@napiereng.com'; 'Buchanan, Kimberly'; Chuck Staples; Claudia Larkin; 'Cmagaha@leavenworthcounty.org'; 'dave.stokka@usd453.org'; David Griffith; 'Dedeke, Matt'; 'Donald W. Baker P. E. D. WRE CPESC (DBaker@wrs-rc.com)'; 'greg@lexeco.com'; Hal Burdette; 'jfsanders39@hotmail.com'; 'Joel Mahnken'; Justin Stewart; 'jyoung@lansing.ks.us'; 'Katie Schleicher (kschleicher@trekkllc.com)'; 'Kayla Manning'; 'Ken Miller'; 'Kevin.gullett@usd453.org'; 'lauren@lexeco.com'; Manuel Carrera; 'Mark G. Wade (mwade@providenceic.com)'; Melissa Bower; Mike Hooper; 'Mike McDonald (Home)'; 'Mitch Pleak'; 'mspickelmier@leavenworthcounty.org'; 'Ric.Johnson@wilsonco.com'; Sara Croke; Steve Grant; 'Tom Morey (tom.morey@kda.ks.gov)'
Subject: Rainfall Totals - September 10 2015

Pretty heavy rain last night in the city

Will plot up a few interesting things later – but the summary is here!

If you need the detailed data – let me know and I will email a spreadsheet

Mike

Rainfall September 10, 2015

(nearly all afternoon rain fell between 9:15PM and 12:00AM)

	Inches			peak
	before noon	after noon	total	15min
City Hall	0.03	2.33	2.36	0.65
David Brewer	0.04	2.01	2.05	0.79
WPC	0.03	2.9	2.93	0.64
Fire Station 1	0.05	1.5	1.55	0.36
Average	0.038	2.185	2.223	0.610

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Director of Public Works
City of Leavenworth
100 N Fifth Street
Leavenworth, KS 66048
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913-684-0375

Mike McDonald

From: Mike McDonald
Sent: Thursday, November 26, 2015 9:42 PM
To: Bill Yord; Bob Patzwald; brett@napiereng.com; Buchanan, Kimberly; Chuck Staples; Claudia Larkin; Cmagaha@leavenworthcounty.org; dave.stokka@usd453.org; David Griffith; Dedeke, Matt; Donald W. Baker P. E. D. WRE CPESC (DBaker@wrs-rc.com); greg@lexeco.com; Hal Burdette; Joel Mahnken; Justin Stewart; jyoung@lansing.ks.us; Katie Schleicher (kschleicher@trekkllc.com); Kayla Manning; Ken Miller; Kevin.gullett@usd453.org; lauren@lexeco.com; Manuel Carrera; Mark G. Wade (mwade@providenceic.com); Melissa Bower; Mike Hooper; Mike McDonald (Home); Mitch Pleak; mspickelmier@leavenworthcounty.org; Ric.Johnson@wilsonco.com; Sara Croke; Steve Grant; Tom Morey (tom.morey@kda.ks.gov)
Subject: Rain RAin Go Away! Nov 26, 2015

Raining again – reminds me of (partly) why I moved from Oregon to Arizona – not sure it does much to explain why I moved here though!

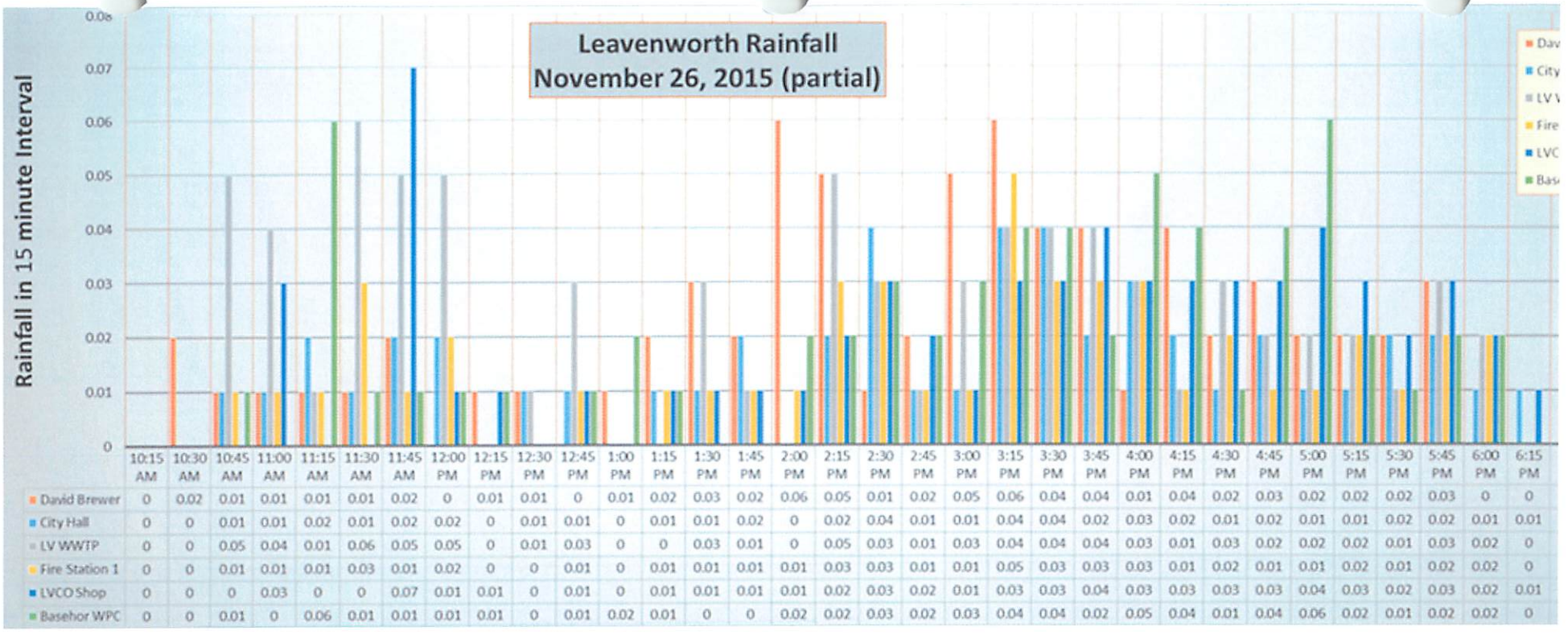
We have been chasing rainfall accuracy issues at both David Brewer and Fire Station 1 – mostly related to bird poop, and that the anti-bird goo we put on the lip of the rain bucket can fall off and plug up the works as well! New design rain buckets that have anti-bird spikes are on order.

Even though our "For the Record" KDHE effort of measurement and sampling for 2015 is over, we are starting an exploration of detention basin water quality over the winter – so the rain-gauges must be accurate – so wanted to see how they are doing. I recognize that there is variation due to storms and topography – but throw in some bird poop – and a degree of "unconfident" can creep in. Chart and table below are from todays rainfall through early evening – shows interesting variations – we will need to evaluate the BPPI next week (Bird Poop Plugged index)!

I can send the spreadsheet to anyone interested – these are just pasted images of the work

Have a Happy Thanksgiving Evening!

Mike



	10:15 AM	10:30 AM	10:45 AM	11:00 AM	11:15 AM	11:30 AM	11:45 AM	12:00 PM	12:15 PM	12:30 PM	12:45 PM	1:00 PM	1:15 PM	1:30 PM	1:45 PM	2:00 PM	2:15 PM	2:30 PM	2:45 PM	3:00 PM	3:15 PM	3:30 PM	3:45 PM	4:00 PM	4:15 PM	4:30 PM	4:45 PM	5:00 PM	5:15 PM	5:30 PM	5:45 PM	6:00 PM	6:15 PM
David Brewer	0	0.02	0.01	0.01	0.01	0.01	0.02	0	0.01	0.01	0	0.01	0.02	0.03	0.02	0.06	0.05	0.01	0.02	0.05	0.06	0.04	0.04	0.01	0.04	0.02	0.03	0.02	0.02	0.02	0.03	0	0
City Hall	0	0	0.01	0.01	0.02	0.01	0.02	0.02	0	0.01	0.01	0	0.01	0.01	0.02	0	0.02	0.04	0.01	0.01	0.04	0.04	0.02	0.03	0.02	0.01	0.02	0.01	0.01	0.02	0.02	0.01	0.01
LV WWTP	0	0	0.05	0.04	0.01	0.06	0.05	0.05	0	0.01	0.03	0	0	0.03	0.01	0	0.05	0.03	0.01	0.03	0.04	0.04	0.04	0.03	0.01	0.03	0.02	0.02	0.02	0.01	0.03	0.02	0
Fire Station 1	0	0	0.01	0.01	0.01	0.03	0.01	0.02	0	0	0.01	0	0.01	0.01	0.01	0.01	0.03	0.03	0.01	0.01	0.05	0.03	0.03	0.03	0.01	0.02	0.01	0.01	0.02	0.01	0.02	0.02	0
LVCO Shop	0	0	0	0.03	0	0	0.07	0.01	0.01	0	0.01	0	0.01	0.01	0.01	0.01	0.02	0.03	0.02	0.01	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.04	0.03	0.02	0.03	0.02	0.01
Basehor WPC	0	0	0.01	0	0.06	0.01	0.01	0.01	0.01	0	0.01	0.02	0.01	0	0	0.02	0.02	0.03	0.02	0.03	0.04	0.04	0.02	0.05	0.04	0.01	0.04	0.06	0.02	0.01	0.02	0.02	0

Date and Time	City Hall	David Brewer	LV WWTP	Fire Station 1	LVCO Shop	Basehor WPC
11/26/15 10:15 AM	0	0	0	0	0	0
11/26/15 10:30 AM	0	0.02	0	0	0	0
11/26/15 10:45 AM	0.01	0.01	0.05	0.01	0	0.01
11/26/15 11:00 AM	0.01	0.01	0.04	0.01	0.03	0
11/26/15 11:15 AM	0.02	0.01	0.01	0.01	0	0.06
11/26/15 11:30 AM	0.01	0.01	0.06	0.03	0	0.01
11/26/15 11:45 AM	0.02	0.02	0.05	0.01	0.07	0.01
11/26/15 12:00 PM	0.02	0	0.05	0.02	0.01	0.01
11/26/15 12:15 PM	0	0.01	0	0	0.01	0.01
11/26/15 12:30 PM	0.01	0.01	0.01	0	0	0
11/26/15 12:45 PM	0.01	0	0.03	0.01	0.01	0.01
11/26/15 1:00 PM	0	0.01	0	0	0	0.02
11/26/15 1:15 PM	0.01	0.02	0	0.01	0.01	0.01
11/26/15 1:30 PM	0.01	0.03	0.03	0.01	0.01	0
11/26/15 1:45 PM	0.02	0.02	0.01	0.01	0.01	0
11/26/15 2:00 PM	0	0.06	0	0.01	0.01	0.02
11/26/15 2:15 PM	0.02	0.05	0.05	0.03	0.02	0.02
11/26/15 2:30 PM	0.04	0.01	0.03	0.03	0.03	0.03
11/26/15 2:45 PM	0.01	0.02	0.01	0.01	0.02	0.02
11/26/15 3:00 PM	0.01	0.05	0.03	0.01	0.01	0.03
11/26/15 3:15 PM	0.04	0.06	0.04	0.05	0.03	0.04
11/26/15 3:30 PM	0.04	0.04	0.04	0.03	0.03	0.04
11/26/15 3:45 PM	0.02	0.04	0.04	0.03	0.04	0.02
11/26/15 4:00 PM	0.03	0.01	0.03	0.03	0.03	0.05
11/26/15 4:15 PM	0.02	0.04	0.01	0.01	0.03	0.04
11/26/15 4:30 PM	0.01	0.02	0.03	0.02	0.03	0.01
11/26/15 4:45 PM	0.02	0.03	0.02	0.01	0.03	0.04
11/26/15 5:00 PM	0.01	0.02	0.02	0.01	0.04	0.06
11/26/15 5:15 PM	0.01	0.02	0.02	0.02	0.03	0.02
11/26/15 5:30 PM	0.02	0.02	0.01	0.01	0.02	0.01
11/26/15 5:45 PM	0.02	0.03	0.03	0.02	0.03	0.02
11/26/15 6:00 PM	0.01	0	0.02	0.02	0.02	0.02
11/26/15 6:15 PM	0.01	0	0	0	0.01	0
11/26/15 6:30 PM	0	0	0	0	0	0
11/26/15 6:45 PM	0	0	0	0	0.02	0
	0.49	0.7	0.77	0.48	0.64	0.64

City of Leavenworth

February 26, 2015

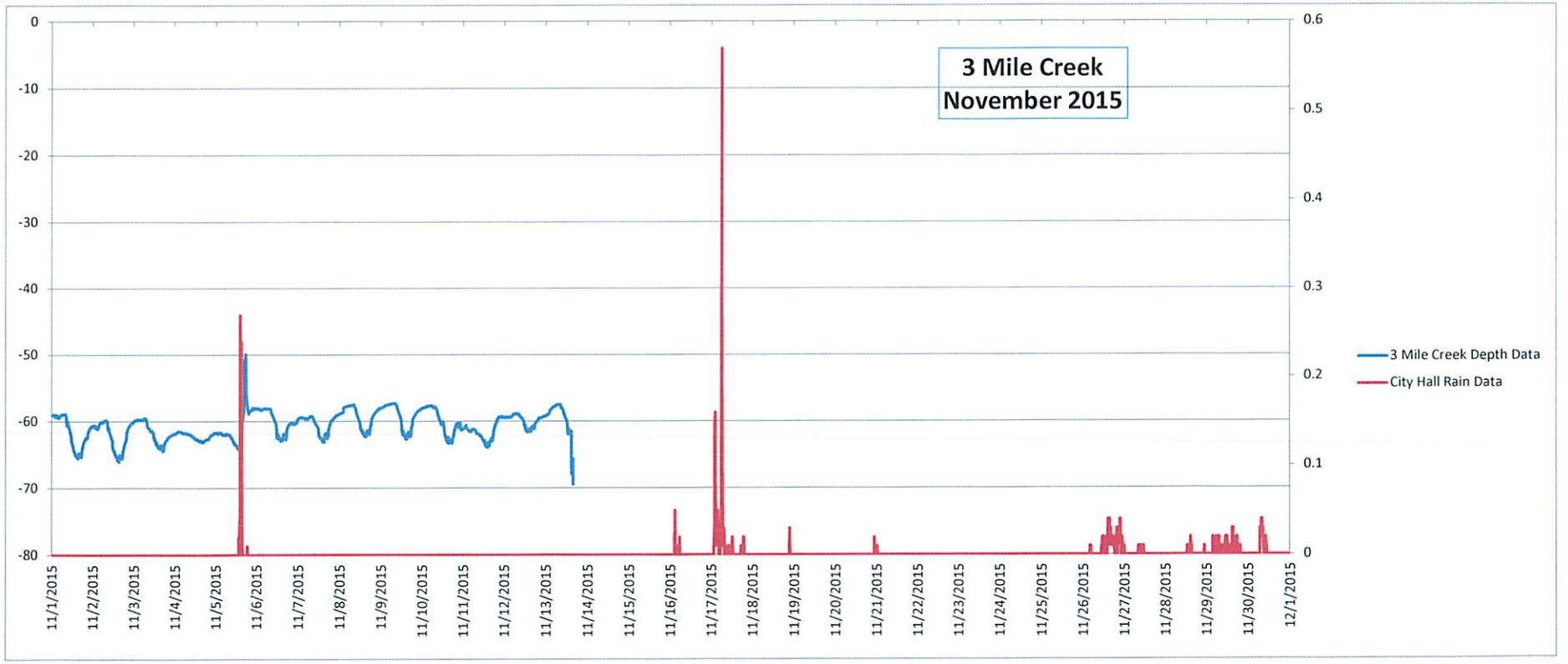
Observations - Stream Stage and Rainfall

City maintains four rain gauges throughout the year. The stream measurements and detention basin measurements are obtained from portable devices installed in the Spring and removed in the Fall. All rainfall and all stage data are stored on city computers, and simple graphs created to be evaluated by staff and interested outside parties (engineers, contractors, other local governments)

A discussion of the challenges of sampling streams is included in Section F.

The following charts and observations are only a sample of the entire recorded weather for the year 2015. They show the close relationship between rainfall and stream stage. The stream measuring stations are shown on the overall map near the lower limits of each stream. The rainfall shown is from the closest gauge to the measurement station (occasionally two gauges are shown)

The response of both 3-Mile Creek and 5-Mile Creek are extremely sensitive to rainfall, and rise rapidly. This creates difficulty in knowing when to respond for sampling events, especially after hours.


3 Mile Creek
November 2015
0
-10
-20
-30
-40
-50
-60
-70
-80
0.6
0.5
0.4
0.3
0.2
0.1
0
11/1/2015
11/2/2015
11/3/2015
11/4/2015
11/5/2015
11/6/2015
11/7/2015
11/8/2015
11/9/2015
11/10/2015
11/11/2015
11/12/2015
11/13/2015
11/14/2015
11/15/2015
11/16/2015
11/17/2015
11/18/2015
11/19/2015
11/20/2015
11/21/2015
11/22/2015
11/23/2015
11/24/2015
11/25/2015
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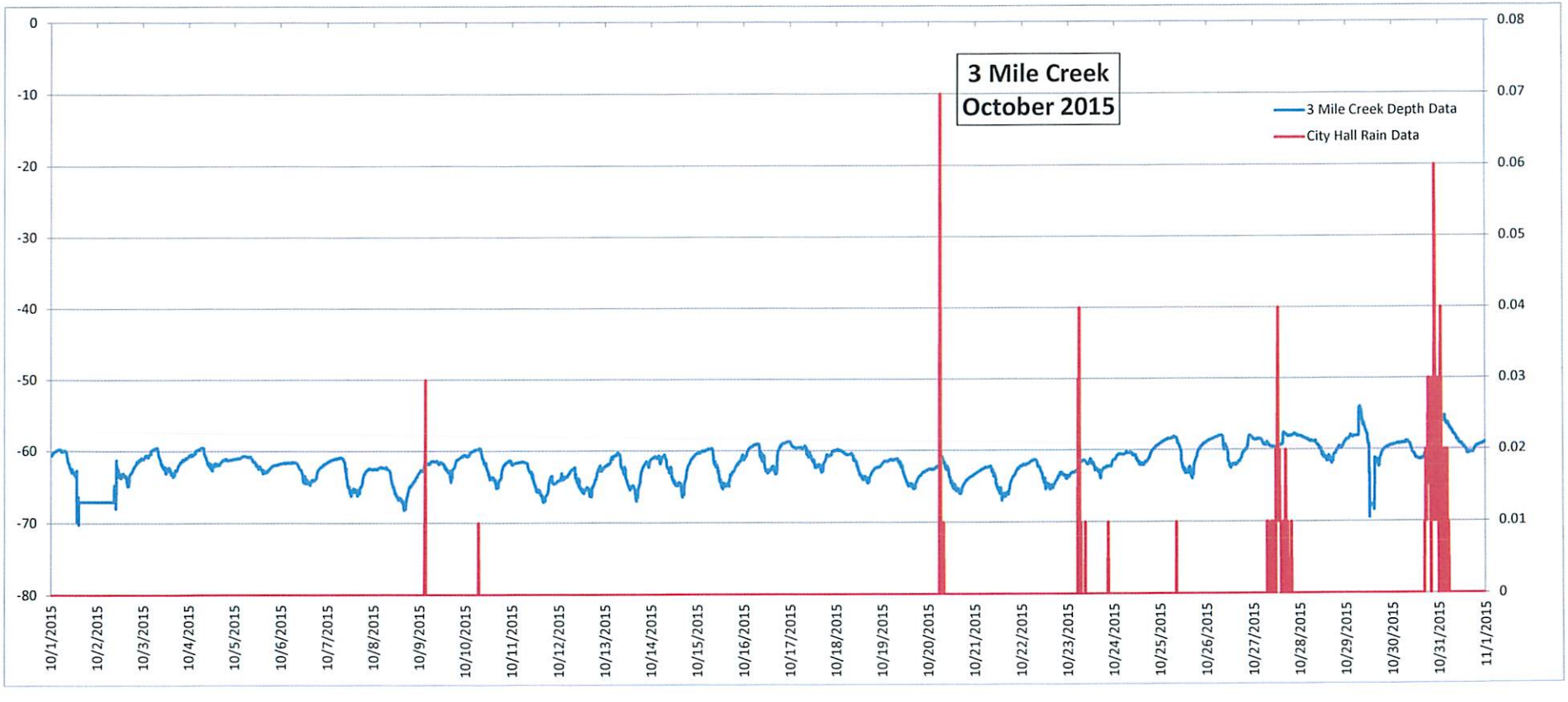
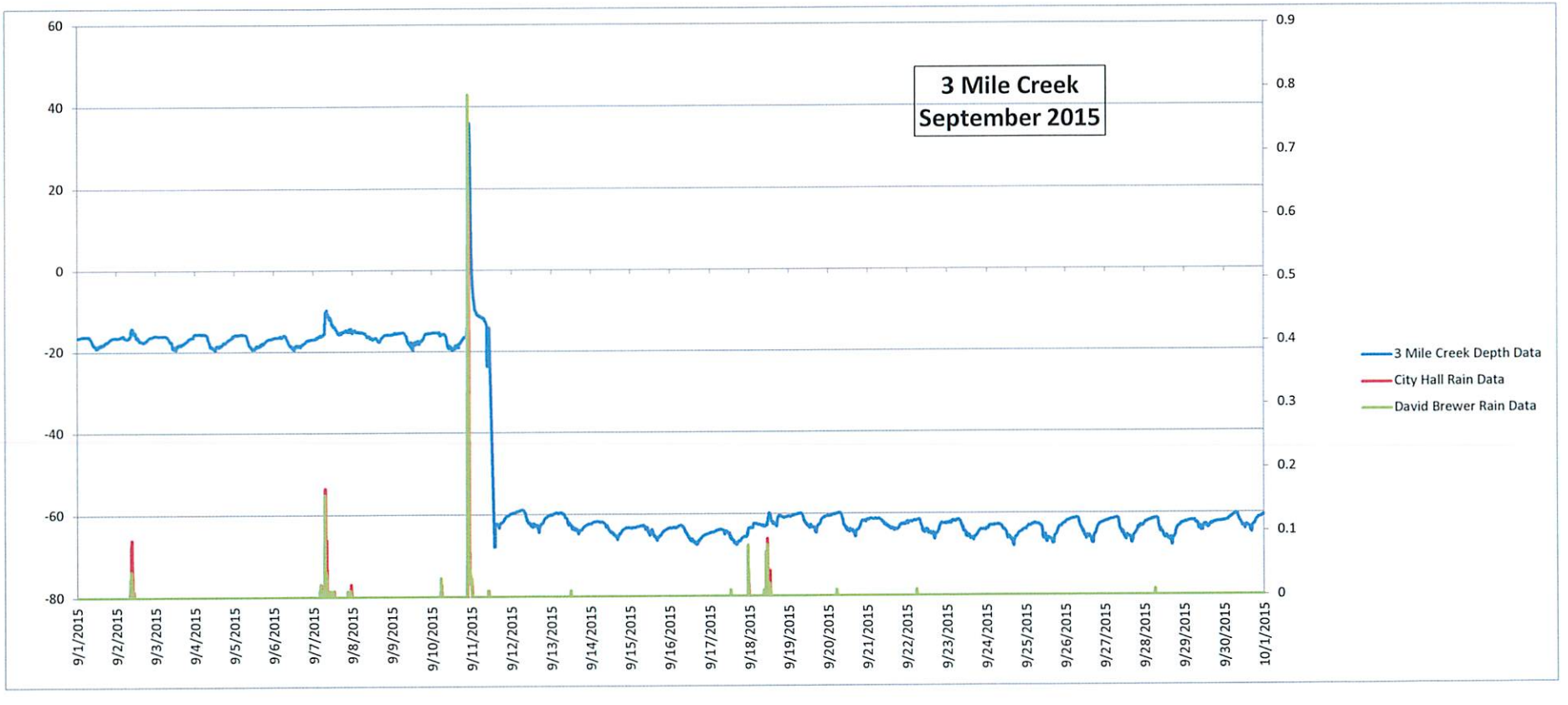
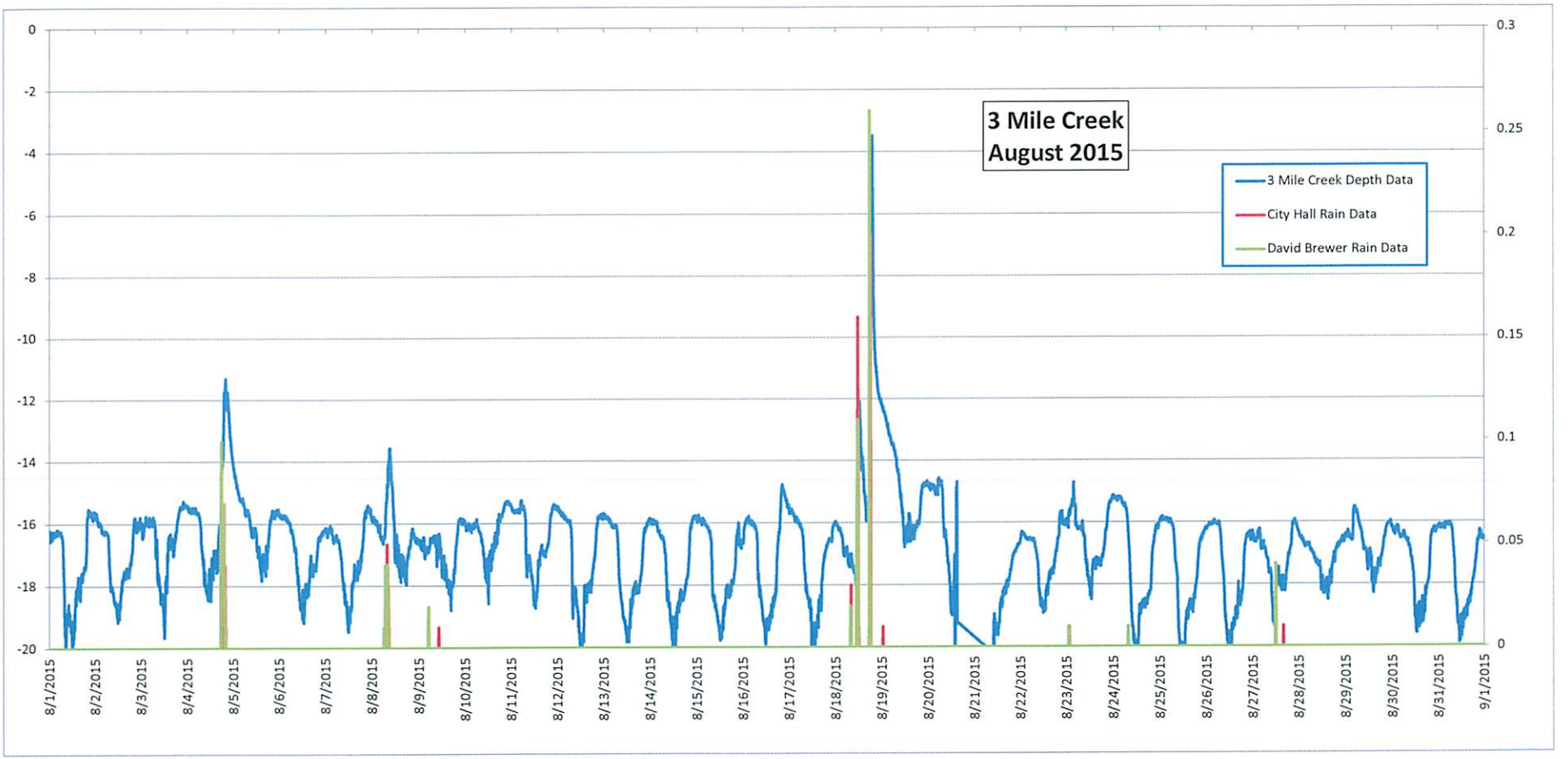
11/29/2015
11/30/2015
12/1/2015
3 Mile Creek Depth Data
City Hall Rain Data


3 Mile Creek
October 2015
3 Mile Creek Depth Data
City Hall Rain Data
0
-10
-20
-30
-40
-50
-60
-70
-80
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
10/1/2015
10/2/2015
10/3/2015
10/4/2015
10/5/2015
10/6/2015
10/7/2015
10/8/2015
10/9/2015
10/10/2015
10/11/2015
10/12/2015
10/13/2015
10/14/2015
10/15/2015
10/16/2015
10/17/2015
10/18/2015
10/19/2015
10/20/2015
10/21/2015
10/22/2015
10/23/2015
10/24/2015
10/25/2015
10/26/2015
10/27/2015
10/28/2015
10/29/2015
10/30/2015
10/31/2015
11/1/2015


3 Mile Creek
September 2015
60
40
20
0
-20
-40
-60
-80
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
9/1/2015
9/2/2015
9/3/2015
9/4/2015
9/5/2015
9/6/2015
9/7/2015
9/8/2015
9/9/2015
9/10/2015
9/11/2015
9/12/2015
9/13/2015
9/14/2015
9/15/2015
9/16/2015
9/17/2015
9/18/2015
9/19/2015
9/20/2015
9/21/2015
9/22/2015
9/23/2015
9/24/2015
9/25/2015
9/26/2015
9/27/2015
9/28/2015
9/29/2015
9/30/2015
10/1/2015
3 Mile Creek Depth Data
City Hall Rain Data
David Brewer Rain Data


3 Mile Creek
August 2015
3 Mile Creek Depth Data
City Hall Rain Data
David Brewer Rain Data
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
0.3
0.25
0.2
0.15
0.1
0.05
0
8/1/2015
8/2/2015
8/3/2015
8/4/2015
8/5/2015
8/6/2015
8/7/2015
8/8/2015
8/9/2015
8/10/2015
8/11/2015
8/12/2015
8/13/2015
8/14/2015
8/15/2015
8/16/2015
8/17/2015
8/18/2015
8/19/2015
8/20/2015
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8/22/2015
8/23/2015
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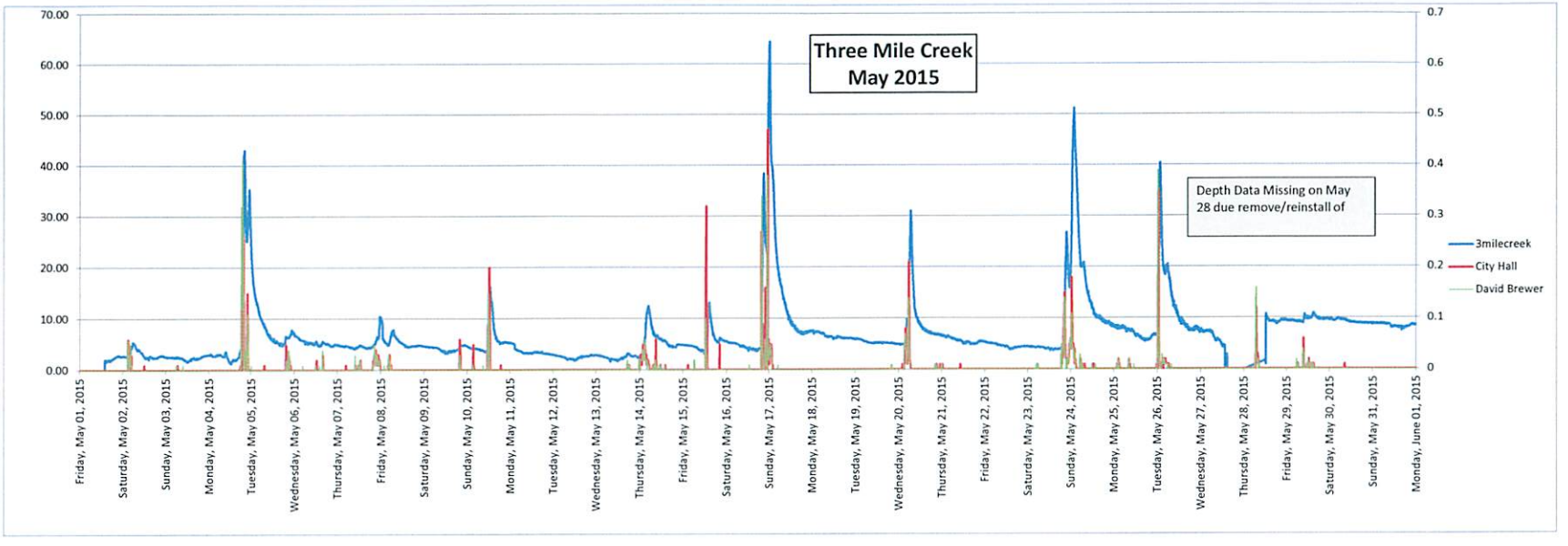
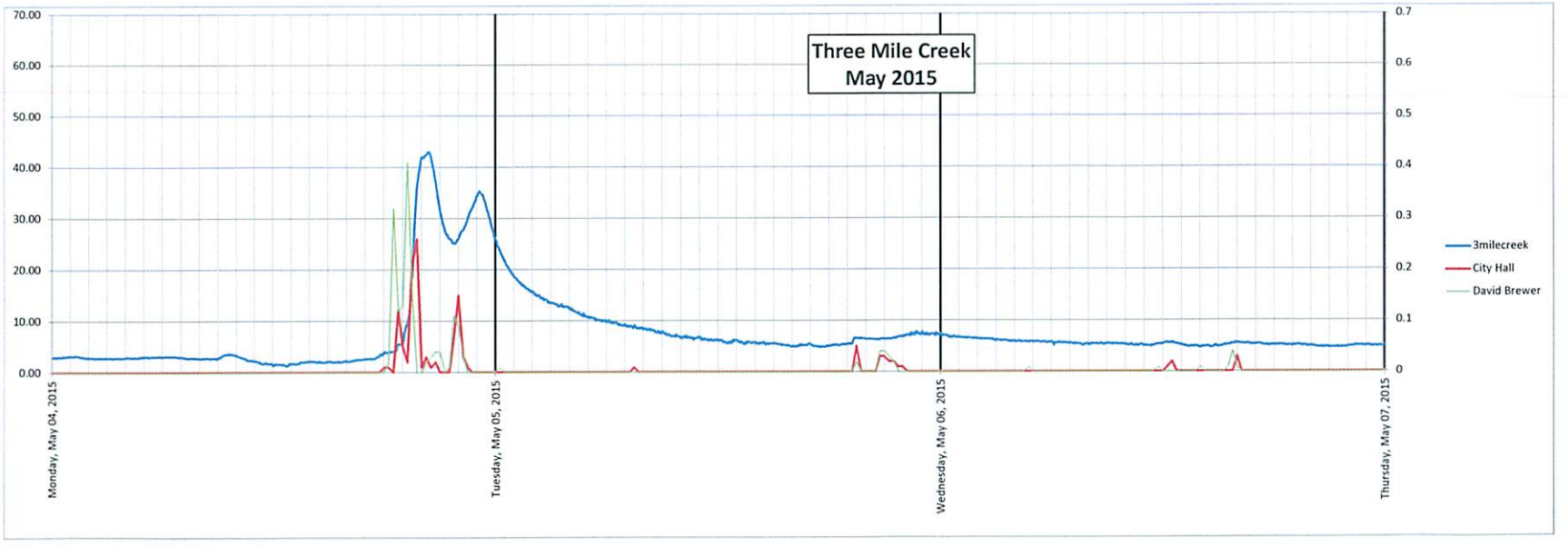
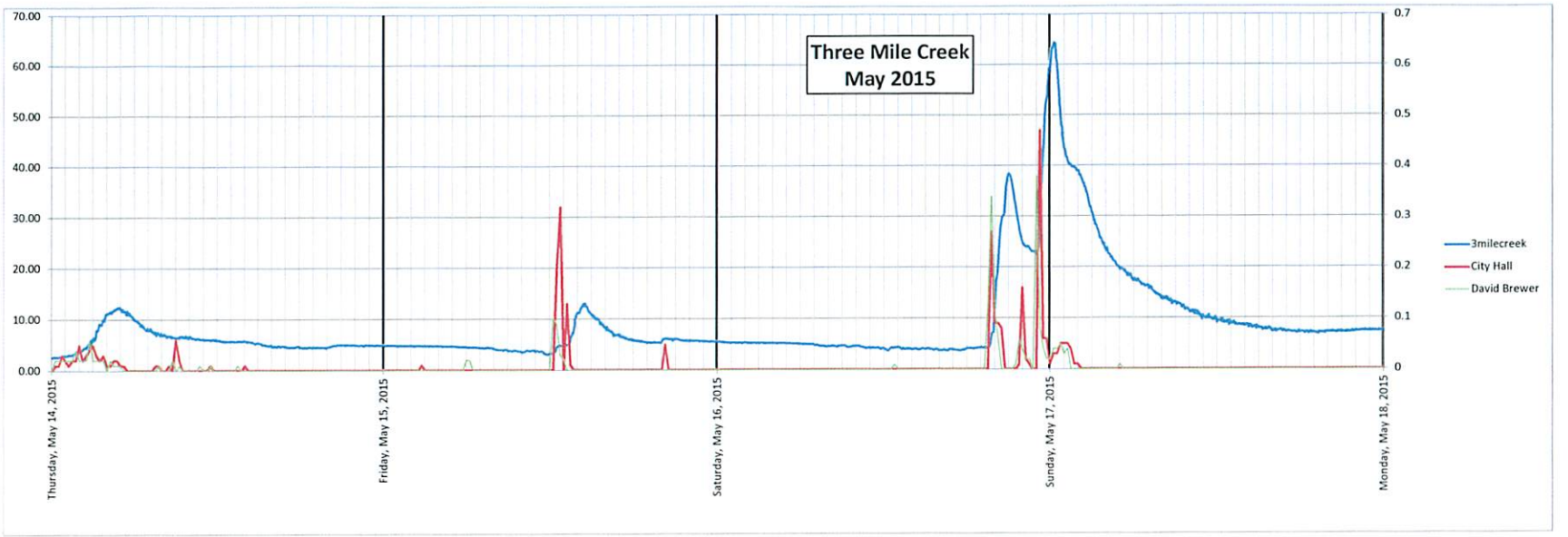
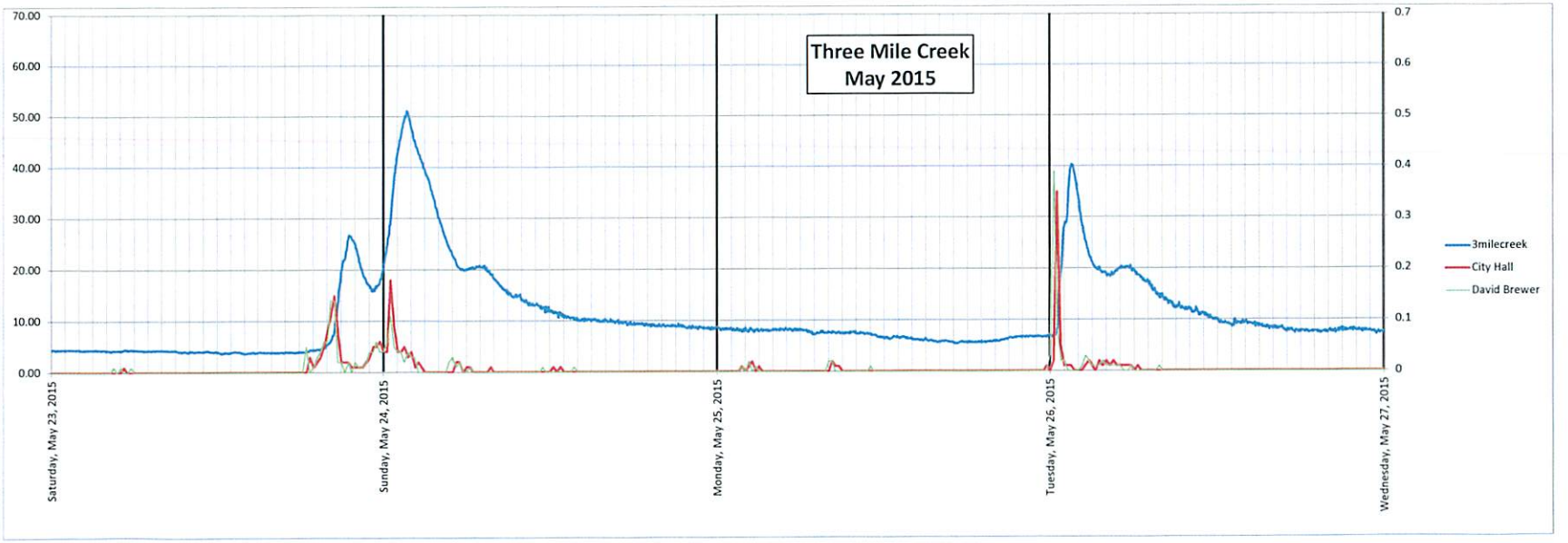
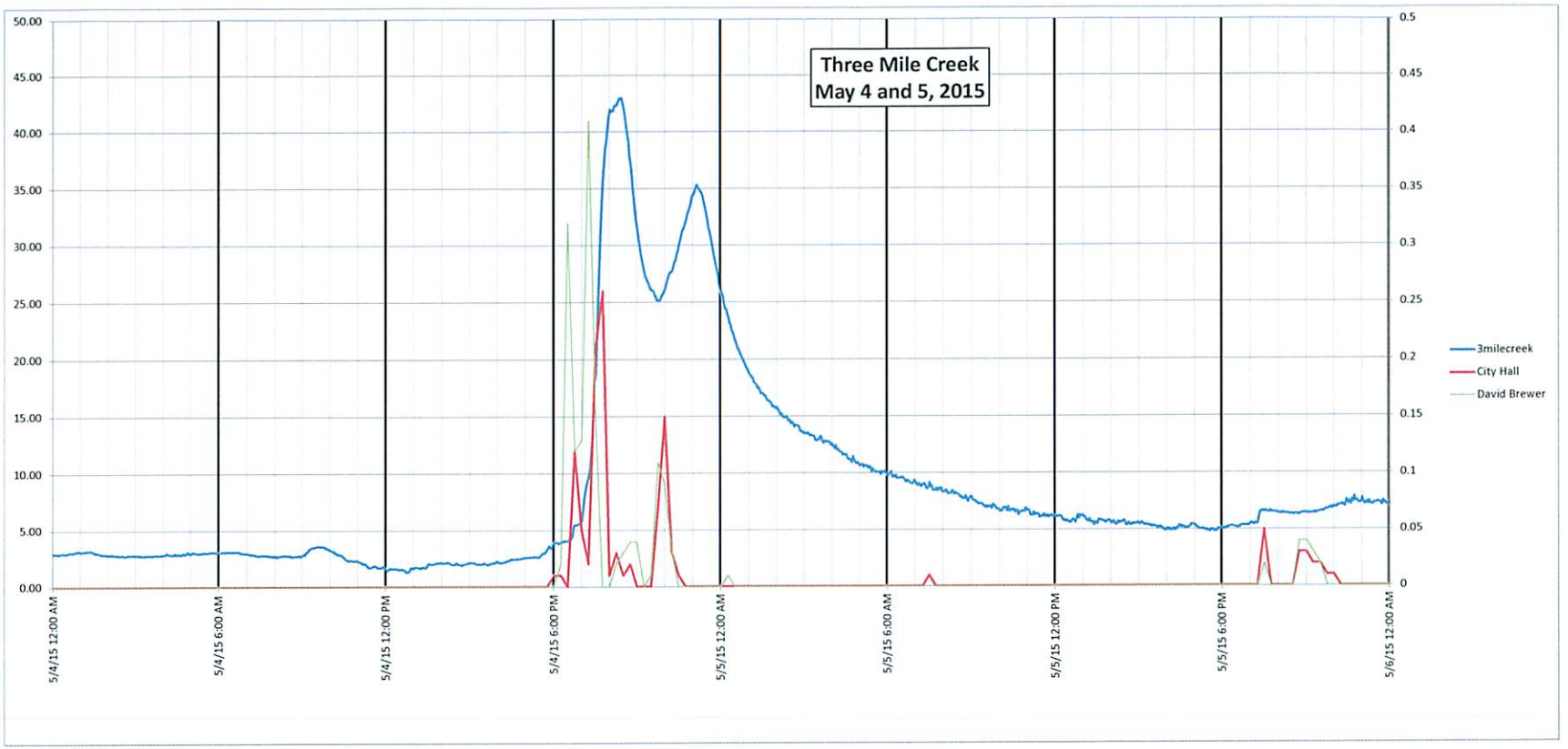
8/30/2015
8/31/2015
9/1/2015

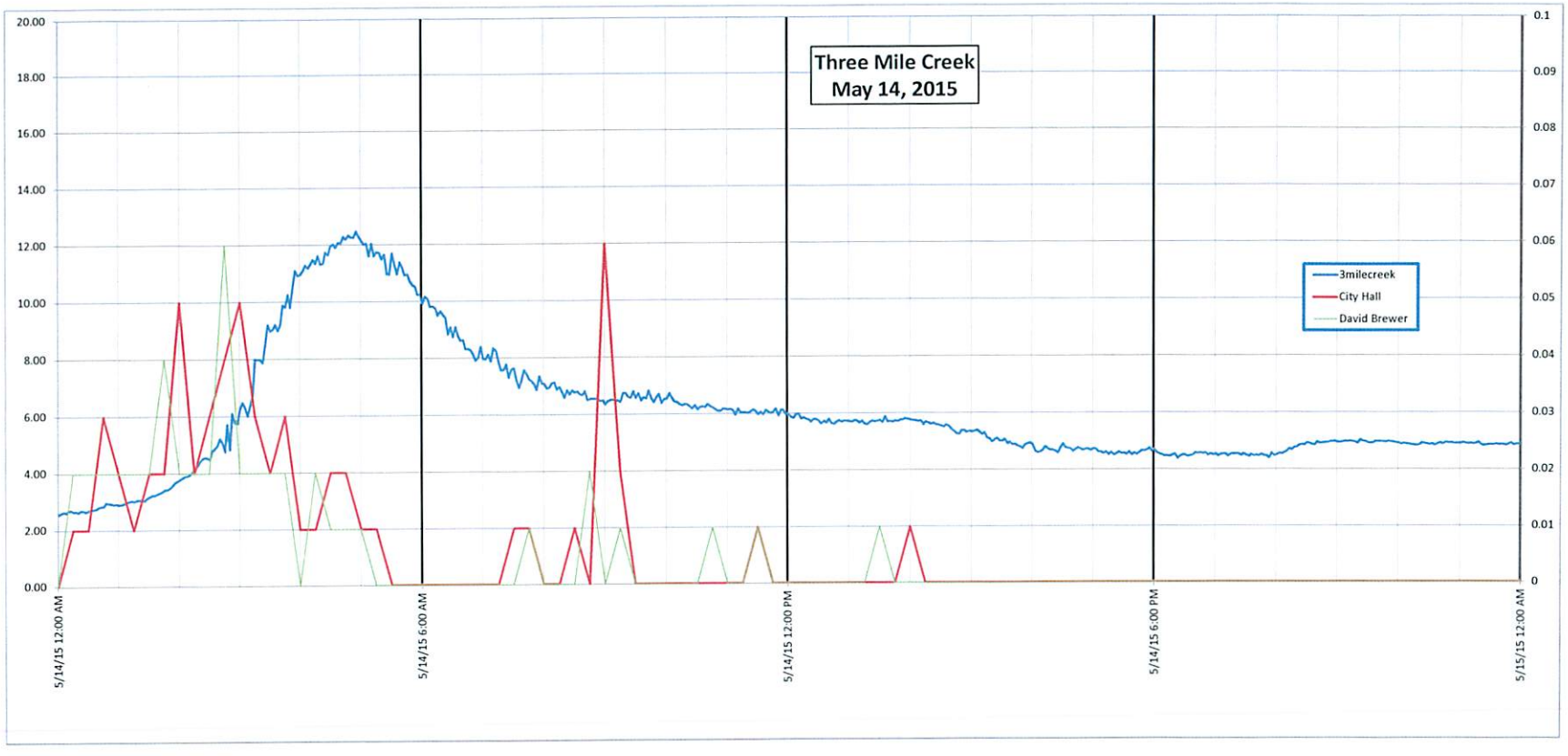

Three Mile Creek
May 2015
Depth Data Missing on May 28 due remove/reinstall of
3milecreek
City Hall
David Brewer
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Friday, May 01, 2015
Saturday, May 02, 2015
Sunday, May 03, 2015
Monday, May 04, 2015
Tuesday, May 05, 2015
Wednesday, May 06, 2015
Thursday, May 07, 2015
Friday, May 08, 2015
Saturday, May 09, 2015
Sunday, May 10, 2015
Monday, May 11, 2015
Tuesday, May 12, 2015
Wednesday, May 13, 2015
Thursday, May 14, 2015
Friday, May 15, 2015
Saturday, May 16, 2015
Sunday, May 17, 2015
Monday, May 18, 2015
Tuesday, May 19, 2015
Wednesday, May 20, 2015
Thursday, May 21, 2015
Friday, May 22, 2015
Saturday, May 23, 2015
Sunday, May 24, 2015
Monday, May 25, 2015
Tuesday, May 26, 2015
Wednesday, May 27, 2015
Thursday, May 28, 2015
Friday, May 29, 2015
Saturday, May 30, 2015
Sunday, May 31, 2015
Monday, June 01, 2015

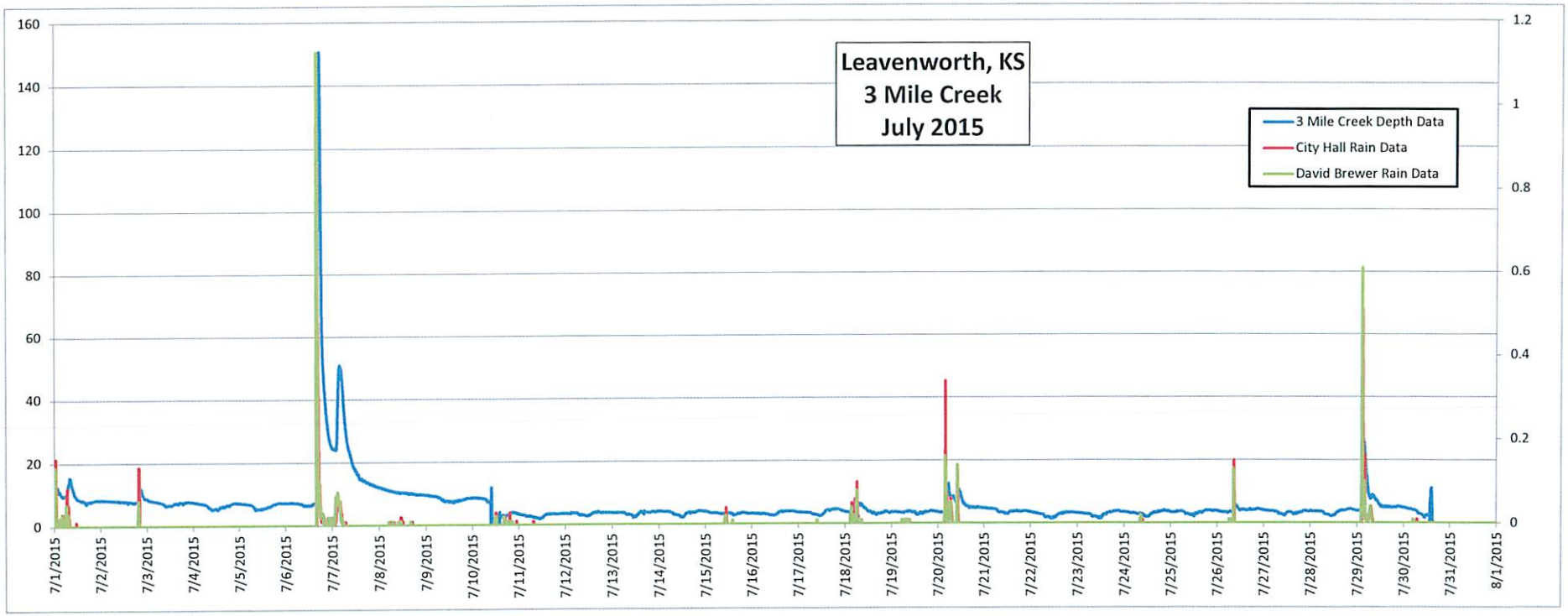

Three Mile Creek
May 2015
3milecreek
City Hall
David Brewer
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Monday, May 04, 2015
Tuesday, May 05, 2015
Wednesday, May 06, 2015
Thursday, May 07, 2015


Three Mile Creek
May 2015
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Thursday, May 14, 2015
Friday, May 15, 2015
Saturday, May 16, 2015
Sunday, May 17, 2015
Monday, May 18, 2015
3milecreek
City Hall
David Brewer


Three Mile Creek
May 2015
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Saturday, May 23, 2015
Sunday, May 24, 2015
Monday, May 25, 2015
Tuesday, May 26, 2015
Wednesday, May 27, 2015
3milecreek
City Hall
David Brewer


Three Mile Creek
May 4 and 5, 2015
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5/4/15 12:00 AM
5/4/15 6:00 AM
5/4/15 12:00 PM
5/4/15 6:00 PM
5/5/15 12:00 AM
5/5/15 6:00 AM
5/5/15 12:00 PM
5/5/15 6:00 PM
5/6/15 12:00 AM
3milecreek
City Hall
David Brewer


Three Mile Creek
May 14, 2015
3milecreek
City Hall
David Brewer
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.1
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
5/14/15 12:00 AM
5/14/15 6:00 AM
5/14/15 12:00 PM
5/14/15 6:00 PM
5/15/15 12:00 AM


Leavenworth, KS
3 Mile Creek
July 2015
3 Mile Creek Depth Data
City Hall Rain Data
David Brewer Rain Data
160
140
120
100
80
60
40
20
0
1.2
1
0.8
0.6
0.4
0.2
0
7/1/2015
7/2/2015
7/3/2015
7/4/2015
7/5/2015
7/6/2015
7/7/2015
7/8/2015
7/9/2015
7/10/2015
7/11/2015
7/12/2015
7/13/2015
7/14/2015
7/15/2015
7/16/2015
7/17/2015
7/18/2015
7/19/2015
7/20/2015
7/21/2015
7/22/2015
7/23/2015
7/24/2015
7/25/2015
7/26/2015
7/27/2015
7/28/2015
7/29/2015
7/30/2015
7/31/2015
8/1/2015

City of Leavenworth

February 26, 2015

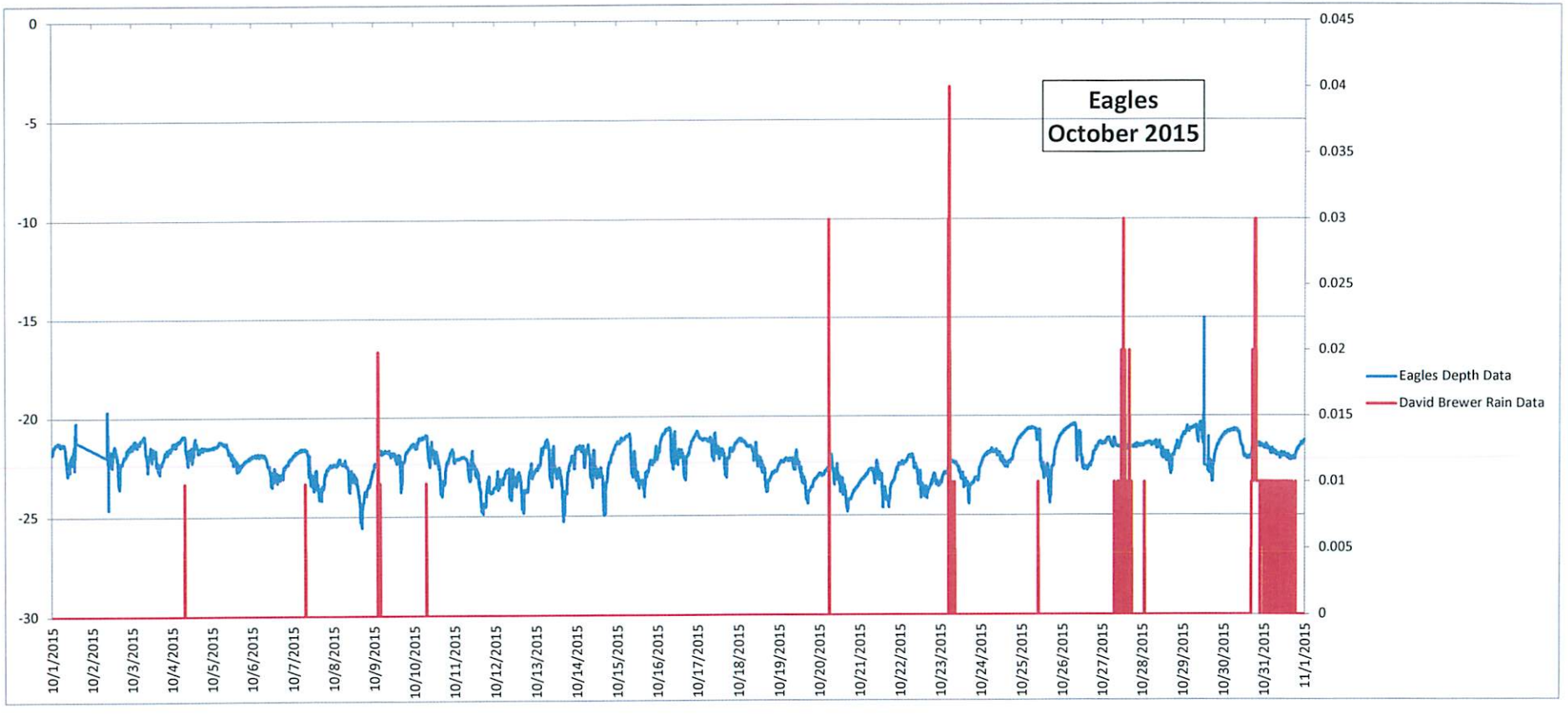
Observations – Detention Basins and Rainfall

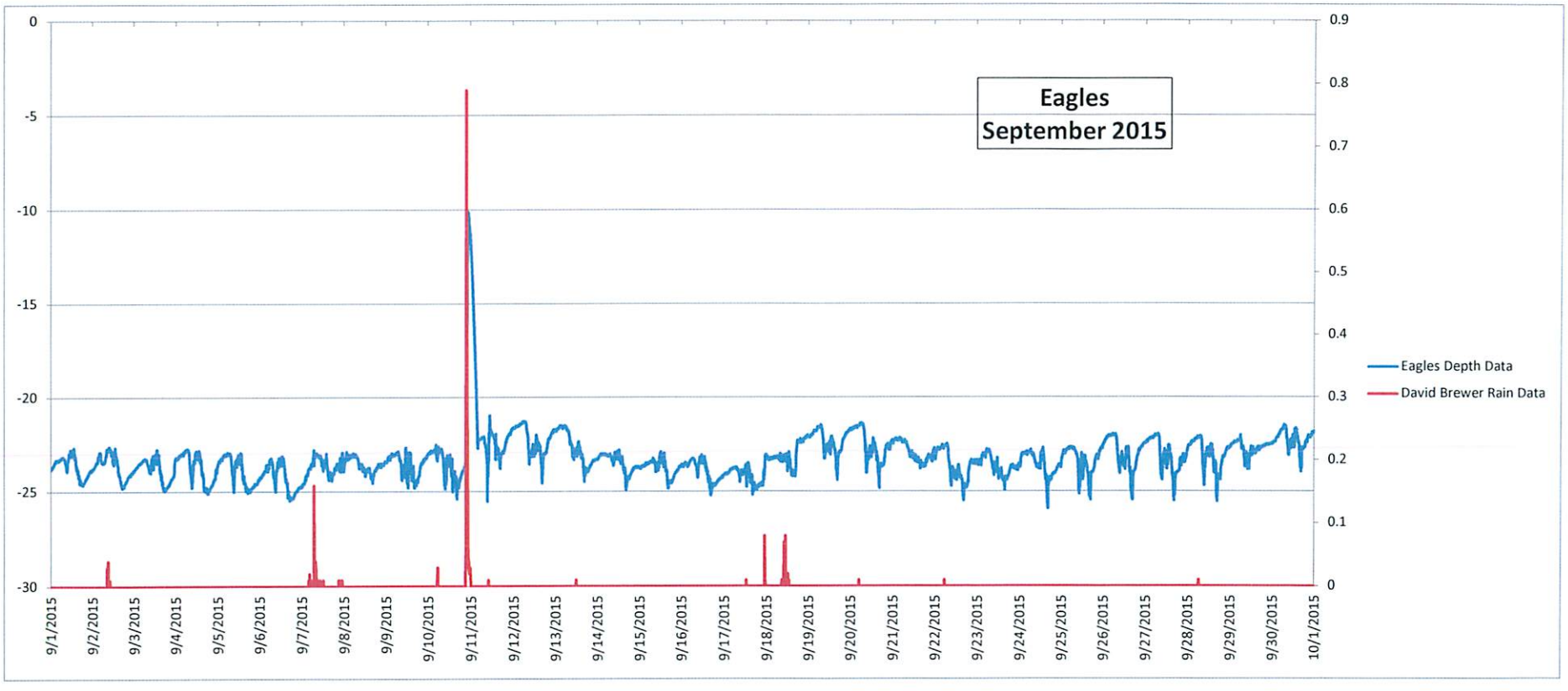
City maintains four rain gauges throughout the year. All rainfall and all depth are stored on city computers, and simple graphs created to be evaluated by staff and interested outside parties (engineers, contractors, other local governments). Water depth in creeks and detention basins are monitored with portable data loggers.

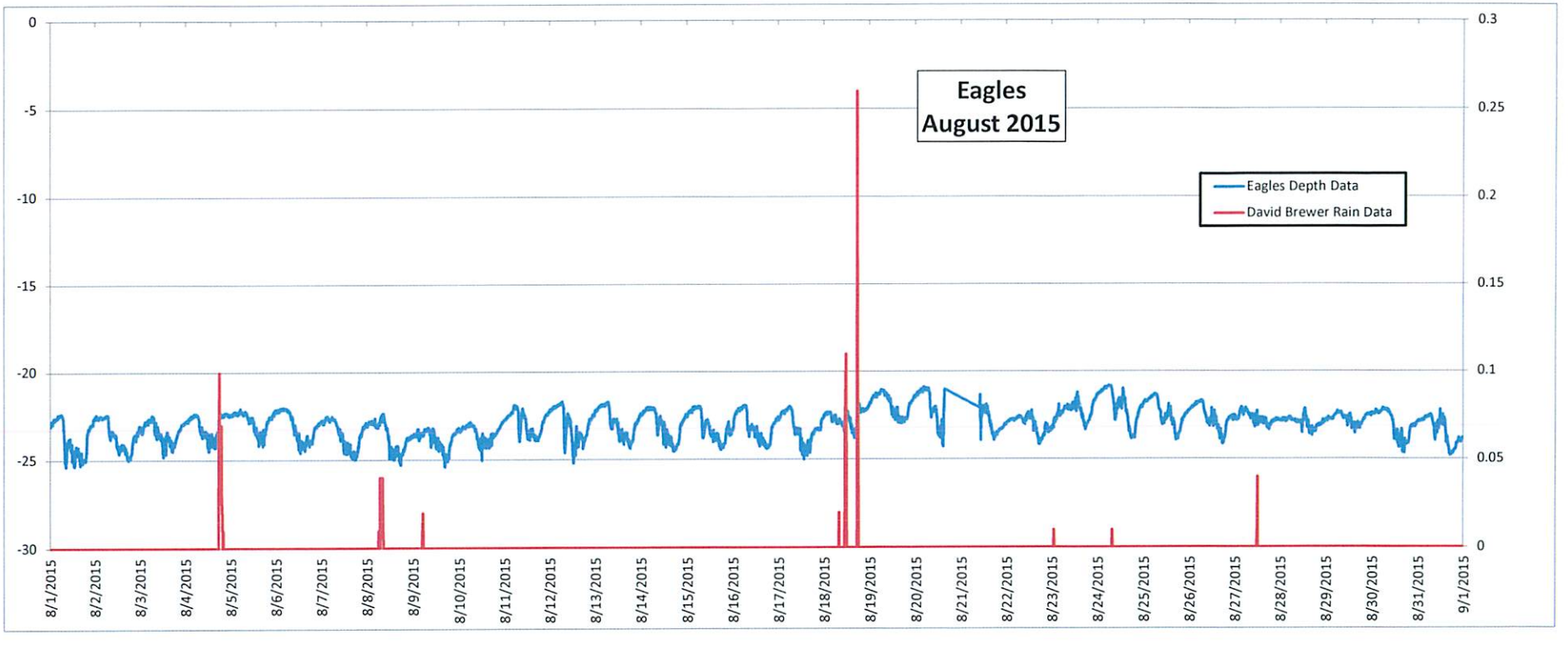
There are approximately thirty-three detention basins constructed as part of a project within the city. Staff began evaluating selected basins with depth measurements in 2014 and 2015. The detention basins measurements begin in the Spring and end in the Fall. Locations may vary depending on local concerns or an effort to evaluate the effectiveness of the basins. Limited sampling and observation continued on selected basins throughout the winter of 2015/2016.

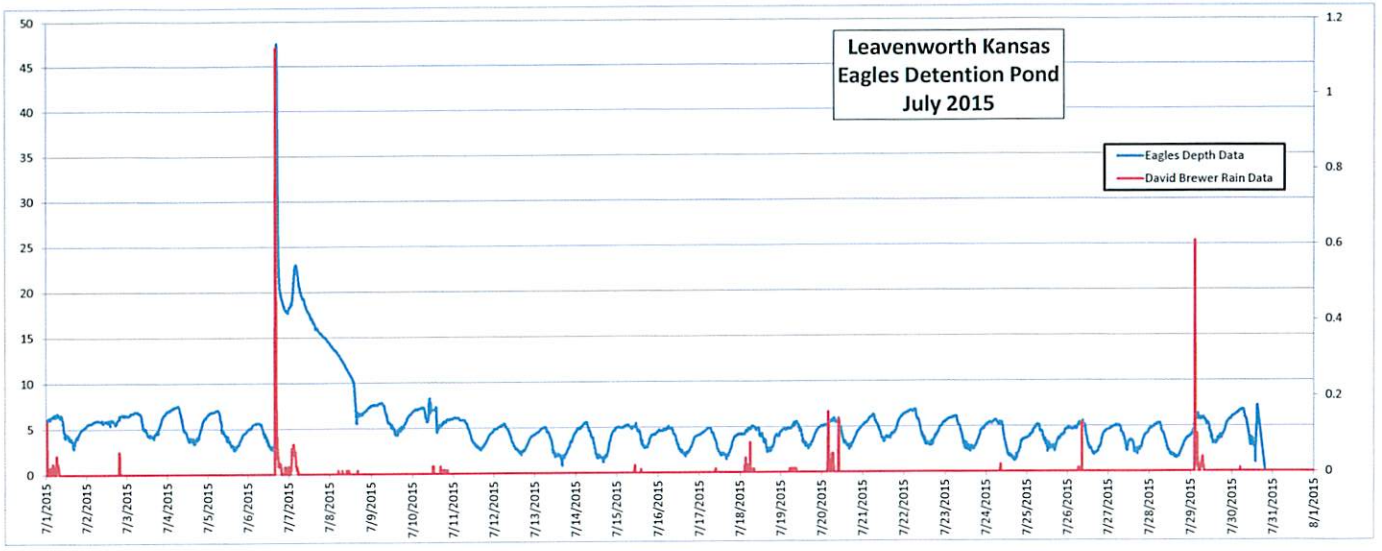
What was noticed is that the outfalls are generously designed allowing water to quickly leave the basin once the rainfall stops. Staff believes this contributes to a general public perception that specific basins are ineffective. The recordings have demonstrated to several citizens that there is storage in the basins, but it does not last long.

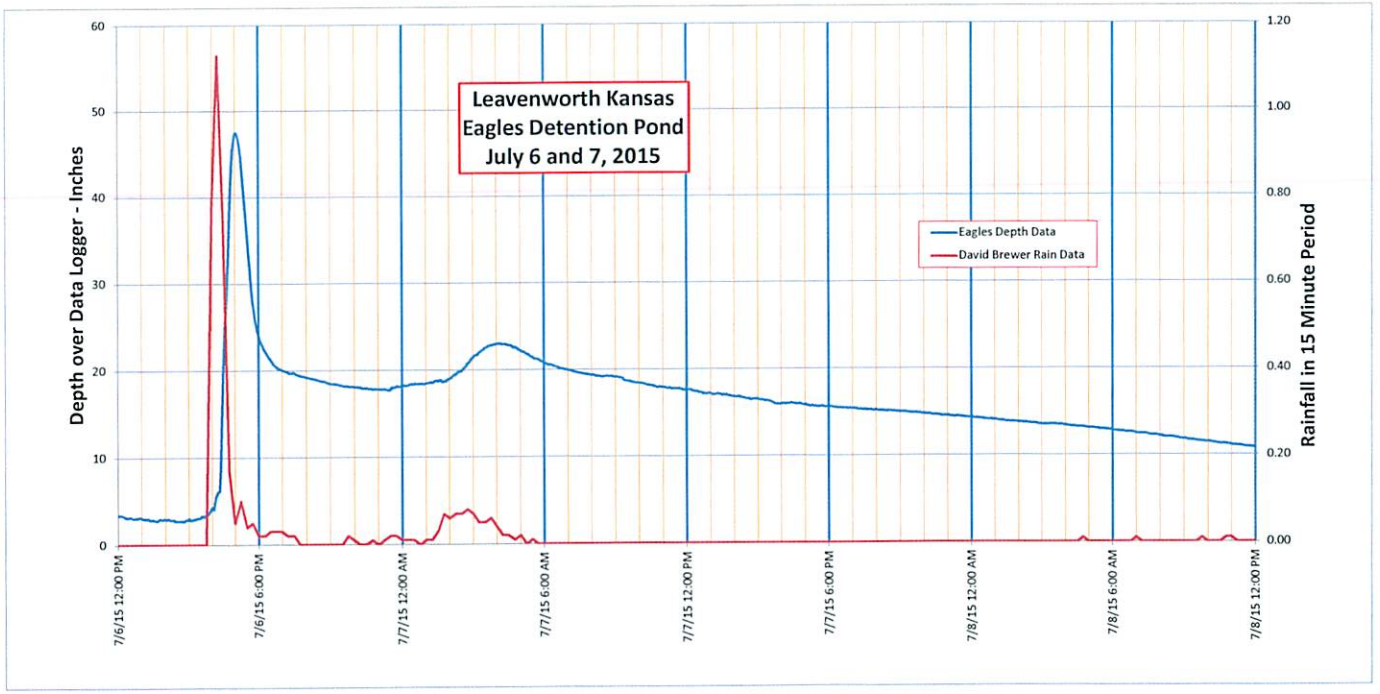
The recorded data was used at the "Eagles Site" (20th and Shawnee) was provided to the designer to evaluate if the outlet volumes met expectations. Staff has had general discussions with engineers on revising the criteria used for detention basins to be more effective on smaller storms. This will be evaluated for use in design of future installations.


Eagles
October 2015
0
-5
-10
-15
-20
-25
-30
0.045
0.04
0.035
0.03
0.025
0.02
0.015
0.01
0.005
0
10/1/2015
10/2/2015
10/3/2015
10/4/2015
10/5/2015
10/6/2015
10/7/2015
10/8/2015
10/9/2015
10/10/2015
10/11/2015
10/12/2015
10/13/2015
10/14/2015
10/15/2015
10/16/2015
10/17/2015
10/18/2015
10/19/2015
10/20/2015
10/21/2015
10/22/2015
10/23/2015
10/24/2015
10/25/2015
10/26/2015
10/27/2015
10/28/2015
10/29/2015
10/30/2015
10/31/2015
11/1/2015
Eagles Depth Data
David Brewer Rain Data

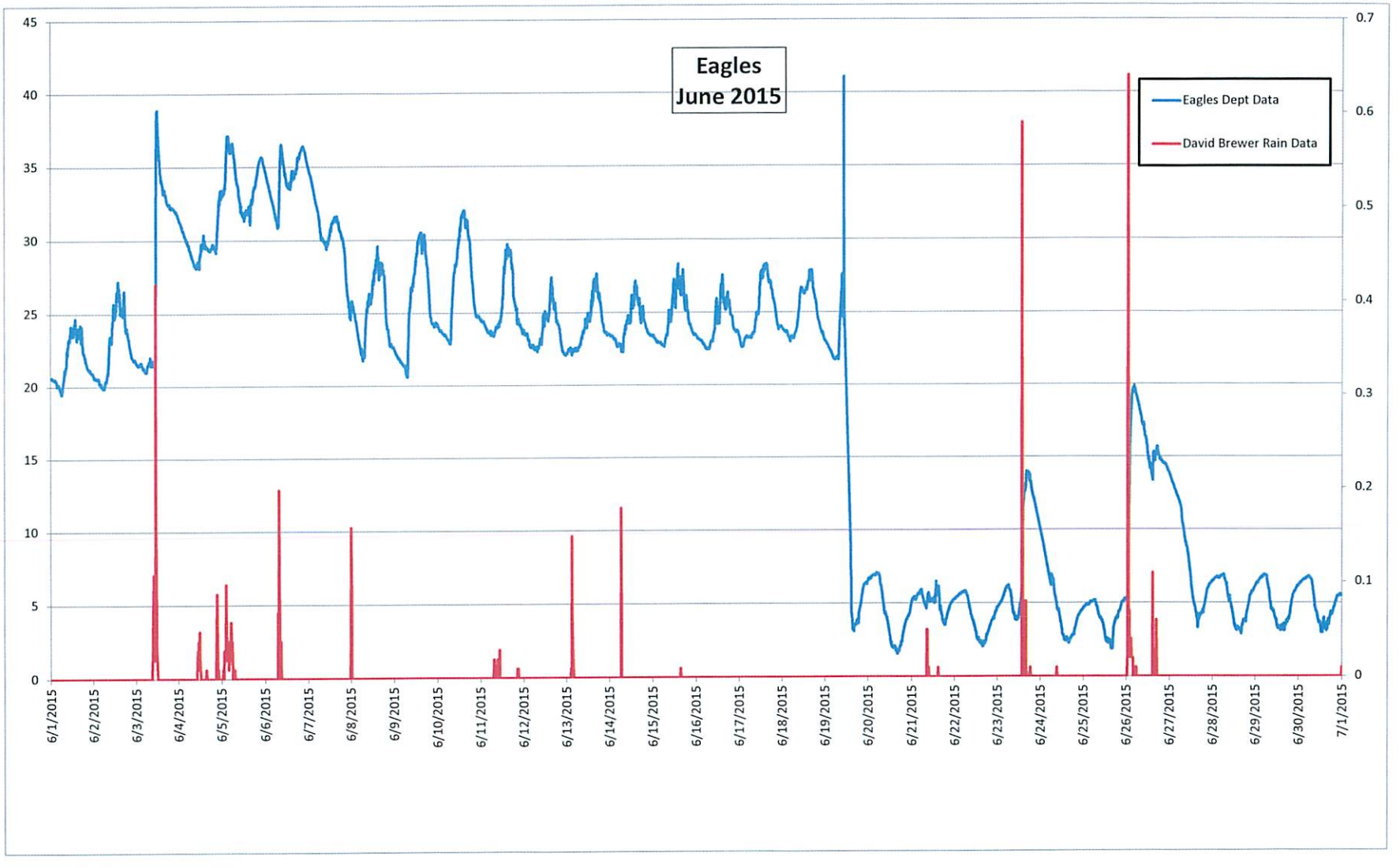

Eagles
September 2015
0
-5
-10
-15
-20
-25
-30
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
9/1/2015
9/2/2015
9/3/2015
9/4/2015
9/5/2015
9/6/2015
9/7/2015
9/8/2015
9/9/2015
9/10/2015
9/11/2015
9/12/2015
9/13/2015
9/14/2015
9/15/2015
9/16/2015
9/17/2015
9/18/2015
9/19/2015
9/20/2015
9/21/2015
9/22/2015
9/23/2015
9/24/2015
9/25/2015
9/26/2015
9/27/2015
9/28/2015
9/29/2015
9/30/2015
10/1/2015
Eagles Depth Data
David Brewer Rain Data

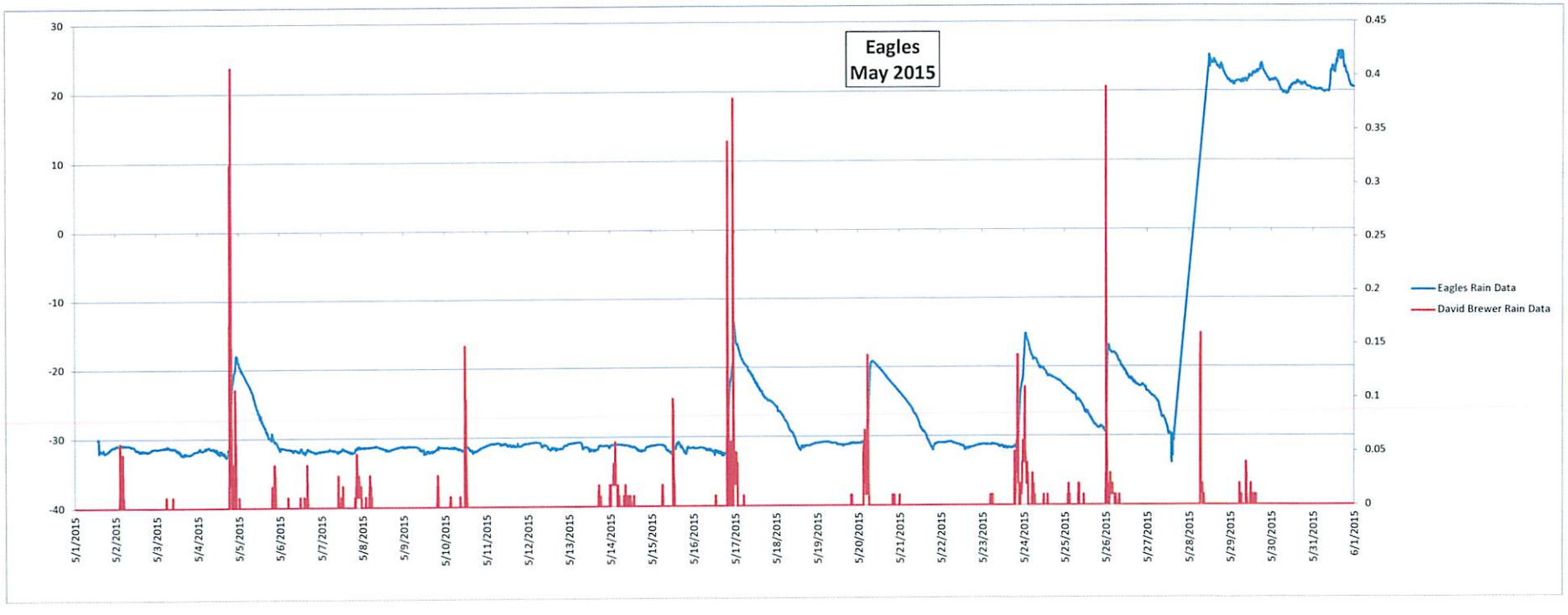

Eagles
August 2015
Eagles Depth Data
David Brewer Rain Data
0
-5
-10
-15
-20
-25
-30
0.3
0.25
0.2
0.15
0.1
0.05
0
8/1/2015
8/2/2015
8/3/2015
8/4/2015
8/5/2015
8/6/2015
8/7/2015
8/8/2015
8/9/2015
8/10/2015
8/11/2015
8/12/2015
8/13/2015
8/14/2015
8/15/2015
8/16/2015
8/17/2015
8/18/2015
8/19/2015
8/20/2015
8/21/2015
8/22/2015
8/23/2015
8/24/2015
8/25/2015
8/26/2015
8/27/2015
8/28/2015
8/29/2015
8/30/2015
8/31/2015
9/1/2015

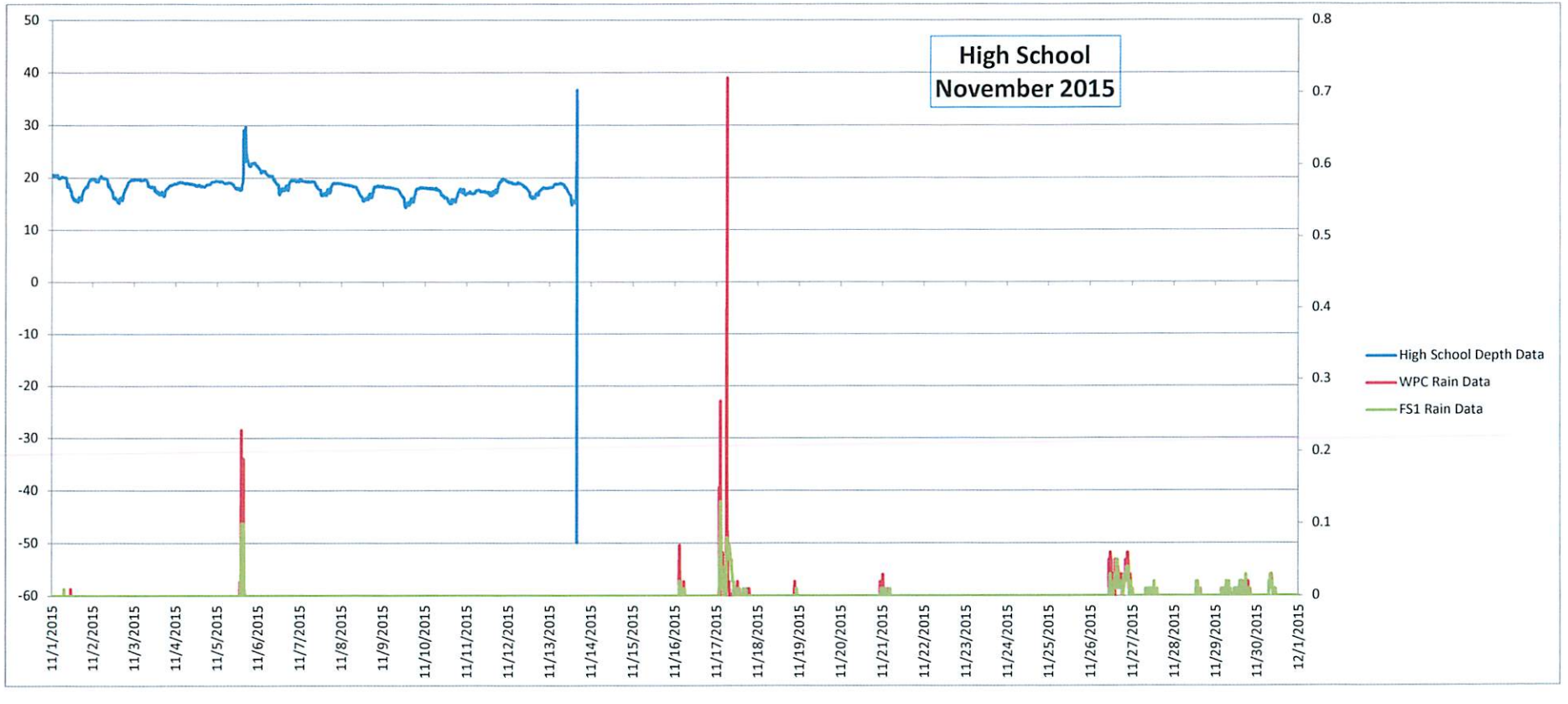


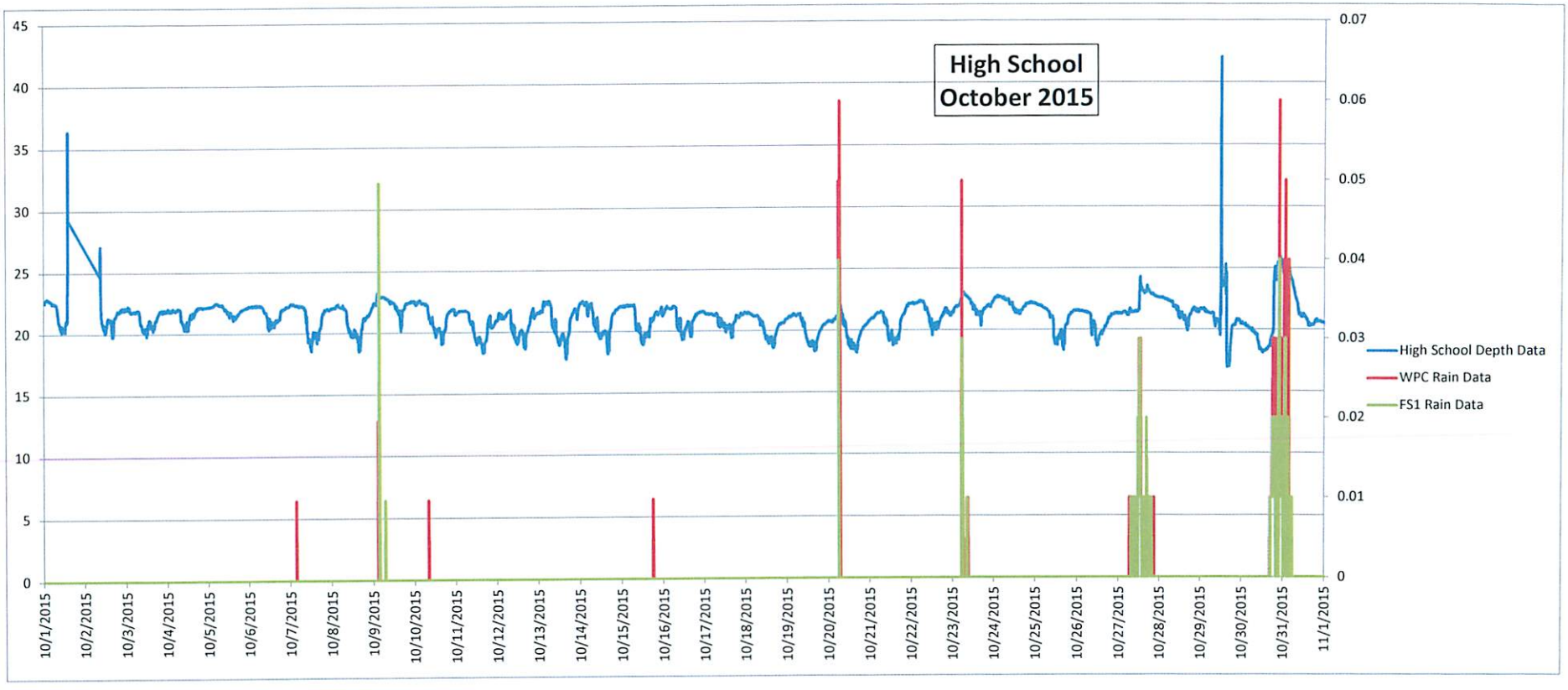


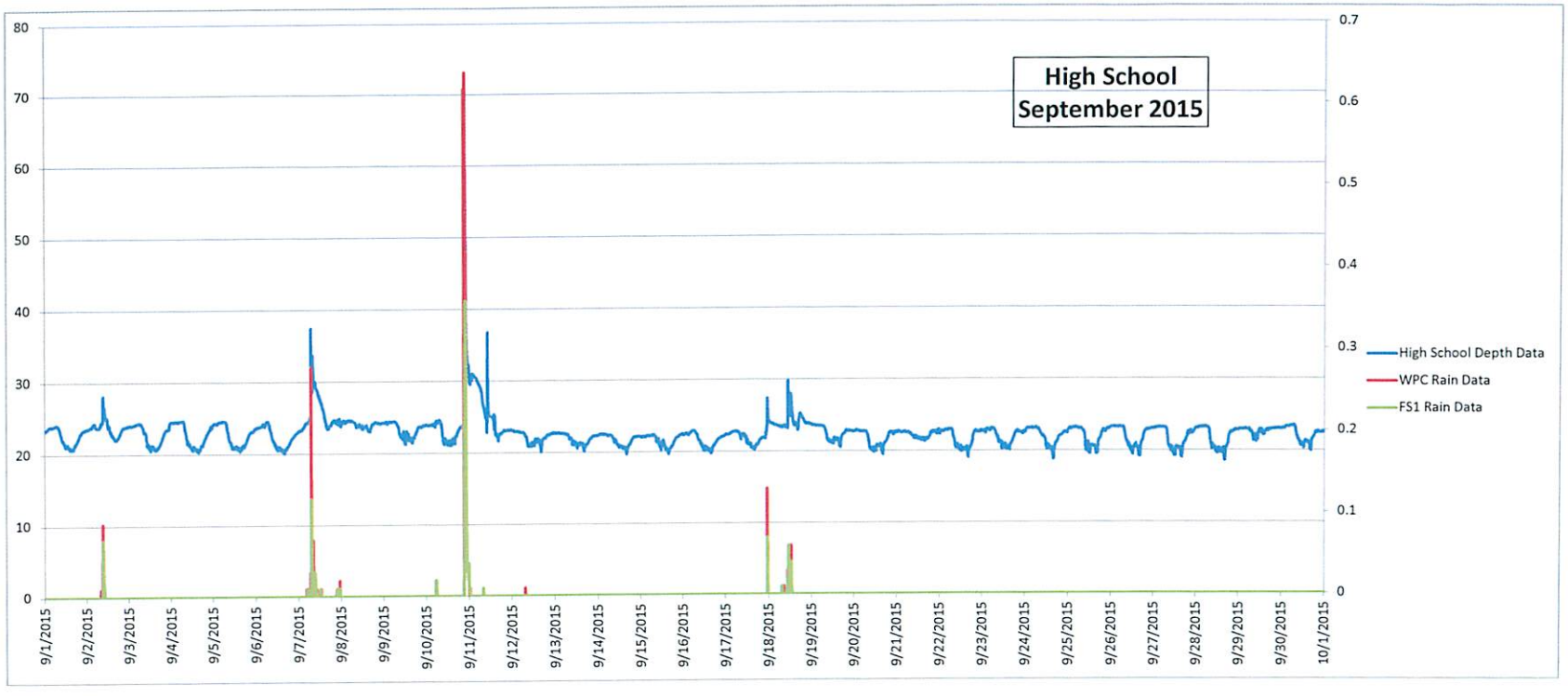
0.041667
0.010417

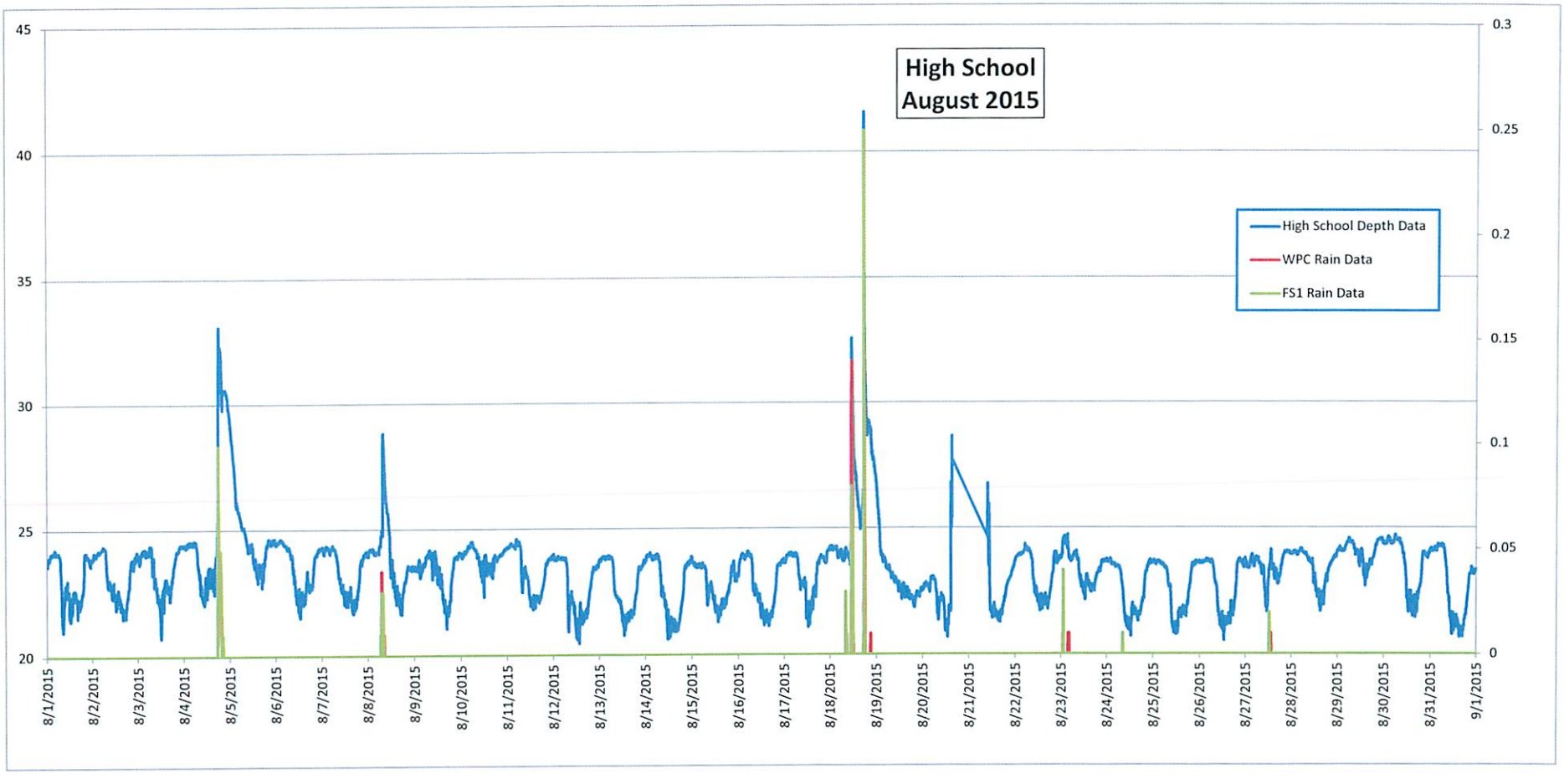

Eagles
June 2015
Eagles Dept Data
David Brewer Rain Data
45
40
35
30
25
20
15
10
5
0
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
6/1/2015
6/2/2015
6/3/2015
6/4/2015
6/5/2015
6/6/2015
6/7/2015
6/8/2015
6/9/2015
6/10/2015
6/11/2015
6/12/2015
6/13/2015
6/14/2015
6/15/2015
6/16/2015
6/17/2015
6/18/2015
6/19/2015
6/20/2015
6/21/2015
6/22/2015
6/23/2015
6/24/2015
6/25/2015
6/26/2015
6/27/2015
6/28/2015
6/29/2015
6/30/2015
7/1/2015


Eagles
May 2015
30
20
10
0
-10
-20
-30
-40
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
5/1/2015
5/2/2015
5/3/2015
5/4/2015
5/5/2015
5/6/2015
5/7/2015
5/8/2015
5/9/2015
5/10/2015
5/11/2015
5/12/2015
5/13/2015
5/14/2015
5/15/2015
5/16/2015
5/17/2015
5/18/2015
5/19/2015
5/20/2015
5/21/2015
5/22/2015
5/23/2015
5/24/2015
5/25/2015
5/26/2015
5/27/2015
5/28/2015
5/29/2015
5/30/2015
5/31/2015
6/1/2015
Eagles Rain Data
David Brewer Rain Data


High School
November 2015
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
11/1/2015
11/2/2015
11/3/2015
11/4/2015
11/5/2015
11/6/2015
11/7/2015
11/8/2015
11/9/2015
11/10/2015
11/11/2015
11/12/2015
11/13/2015
11/14/2015
11/15/2015
11/16/2015
11/17/2015
11/18/2015
11/19/2015
11/20/2015
11/21/2015
11/22/2015
11/23/2015
11/24/2015
11/25/2015
11/26/2015
11/27/2015
11/28/2015
11/29/2015
11/30/2015
12/1/2015
High School Depth Data
WPC Rain Data
FS1 Rain Data


High School
October 2015
45
40
35
30
25
20
15
10
5
0
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
10/1/2015
10/2/2015
10/3/2015
10/4/2015
10/5/2015
10/6/2015
10/7/2015
10/8/2015
10/9/2015
10/10/2015
10/11/2015
10/12/2015
10/13/2015
10/14/2015
10/15/2015
10/16/2015
10/17/2015
10/18/2015
10/19/2015
10/20/2015
10/21/2015
10/22/2015
10/23/2015
10/24/2015
10/25/2015
10/26/2015
10/27/2015
10/28/2015
10/29/2015
10/30/2015
10/31/2015
11/1/2015
High School Depth Data
WPC Rain Data
FS1 Rain Data


High School
September 2015
80
70
60
50
40
30
20
10
0
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
9/1/2015
9/2/2015
9/3/2015
9/4/2015
9/5/2015
9/6/2015
9/7/2015
9/8/2015
9/9/2015
9/10/2015
9/11/2015
9/12/2015
9/13/2015
9/14/2015
9/15/2015
9/16/2015
9/17/2015
9/18/2015
9/19/2015
9/20/2015
9/21/2015
9/22/2015
9/23/2015
9/24/2015
9/25/2015
9/26/2015
9/27/2015
9/28/2015
9/29/2015
9/30/2015
10/1/2015
High School Depth Data
WPC Rain Data
FS1 Rain Data


High School
August 2015
High School Depth Data
WPC Rain Data
FS1 Rain Data
45
40
35
30
25
20
0.3
0.25
0.2
0.15
0.1
0.05
0
8/1/2015
8/2/2015
8/3/2015
8/4/2015
8/5/2015
8/6/2015
8/7/2015
8/8/2015
8/9/2015
8/10/2015
8/11/2015
8/12/2015
8/13/2015
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8/16/2015
8/17/2015
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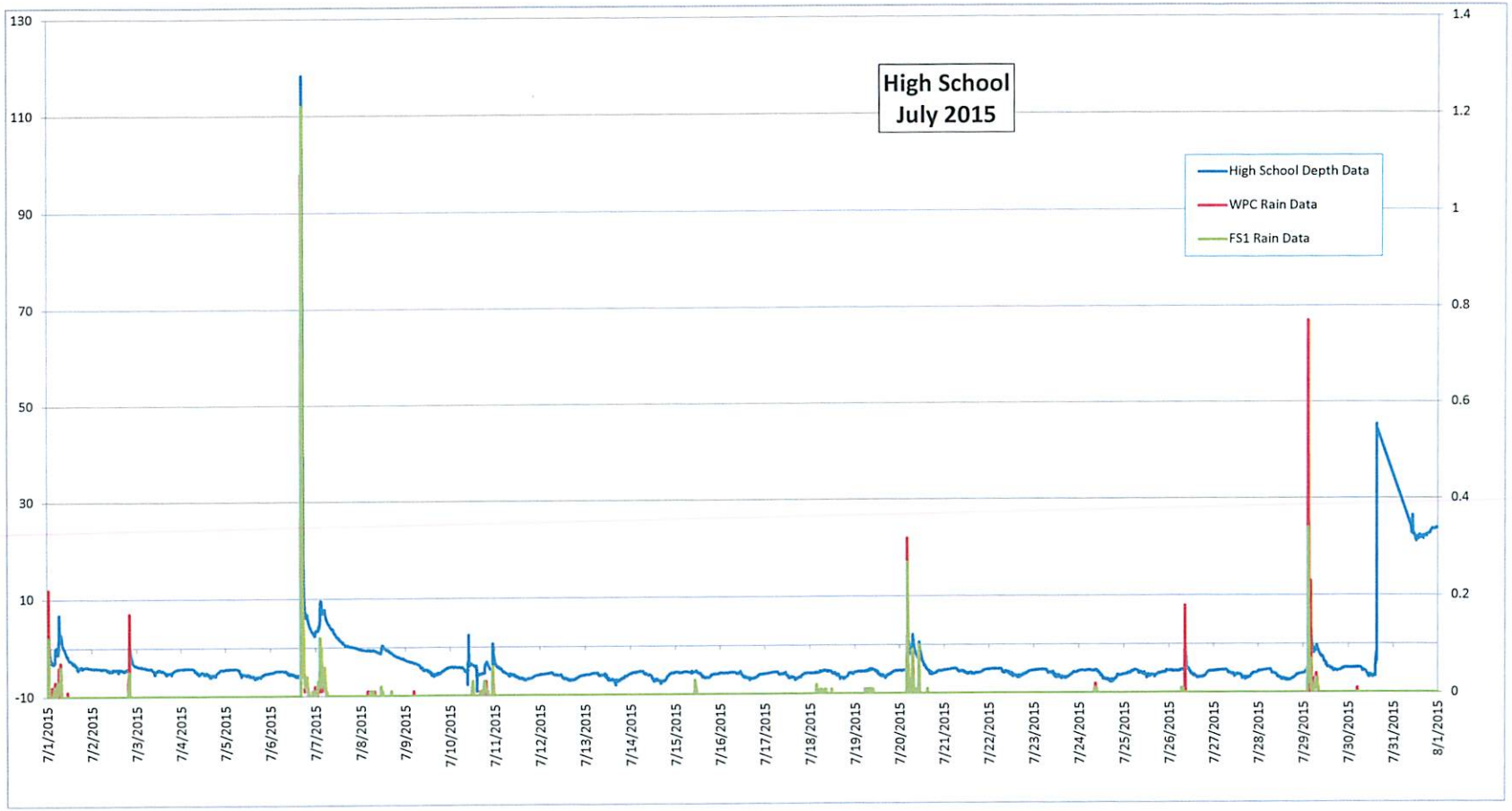
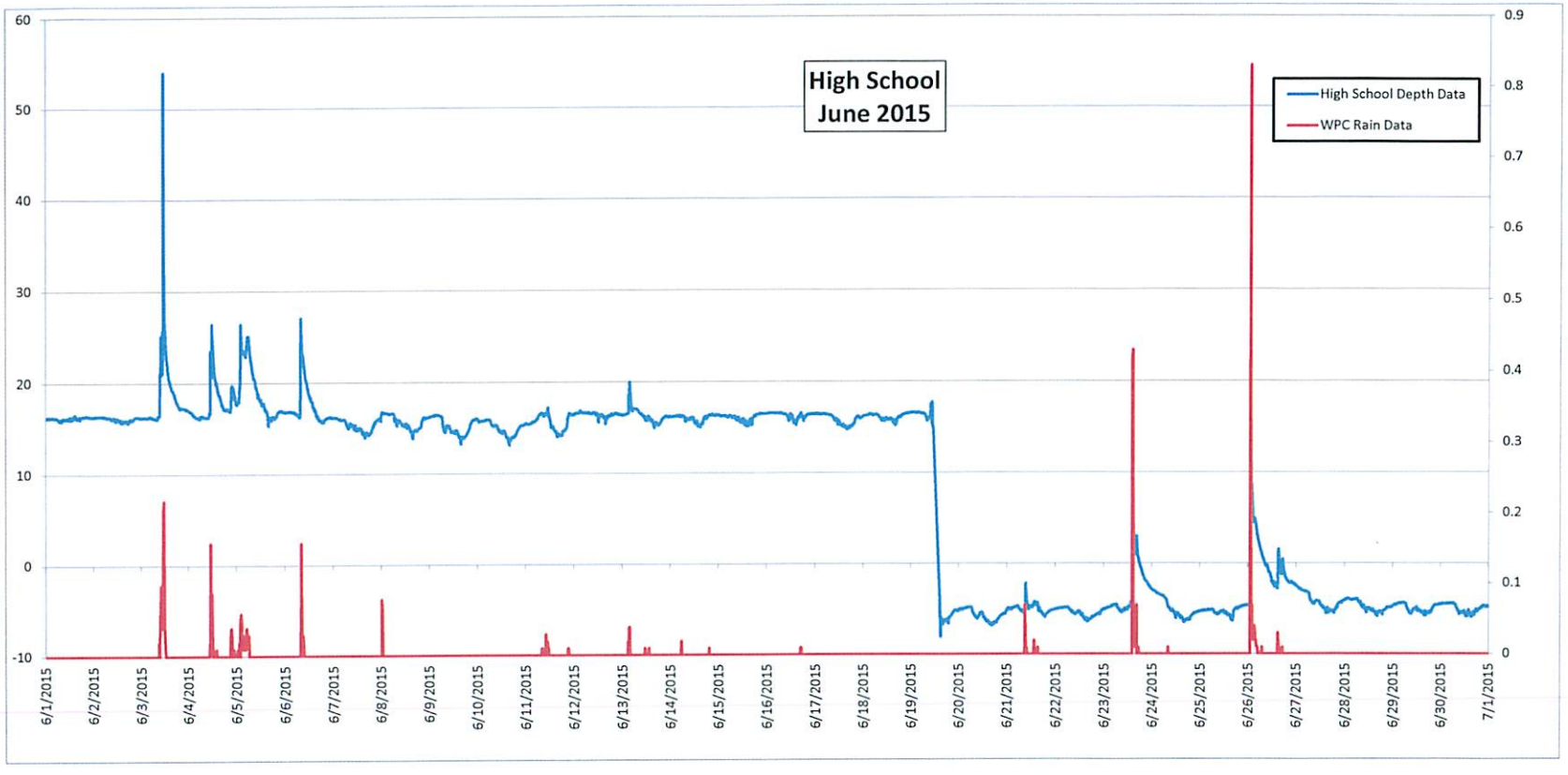
8/22/2015
8/23/2015
8/24/2015
8/25/2015
8/26/2015
8/27/2015
8/28/2015
8/29/2015
8/30/2015
8/31/2015
9/1/2015


High School
July 2015
High School Depth Data
WPC Rain Data
FS1 Rain Data
130
110
90
70
50
30
10
-10
1.4
1.2
1
0.8
0.6
0.4
0.2
0
7/1/2015
7/2/2015
7/3/2015
7/4/2015
7/5/2015
7/6/2015
7/7/2015
7/8/2015
7/9/2015
7/10/2015
7/11/2015
7/12/2015
7/13/2015
7/14/2015
7/15/2015
7/16/2015
7/17/2015
7/18/2015
7/19/2015
7/20/2015
7/21/2015
7/22/2015
7/23/2015
7/24/2015
7/25/2015
7/26/2015
7/27/2015
7/28/2015
7/29/2015
7/30/2015
7/31/2015
8/1/2015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June 2015
High School Depth Data
WPC Rain Data
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50
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-10
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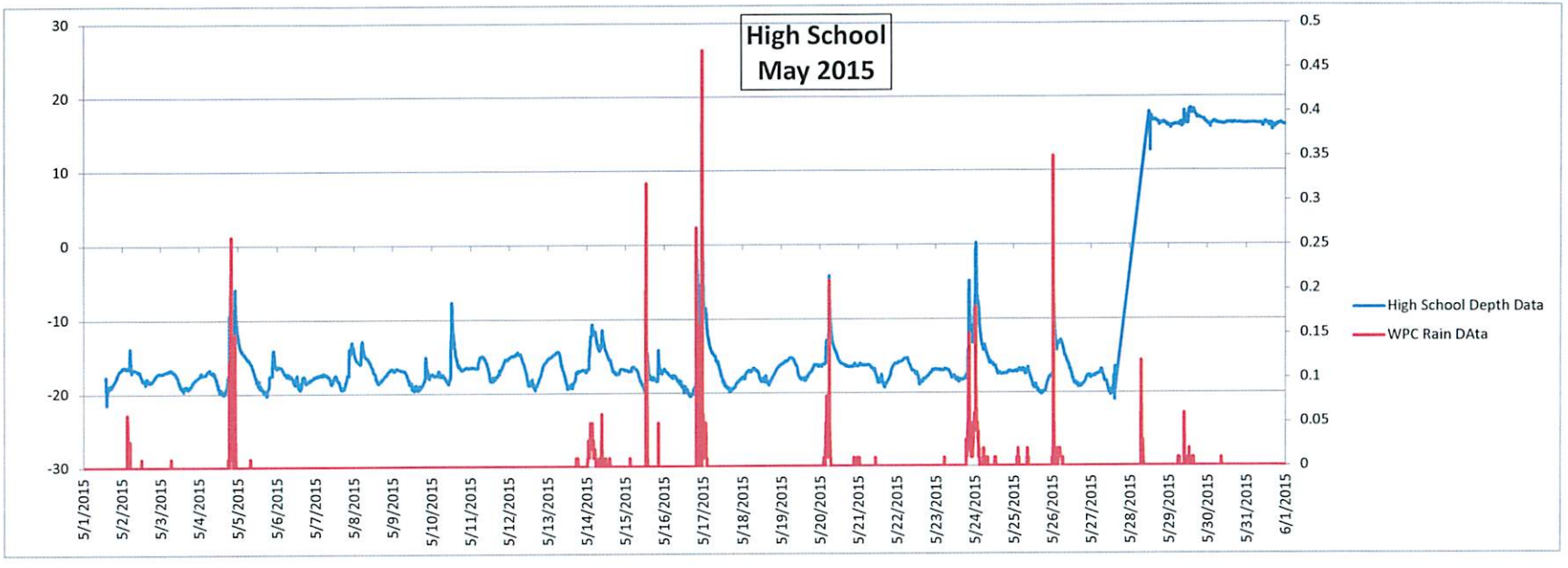
High School
May 2015
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High School Depth Data
WPC Rain DAta

Appendix D

Examples of Public Information and Involvement

Examples of Public Information and Involvement

- City Commission Meetings, policy reports and meeting minutes– various dates. These meetings are broadcast live and several times throughout the week on cable TV, also available on YouTube.
  - Land Disturbance Permits
  - Drainage Basin Studies and projects
  - Citizen Participation
  - History of Flooding and direction for stormwater efforts
  - Contract related to EPA requirements related to Supplemental Environmental Project
  - Capital Improvement Program
  - Approval of Stormwater Annual Report
  - Approval of Stormwater Management Program
- USGS River Gauge funded in-part by City of Leavenworth
- Solid Waste Information
  - Free First Saturdays each month – web page
  - Recycling Center is always free Tuesday through Saturday 8:30 am to 12:30pm, web page
  - Trashbag handout flyer
  - January Holiday tree recycle – online article includes Leavenworth
  - Rain Garden on Webpage
- 4/18/2015 City Wide Clean up
  - Outreach - webpage, newspaper, City Flyer (First City Connection Newsletters) and channel 2
  - Shred it for unwanted paper free at Citizens Savings and Loan 515 S 4th St
  - Yard waste
- Tree legacy program
- Solid Waste printable flyer

POLICY REPORT PWD NO. 15-11

REVIEW GUIDELINES FOR STORMWATER AND DRAINAGE DESIGN

February 17, 2015

Prepared by:

Michael G. McDonald, P.E,
Director of Public Works

Submitted by:

J. Scott Miller
City Manager

ISSUE
Review proposed guidelines related to stormwater design.

RECOMMENDATION
Staff recommends that the City Engineers Office begin using the guidelines for stormwater design.

BACKGROUND
The City has become increasingly regulated in the area of stormwater, especially water quality issues. The EPA and KDHE created a series of regulations in the 1980's. These regulations have led to the City being regulated as a "Phase II" City for stormwater purposes. In general – these regulations address water quality since the runoff from the City enters the "Waters of the United States" and is regulated by EPA.

In a related process - the design of stormwater drainage systems requires that the volume and velocity of runoff be controlled. This control is more to address the associated water quality degradation issues (primarily erosion and excess nitrogen and phosphorus) than actual flooding conditions. The City completed a stormwater master plan in the late 1990's. This plan addressed primarily flood related issues through a series of design guidelines.

The engineers and developers that work in the city have typically used modern design methods for their projects. This includes the design guidelines in the city master plan, recommendations from the American Public Works Association (APWA Kansas City Region), and Mid-America Regional Council (MARC). The submitted plans are reviewed by city staff and any necessary modifications made, and the projects constructed.

There have been several instances where it has been necessary to summarize the expectations of the City Engineering Office for firms that have not worked in the city before. These guidelines are an effort to create a summary document that can be used to facilitate a discussion on expectations. The main effort in this document is to:

- Identify that the City is concerned with both water quality and water quantity
- Identify typical instances when a city permit is required
- Identify other regulatory agencies – particularly KDHE, Kansas Division of Water Resources and Corps of Engineers
- Identify appropriate guidelines for water quantity design
- Identify appropriate guidelines for water quality design
- Increase the awareness of contractors to the importance of water quality and erosion control on large and small projects
- Identify typical measures related to erosion control (and therefore water quality)
- Identify specific areas of concern to property owners, developers and designers related to design of storm sewer systems, particularly detention basins.
- Identify typical measures related to water quality that can be incorporated into the project.

The regulatory environment from the EPA has become increasingly strict. KDHE has worked with local governments to identify known areas of concern and to seek reasonable approaches to solving national goals related to water quality. As part of the ongoing effort by the city to ensure compliance with federal and state regulations – staff will be working to more effectively enforce at least the following:

- Erosion from construction sites entering the street.
- Ensuring long-term erosion protection is in-place on large and small projects
- Increased maintenance of detention ponds and similar facilities
- Improved grease-trap inspection program
- Improved clean-up of sewer overflows

These guidelines are part of the effort to comply with regulations. The guidelines have been reviewed by engineers from several firms that have experience working in the City of Leavenworth. They all agree that they will serve a useful purpose when working with clients in the area. As noted – these are guidelines and not regulations and will evolve over time as necessary

ATTACHMENT:
Draft 2015 General Guidelines Stormwater and Drainage
KDHE Executive Summary

- Zeck's have made investments to date
- If there are no improvements completed there will be no payments made to the developer; very complicated project

- Financial Director Ron Hale very comfortable with the agreement

Consensus to move forward with the Development Agreement

Presentation by Nancy Bauder – Mayor Preisinger introduced Nancy Bauder who will be painting a mural on the Crow law office building at 302 Shawnee. Ms. Bauder displayed the painting and she plans to start right away.

Discuss Trolleys – City Manager Miller reviewed:

- The City approved an appropriation to the Leavenworth Historical Museum Association (LHMA) in the amount of $45,000 at their regular business meeting of February 27, 2007 for 3 trolleys.
- Specifically, the motion was "to approve the agreement for trolley operations with amendments to include should the trolley operations cease the City shall be paid 50% share of revenue not to exceed the initial investment of $45,000."
- Met with Del Sanders, President of the Board LHMA on Thursday, December 4, 2014 in reference to the 3 trolleys; particularly, the costs of operation, maintenance and repair of the vehicles. He let me know that the insurance (liability only) would be increasing to $1,600 per trolley (total of $4,800) and the policy comes due in March 2015.
- In April of 2013 the CVB paid $3,551 for the insurance and in March 2012 the City paid $2,000 for the insurance.
- The City Commission discussed the financial request from the LHMA at their study session of January 20, 2015 and decided to table the item until after the February 2, 2015 referendum on the Countywide Sales Tax.

Mayor and City Commissioners discussed with Mr. Del Sanders:

- Cost of operating the trolleys and the lack of usage
- Wedding receptions and nursing homes have asked to use the trolleys
- Events within the community along with the CVB
- Visitors enjoy use of the trolleys; good image of the city
- Taste of Leavenworth pays for the insurance on the buildings / carousel owned by the LHMA
- Wendy Scheidt with Leavenworth Main Street stated that this does benefit the downtown area
- Discussed selling 2 of the 3 trolleys; 1 of the 3 trolleys has not been reconditioned
- City expended $45,000 for the trolleys back in 2007; need to cover expenses for the trolleys; and be self-sufficient; operated since 2007
- Would like to keep the trolleys; suggested liquidating 1 trolley and keep 2 trolleys
- City could support 1 trolley's insurance premiums
- Good advertisement for the City; really thought the trolleys would be seen more within the community
- Liquidating the trolley not operating and then also discussed selling the trolley that is operating
- The business needs to support itself and suggested increasing the revenue to become self-sufficient.

Consensus to insure one trolley for $1,600 and suggested that LHMA sell 1 trolley

Review Drainage Study East of Broadway – Public Works Director Mike McDonald and Don Baker with Water Resources Solutions (WRS) reviewed the report prepared by WRS related to drainage study of the area of Ottawa Street between 7th Street and Broadway. WRS provided recommendations related to a series of flooding and high water events in the storm sewer system east of Broadway and south of Metropolitan Avenue that have occurred in the last few years.

- Staff recommends that the Commission approve proceeding with improvements in the area between Kickapoo and Ottawa Street (Option 4)
- Discussed the improvements; goal to make improvements to reduce the flooding; protect those downstream; improve drainage
- Project should help and suggested proceeding in one or two phases; funds available in storm water

Consensus to move forward.

Commissioner Dedeke moved to adjourn. Commissioner Gasbarre seconded the motion and was unanimously approved. Meeting adjourned 8:13 p.m.

Notes taken by City Clerk Karen J. Logan, MMC

Ottawa, 7th to Broadway, Watershed Plan
3 Mile 4 L Basin

Water Resources Solutions

DONALD W. BAKER
LICENSED
14258
KANSAS
PROFESSIONAL ENGINEER

02-13-2015

8800 Linden Drive
Prairie Village Kansas 66207
913-302-1030

www.wrs-rc.com

info@wrs-rc.com

Contents

Tables

Commissioner Dedeke moved to remove the review of Resolution B-2105. Commissioner Preisinger seconded the motion and was unanimously approved.

Bids, Contracts & Agreements:

Contract No. 2015-33 Bids for Demolition of Unsafe Structures – Community Development Coordinator Dwyer stated bids were solicited for the demolition of 13 structures on 11 properties as listed in Resolution B-2105 and Resolution B-2077. Properties listed were:

- 1116 Osage house /shed
- 1206 Spruce garage
- 1328 Spruce house
- 717 N. 2nd Street house /shed
- 320 Kickapoo house (removed due to Petition for Injunction)
- 410 Ottawa Street house /shed (removed due to Petition for Injunction)
- 613 S. 10th Street house
- 651 Marshall Street garage
- 320 Logan Street house
- 610 Lawrence Avenue house
- 113 Ottawa Street house

The following bids were received for all 11 properties:

- Midland Wrecking Inc., all 11 properties, $59,913
- Remco Wrecking LLC, all 11 properties, $59,023

Bids minus 320 Kickapoo and 410 Ottawa due to the Petition for Injunction:

- Midland Wrecking Inc., bid minus 320 Kickapoo and 410 Ottawa, $47,222 (staff recommends low bidder)
- Remco Wrecking LLC, bid minus 320 Kickapoo and 410 Ottawa, $48,326

Mayor Weakley and City Commissioners discussed the sheriff sale for 613 S. 10th Street. Larry Waton stated that he has made numerous attempts to contact the owner(s) to purchase the property and there has been no response.

Commissioner Preisinger moved to approve the Contract 2015-33 to Midland Wrecking Inc., minus 320 Kickapoo and 410 Ottawa, in an amount not to exceed $47,222.00 to demolish nine (9) properties. Commissioner Dedeke seconded the motion and was unanimously approved.

Contract No. 2014-21 Change Order 2 for Stormwater Drainage Improvements – Public Works Director McDonald reviewed the Change Order No. 2 to Contract No. 2014 -21 for the 2014 Stormwater Drainage Improvement Project, Project No. 2013-765 located at 5th & Oak, 5th Ave & Prospect, and 18th & Spruce. He recommended approval of Change Order No. 2 for the contract with Linaweaver Construction in an amount of $19,005.58 for the total contract amount not to exceed $631,318.32. Mr. McDonald highlighted the three projects:

- 5th and Oak Street, 5th Avenue and Prospect and 18th and Spruce
- Waterline replacement cost - $67,074.16
    - City should be reimbursed $33,537.08
- Recommend approval of the Change Order 2

Commissioner Bauder moved to approve the Change Order No. 2 in the amount of $19,005.58 for the Stormwater Drainage Improvements for the total contract amount of $631,318.32. Commissioner Preisinger seconded the motion and was unanimously approved.

Contract No. 2015-32 Stormwater Design Contract Ottawa Street – Public Works Director McDonald recommended a contract with Water Resources Solutions for stormwater design on Ottawa, 7th to Broadway in the amount not to exceed $38,600.00. He highlighted:

- August 7, 2014 contracted with Water Resources Solutions (WRS) to provide recommendations services related to a series of flooding and high water events in the storm sewer system east of Broadway and south of Metropolitan Avenue
- On March 31, 2015 The Commission reviewed the report and alternatives. Staff was directed to pursue work as described in alternative 4.
- Alternate 4 is a series of phased pipe replacements and drainage channel improvements between Kickapoo Street and the alley south of Ottawa Street. It will increase the flow capacity of the existing system and improve the ease of maintenance on the system. It includes above ground swales for overflows.
- Proposal from Water Resource Solutions will survey the site and prepare plans with any necessary easements to facilitate bidding of the work. There may be more than one bid necessary depending on the cost or complexity of the project. The anticipated construction cost for this work is $430,215.

Commissioner Preisinger moved to approve the contract with Water Resources Solutions for stormwater design on Ottawa, 7th to Broadway in the amount not to exceed $38,600.00. Commissioner Dedeke seconded the motion and was unanimously approved.

Consent Agenda:
Claims for April 25, 2015 through May 8, 2015 in the amount of $1,121,136.87; Net amount for Pay #9 effective May 1, 2015 in the amount of $305,126.85. Commissioner Bauder moved to approve the consent agenda, as presented. Commissioner Dedeke seconded the motion and was unanimously approved.

Other Items:
Select Date for the City Commission Budget Work Sessions – City Manager Miller stated it was time to set a date for the City Commission Budget Work Sessions. Dates suggested were: July 8th – July 10th or July 15th – July 17th from 1-4 p.m.

Mayor and Commissioners discussed dates and there was a consensus to hold Budget Work Sessions on July 15th – July 17th from 1-4 p.m.

Commissioner Preisinger mentioned the closure of Cherokee Street from 3rd to 4th Street for the Hometown Welcome and the Barbeque Contest which is planned for September 11 and 12, 2015. He stated the business owners were not notified about the event or the street closures. Mayor Weakley would like to discuss this issue during the Goal Setting Session to include use of Haymarket Square.

Executive Session for Land Acquisition and Attorney Client Privilege: Commissioner Preisinger moved to go into executive session for land acquisition and attorney client privilege at 7:50 p.m. and return to open session at 8:15 p.m. Commissioner Dedeke seconded the motion and was unanimously approved. The City Commission returned to open session at 8:15 p.m.

Commissioner Preisinger moved to extend the executive session until 8:31 p.m. Commissioner Raney seconded the motion and was unanimously approved. The City Commission returned to open session at 8:31 p.m.

Adjourn – Commissioner Preisinger moved to adjourn the meeting. Commissioner Dedeke seconded the motion and was unanimously approved.

Time Meeting Adjourned 8:32 p.m.
Minutes taken by City Clerk Karen J. Logan, MMC

CALL TO ORDER - The Governing Body met in regular session on Tuesday, July 14, 2015 at 7:00 p.m. **The following commission members were present:** Mayor Lisa A. Weakley, Mayor Pro-Tem Larry Dedeke, Commissioners Nancy Bauder, Mark Preisinger and Charles Raney

Others present: City Manager J. Scott Miller, Assistant City Manager Paul Kramer, Public Works Director Mike McDonald, Acting Park & Recreation Director Steve Grant, Project Manager Mike Hooper, Chief Inspector Hal Burdette, City Planner Julie Hurley, Public Information Officer Melissa Bower, City Attorney Tom Dawson and City Clerk Karen J. Logan

Mayor Weakley opened the meeting with the pledge of allegiance followed by silent meditation.

Presentations & Proclamations:

Parks & Recreation Month July 2015 – Mayor Weakley read a Proclamation for Leavenworth Parks & Recreation Month. Acting Parks & Recreation Director Steve Grant encouraged the community to enjoy our parks. He also invited everyone to attend a movie night on July 25th at Stubby Park to celebrate "National Parks and Recreation Month" and "National Dance Day" at 7 p.m.

Leavenworth High School Girls Basketball Team – Mayor Weakley read a Proclamation recognizing the 2014-2015 basketball season of the Leavenworth High School Lady Pioneers Basketball Team as State Champions of the Kansas State High School Athletic Association Class 5A. She also presented City coins to each player and coach; and unveiled a recognition sign to install on 4th Street Trafficway in their honor. Coach Vanek mentioned that all the members of the basketball team have maintained above a 3.5 grade point average and are very active in their school and community.

Consideration of Minutes – Commissioner Preisinger moved to approve the June 23, 2015 regular meeting and July 7, 2015 special meeting minutes as presented. Commissioner Dedeke seconded the motion and was unanimously approved.

Ordinance No. 7974 Condemn Property Ottawa Street Storm Sewer Project – Public Works Director Mike McDonald stated this is part of the ongoing process to acquire private property for the Ottawa Street Storm Sewer Improvement Project through the condemnation process. The property being acquired is for a temporary construction easement.

Mayor Weakley called for the roll call vote and Ordinance No. 7974 was unanimously approved.

Citizen Participation:

Mark & Janet Drews owners of 2209 S. 16th Terrace, distributed pictures of flooding that happened on July 6, 2015 at their home. He stated it flooded in 2005, 2009, 2010 and 2015. The City installed a swale after the flood of 2010. He stated they were afraid to leave their home due to possible flooding. It has happed four times in fourteen years and they are concerned with the flooding issues. In 2010 it was considered to purchase their home and they are requesting that the City purchase the home for drainage purposes. Mayor Weakley stated she needed time to review this issue and get with City staff for possible solutions. Mayor Weakley stated there is no money set aside to purchase homes with flooding issues at this time.

Mayor and Commissioners discussed the amount of rain that happened on July 6th which was around three inches in a short amount of time and the amount of debris that runs off the hill near 16th Terrace.

Duane Mann owner of 1425 Seneca, stated that something bad is going to happen when this type of rain happens; this has been a repeat problem at 2209 S. 16th Terrace and something needs to be done. The water comes fast and is dangerous.

General Items:

Quarter Payment to Leavenworth County Development Corporation (LCDC) – City Manager Miller stated that based on the quarterly report presented to the City Commission on July 7, 2015 he recommended payment for the second quarter in the amount of $11,563.50.

Commissioner Dedeke moved to approve the quarter payment to LCDC in the amount of $11,563.50. Commissioner Preisinger seconded the motion and was unanimously approved.

City Commission Goals for 2015-2016 – Assistant City Manager Kramer stated that on June 12, 2015 the City Commission met to review the goals. Mr. Kramer then highlighted the proposed goals for 2015-2016. The following is a summary of the changes by section.

Economic Development
- Deleted "h" attract downtown hotel
- Deleted "i" provide monthly economic development report
- Added "n" explore financial incentives to stimulate new housing construction

Public Safety
- Added "e" related to body cameras

Communications
- Deleted "b" pursuing functionality improvements for City web site

Other items receiving general support
- Deleted "review special use permits"
- Deleted "inventory City owned land"

Commissioner Bauder moved to approve the City Commission goals for 2015-2016. Commissioner Dedeke seconded the motion and was unanimously approved.

Bids, Contracts and Agreements:

Contract No. 2012-66 Supplemental No. 1 Geometric Improvements 4th & Poplar Street – Public Works Director Mike McDonald recommended approval of Supplement No. 1 to the agreement with KDOT related to Geometric Improvements of 4th Street and Poplar. He highlighted:

- April 24, 2012 the City Commission approved to submit a grant application for Geometric Improvements at the intersection of 4th Street and Poplar.
- KDOT announced the grant award to the City on August 28, 2012. Project goal is to move trucks off of 2nd Street by providing an entrance to 4th Street at Poplar Street.
- KDOT will cost share in the construction and inspection with the Geometric Improvement grant at 15% city /85% KDOT up to $850,000 maximum KDOT share. The City is responsible for all design, utility and land acquisition costs.
- August 1, 2014 applied for Access Management Funding to construct the west leg of Poplar Street. November 16, 2014, KDOT agreed to provide funding at 100% up to a maximum of $80,000.00 for the west leg of Poplar Street improvements. All additional expenses will be the responsibility of the City.
- Additional work consists of closing two existing commercial entrances to the north of Poplar on the west side of US -73 (4th Street) and construct a new entrance for the motel. This will improve the safety and efficiency

POLICY REPORT PWD NO. 15-48

FLOOD EFFORTS IN LEAVENWORTH
August 18, 2015

Prepared by:

Michael G. McDonald, P.E.,
Director of Public Works

Reviewed by:

Paul Kramer,
Assistant City Manager

ISSUE

Flooding in Leavenworth has been an ongoing concern since early in the development of the City. In the last half of the 20th Century there were several significant events, and many since the mid-1980's have been well documented.

A series of high rainfall events between about 1985 and the early 1990's caused flooding at several locations in the City. It was apparent that there needed to be some guidance to staff and the commission on the direction to move to address the matter. A "Masterplan" study was awarded to Black & Veatch Engineering in 1994. The study had two main goals:

1) Identify the location of flooding problems, evaluate solutions and create a prioritized approach to addressing the problems.
2) Evaluate a variety of financial alternatives to fund the projects.

The Study created a citizens advisory committee, conducted citizen surveys and included several discussions with the city commission. Ultimately – the study was completed in 1997 and adopted by the Commission in 1999. The study recommended establishing a stormwater fee based on impervious area for project funding. This fee was rejected by the Commission, and the following sources were established to fund stormwater activity:

- Wastewater Rates fund a two person crew with equipment to provide maintenance throughout the year – approximately $100,000. The crew works to repair inlets, open blocked inlets and complete other minor repairs.
- Wastewater Rates provide funding for small projects and for emergency repairs that may be necessary annually – approximately $125,000. Some examples are Swale and grading improvements 2209 S 16th Terrace, 14th & Osage storm inlet/pipe replacement, 9th & Miami culvert replacement, emergency repair 300 Block of Marion.
- CIP Sales Tax to fund larger projects began in 1996 at approximately $350,000 per year. This includes repair and replacement of damaged structures as well as addressing flood related projects. These projects include 5th Avenue and Prospect, the Eagles detention facility, the 2010 ARRA projects.

Areas of flooding were identified in the Masterplan from many sources of information. The study specifically excluded study of infrastructure condition or water quality concerns. Solutions related to QUANTITY of water were estimated for cost and prioritized. Cost estimates of the solutions proposed were used to create budget numbers for the prioritization matrix. It is important to note that the description of the solutions were "generic" and not necessarily what a detailed design would develop, but the expectations were that the cost estimates for the generic solutions would be adequate for the purposes of the plan.

A matrix was created using several factors such as number of impacted properties, economic impact, amount of damage, etc., and the problem areas prioritized. The prioritization was intended to be a guide more than a directive. Many of the projects are impractical in the absence of a much larger project (such as an isolated pipe that may be undersized), or would be pursued only if there was significant matching funds from the state or federal government as in construction of new bridges.

Estimated costs were combined with the prioritization level. The total of the estimated costs was over $26 Million based on 1996 values (approximately $52 million in current dollars). **This is shown in the attached Executive Summary Table I-1.**

The City has completed several studies and constructed many major projects to directly address flood related concerns. Staff has updated the Table I-1 to reflect a summary of major work completed since the Masterplan was approved (attached). Some actions at key flooding locations affecting a large number of homes are summarized below, and this does not include major projects that have replaced deteriorated infrastructure.

1. Construction of large detention basin at Shawnee Street and 20th to address undersized system and related issues. Designed to protect multiple homes from repetitive flooding downstream to about 18th and Osage Street. Worked well in recent 25 year storm with only limited flood damage noted from within the intended protected area.

2. Flooding near 15th and Metropolitan Avenue was intended to be addressed in cooperation with USP to construct a detention basin on USP property. The City has been informed that this is no longer being considered by USP, and the city is not evaluating any projects in this area at this time.

3. Flooding upstream of 17th and Limit resulted in two situations:
    1) A project to address flooding upstream of 16th Terrace and Vilas was reviewed with the Commission in September 2010. The cost of the recommended work (approximately $1.3 million) and cost sharing issues were a detriment to move forward with any major project. Some selected improvements resulted from this effort, particularly the swale at 2209 S. 16th Terrace.
    2) Work to provide access and increase capacity of the main storm sewer line between Vilas and Limit Street has been designed and will move forward as other projects are completed.

4. The construction of new bridges over Three-Mile Creek since 1988 at Broadway, 7th Street, 6th Street, 3rd Street, 2nd Street (2016), and construction of the Three Mile Creek Trail in 2007 have all contributed to improve flooding conditions in the downtown area. This has resulted in FEMA lowering the flood elevation along Cherokee Street, and reducing the width of the "Floodway" improving the viability of many properties in the downtown area.

5. Recent flooding east of Broadway south of Metropolitan Avenue was reviewed with the Commission on March 13, 2015. The cost the entire project was estimated to be in excess of $3 Million. Design of selected improvements to be built in 2016 near Ottawa Street estimated to cost $430,000 is currently underway.

6. Improvements to the creek in Wellington Subdivision area have resulted in stable creek banks, increasing protection of the sanitary sewer lines and improved stream stability in high run-off events

The masterplan identified several projects that included acquisition of property, construction of berms and other improvements on private property. The city generally does not pursue these types of projects unless there is cost sharing of some type with the impacted property owner(s). The city has participated in "friendly" acquisition of repetitively damaged properties when matching funds from FEMA were available. This was in the 800 and 900 Blocks of Miami Street after the 1993 Missouri River Flood.

The City has worked with Leavenworth County Emergency Management to position the City to take advantage of FEMA Mitigation funds that may become available. The Floodwall project at the Riverfront Community Center is an example of this funding. A similar floodwall project at the Wastewater Treatment Plant was studied and rejected as being too expensive (in excess of $5 million). The list of proposed mitigation projects included in the Leavenworth County Emergency Management Plan is attached to this policy report.

There is currently a variety of programs with varying rules related to "buy-outs", and almost all require some level of City participation. These FEMA programs do not have the same eligibility requirements as the ones in the 1990's and are highly competitive. The actual damage within the city and the number of impacted residents create a situation where the City cannot compete effectively against other communities for funds. A summary of the current Flood Mitigation Assistance (FMA) program guidelines copied from FEMA webpage is presented below (City comments in ***italics)***:

Flood Mitigation Assistance Grant Evaluation Criteria:
FEMA will select eligible planning and project sub-applications in order of the agency's priorities for the FY 2015 FMA Grant Program:

1st priority: Mitigation planning sub-applications consistent with 44 CFR Part 201 up to a maximum of $100,000 federal share per applicant. ***(Planning Grants.)***

2nd priority: Projects that mitigate at least 50 percent of structures that meet definition part (b)(ii) of a Severe Repetitive Loss (SRL) property: At least 2 separate NFIP claim payments have been made with the cumulative amount of such claims exceeding the market value of the insured structure. ***(None known in Leavenworth – Some have been flooded ONCE with Flood Insurance, and the claims do not approach the value of the home.)***

3rd priority: Project sub-applications that mitigate at least 50 percent of structures that meet definition of a Repetitive Loss (RL) property: Have incurred flood-related damage on 2 occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event. ***(Essentially the same as Priority 2 except a lower level of loss.)***

4th priority: Projects that mitigate at least 50 percent of structures meet definition part (b)(i) of a SRL property: 4 or more separate NFIP claims payments have been made with the amount of each claim exceeding $5,000, and with the cumulative amount of claims payments exceeding $20,000. ***(Not aware of any home with more than one NFIP claim.)***

5th priority: Projects that will reduce the risk profile in communities through mitigation of the largest number of contiguous NFIP-insured properties. ***(There simply are not very many NFIP policies in the City – 97 in total, and while some may meet these criteria – it is the 5th level of priority in a competitive environment.)***

The City has used the 1999 Black & Veatch Report as a guide to improve stormwater and flood management throughout the city. Resources have been identified to focus on the on maintenance, repairs and new projects. Major projects have been completed to address the priority locations identified in the report.

Even though the report was prepared nearly twenty years ago – it still offers valuable information used by the City in managing stormwater and flooding issues. It is important to note that many things have changed since the report was completed, including:

- There is an substantially increased emphasis on stormwater quality at the state and federal level that now includes the City.
- City has recently completed a detailed stormwater map with good elevation information
- GIS technology and computer modeling are dramatically improved.
- FEMA floodplain changes in the city have occurred.

ATTACHMENTS

Executive Summary BV Report with Table I-1
City Notes on Table I-1
Leavenworth County Mitigation Plan (City of Leavenworth section)
Listing of representative projects by the City.

TABLE OF REPRESENTATIVE LIST OF PROJECTS
RELATED TO FLOODING AND WATER RUN-OFF

Project No.	General Location
2014-786	Ottawa, 7th to Broadway
2013-742	5th Avenue and Prospect
2010-653	21st and Osage Drainage
2010-652	16th and Holman
2010-629	Drainage Study 5 Mile Creek
2014-778	Ottawa Street 12th to 13th Street Storm Sewer Drainage Improvement
2014-777	Marion St Culvert Drainage Improvement
2011-676	Drainage along 1218 Kiowa
2009-601	Drainage Basin / 5 Mile
2008-551	16th and Vilas Storm water Study
2007-538	Wal-Mart 10th & Eisenhower
2006-484	Drainage Detention Basin N. Metro (USP)
2005-469	Restore Drainage Area Cherokee Bridge (flood damage)
2003-379	Garland and Marion Drainage Improvements

CITY OF LEAVENWORTH
100 N. 5th Street
Leavenworth, Kansas 66048
www.lvks.org

CITY COMMISSION STUDY SESSION
COMMISSION CHAMBERS
TUESDAY, AUGUST 18, 2015, 7:00 P.M.

The City Commission met for a study session with the following members present: Mayor Lisa Weakley, Mayor Pro-tem Larry Dedeke, Commissioners Nancy Bauder, Charles Raney and Mark Preisinger

Others Present: Assistant City Manager Paul Kramer, Public Works Director Mike McDonald, Project Manager Mike Hooper, Public Information Officer Melissa Bower, Deputy City Clerk Carla Williamson and City Clerk Karen J. Logan.

Quarterly Report Leavenworth School District – Superintendent Mike Roth reviewed:

- First day of school today and training with teachers / staff started last week
- New perspective on how to work with children
- Middle and High School went through a simulation living through poverty
- Added an on-line enrollment – 900 families enrolled early
- School board budget hearing – gave 6 mills back to the community and still proposing a flat mill rate
- Maintain the class sizes at a workable number
- Read a piece –
    - Nathan Butler a 2013 Leavenworth High student is attending Stanford University and mentioned his wrestling achievements
- Pioneer Career Center (West Middle School) – agreement with Kansas City Kansas Community College
    - Culinary Arts, Health Careers, Electrical Technology, HVAC, Building & Property Maintenance, Computer Repair, Major Appliance Repair, Office Assistant, and Construction Technology
    - 7 staff members and maintenance of the building
    - Offer curricular opportunities for students and community
- Distributed Pioneer PRIDE Magazine published by the school district
- Lot of great things happening this school year
- Discussed the student count, budget and State funding for schools

Flood Efforts in Leavenworth – Public Works Director Mike McDonald, Director of Emergency Management Chuck Magaha for Leavenworth County and Tom Morey with National Flood Insurance Program reviewed:

- Briefed the Commission on the Policy Report concerning flood efforts
- Study completed in 1997 and adopted in 1999 by the City Commission
- Created a table of prioritization projects from the Study
- Key projects:
    - Detention basin at 20th and Shawnee Street
    - 15th & Metropolitan – not pursued
    - Flooding upstream of 17th and Limit
    - Three-Mile Creek (Broadway, 7th Street, 6th Street, 3rd Street, 2nd Street & Three Mile Creek Trail)
    - Broadway south of Metropolitan Avenue
    - Creek in Wellington Subdivision
- FEMA buy-out program
    - Federal government focusing buy-outs with a history of flood insurance payouts
    - National Flood Insurance Program – history of claims
        - In a flood plain, there is flood insurance and there were damages – possibility of buying out the properties
        - If no flood insurance – properties go to the bottom of the list
        - Reviewed the Flood Mitigation Assistance Grant Evaluation Criteria
            - County or city would need to match such as 90%/10% or 75%/25%
            - Discussed the priorities 1 through 5 for the FEMA program
            - Buy-out grants come around once in a while and highly competitive
            - Discussed various city properties that were flooded repeatedly

- Reviewed cost benefit analysis process
- Lengthy application process
- Advise home owners to purchase flood insurance at any level of risk
    - FEMA approved seminars for insurance carriers
    - Website: floodsmart.gov
- Stormwater Plan almost 20 years old – consider a broader program; focus on problem areas and possibly revise or update the plan

Mayor Weakley suggested looking at the Stormwater Plan and to consider an update; re-examine prioritization levels

Meeting adjourned to a Special Meeting at 8:06 p.m.
Notes taken by City Clerk Karen J. Logan, MMC

Bids, Contracts & Agreements:

Change Order No. 1 Contract No. 2015-33 Demolition of Unsafe Structures – Assistant City Manager Kramer stated Contract 2015-33 was issued for demolition of 11 structures on nine properties for $47,222.00. The change is requested for the inclusion of silt fencing which is now required by the City's Land Disturbance Permit. The change order cost is $1,800.00. The cost requested was in line for the fencing installed and it was determined it was acceptable. The additional funds can be paid with CDBG dollars and would bring the total CDBG project cost to $49,022.00.

Commissioner Preisinger moved to approve Change Order No. 1 for $1,800.00 for Contract 2015-33 demolitions of 11 structures; the new total not to exceed $49,022.00. Commissioner Dedeke seconded the motion and was unanimously approved.

Change Order No. 1 Contract No. 2014-50 Financial Software – Human Resource Director Lanter asked for approval of Supplemental Agreement No. 1 with Tyler Technologies for the new financial software. On October 14, 2014, the Commission approved a contract with Tyler Technologies for the purchase of new Financial Software/Hardware system. The system had multiple components outlined, to include Finance, HR, Payroll, Licensing, Permits/Inspections, Cashiering and other modules, for implementation. This system is currently being installed in modules and the technical support has been handled primarily through the City's IT Manager. The scope of services is tied directly to Tyler specific software which can be upgraded at any time without notice. A quote for the support services was provided with the original contract as an optional service, but was not approved for inclusion. The OSDBA services include system support for the operating systems, report writing services, database engines, third party applications or utilities required by the MUNIS software to run, as well as hardware such as application, database, Tyler Content Manager and/or web servers. The support agreement will also cover installations, upgrades, routine maintenance and database tuning as well as the installation and configuration of a new or upgraded server once every two years. The Agreement will begin upon approval and the initial term will expire on November 12, 2016. This provides services for approximately 14 months, with the additional two-month pro-rated based on the annual rate of $8,899.00, for a total cost not to exceed $10,400.00.

Mayor and Commissioners discussed with staff the reporting and operating systems of Tyler Technologies.

Commissioner Bauder moved to approve of Supplemental Agreement No. 1 in the amount of $10,400.00 with Tyler Technologies. Commissioner Preisinger seconded the motion and was unanimously approved.

Supplement No. 2 Contract No. 2014-30 Stove Factory Loft Parking Lot – Public Works Director Mike McDonald asked for approval of Supplemental Agreement No. 2 to the design contract with Wilson & Co. for construction services not included in the original contract on the Stove Factory Lofts Parking Lot Improvements in the amount of $6,280.00 for a total contract amount not to exceed $46,080.00. He highlighted:

- On June 17, 2014, the City Commission approved a contract with Wilson & Co. for the design of the Stove Factory Lofts Parking Lot to be located south of the main building and north of Three-Mile Creek.
- Kaaz Construction started work on the project on September 9, 2015 with completion to be in 60 days.
- During construction, questionable soil was excavated which will require sampling /testing to include documentation sent to KDHE and additional inspection by Wilson & Co. The additional specialized inspection services and testing is to satisfy the KDHE environmental requirements.

Commissioner Bauder moved to approve Supplemental Agreement No. 2 to the design contract with Wilson & Co. for construction services not included in the original contract on the Stove Factory Lofts Parking Lot Improvements in the amount of $6,280.00 for a total contract amount not to exceed $46,080.00. Commissioner Dedeke seconded the motion and was unanimously approved.

Change Order No. 1 Contract No. 2015-32 Stormwater Design on Ottawa – Public Works Director Mike McDonald asked for approval of Agreement Amendment No. 1 to the design contract with Water Resources Solutions for additional design services related to the additional storm water quality requirements recommended by the EPA and

not included in the original contract in the amount of $5,000.00 for a total contract amount not to exceed $43,600.00. He highlighted:

- May 12, 2015 the Commission approved a contract with Water Resources Solutions for the design of storm sewer improvements in the vicinity of Ottawa Street between 7th Street and Broadway.
- Project intended to improve water flow through the existing system and to reduce the potential for flooding of several homes and to be constructed in 2016.
- City staff has had extensive discussions with EPA regarding their concerns over how the City meets federal and state regulations for water quality in the storm sewer system. The EPA identified the opportunity for the city to increase water quality features in this project.
- City staff discussed alternatives with Don Baker of Water Resources and identified that improvements to inlets to better address water quality, improved stream bank restoration and construction of two bio-swales would adequately meet the expectations of EPA.
- The general nature of the improvements was agreed to by the EPA and Water Resources Solutions has proceeded with the design of the project. This agreement is related to the additional design time to include these water quality features.

Commissioner Preisinger moved to approve Agreement Amendment No. 1 to the design contract with Water Resources Solutions for additional design services related to the storm water quality requirements in the amount of $5,000.00 for a total contract amount not to exceed $43,600.00. Commissioner Dedeke seconded the motion and was unanimously approved.

Agreement with Exact Carnegie, LLC (Carnegie Arts Center) – City Manager Miller stated on June 23, 2015 the City Commission selected Exact Architects, LLC (Caleb Buland) for the acquisition, reuse, and historic preservation of the Carnegie Arts Center. Since that time City staff (Tom Dawson, Paul Kramer, Karen Logan and I) have drafted and negotiated a Real Estate Sales Agreement between the City and Exact Carnegie (the new LLC created by Mr. Buland) for this project. The final Real Estate Sales Agreement between the two parties in reference to the Carnegie Arts Center has been signed by Caleb Buland, Exact Carnegie, LLC. Listed below are several of the pertinent terms of the agreement:

- Section 3 (Conditions) — The City shall sell the property to Exact Carnegie for the sum of $100.
- Section 4 (Closing Date) — The closing of this real estate transaction shall take place 45 days after the effective date of the agreement. During the 45 day period Exact Carnegie must conduct their due diligence.
- Section 4 (Closing Date) — Exact Carnegie understand and agrees that the property is being sold to them by the City of Leavenworth "as is" (no warranty) and that Carnegie shall be responsible for all financial costs attributed to the building from construction and all other costs resulting from the purchase and project.
- Section 6 (Construction Requirements) — Within 6 months after the closing date Exact Carnegie shall commence construction to rehabilitate the inside of the building to include an art studio, art gallery, and studio lofts and diligently proceed with the work so as to obtain substantial completion within 12 months thereafter.
- Section 6 (Construction Requirements) — In the event Exact Carnegie is unable to obtain tax credit benefits and bank financing to precede with the project the property will revert back to the City of Leavenworth.
- Section 6 (Construction Requirements) — Permit fees required by the City of Leavenworth shall be capped at $2,000.
- Section 11 (Title Insurance) — The parties understand that closing of the contract includes that the property is subject to Leavenworth preservation regulations, zoning of the property, Exact Carnegie's receipt of financing, appropriate and required development approvals, including state and federal tax credits and neighborhood revitalization area rebates. The sidewalk program reimbursement at the City of Leavenworth's standard 50/50 cost share shall be included.
- Section 14(4) (Representations and Warranties) — Exact Carnegie or City of Leavenworth shall be in default under this contract if either fails to comply with any material covenant, agreement, or obligation within the time limits required by this contract.

- Bond & Interest – proposed amendment would increase 2015 expenditure authority by $107,835 to accommodate the debt issued for the Animal Control facility and for the financial software. The financial software debt was issued in late 2014 and was not included in the 2015 budget. The $54,845 of 2015 principal and interest for this debt will be accommodated by a transfer from the General Fund in that amount. Further, $39,945 in additional interest must be accommodated for the Animal Control facility debt; a transfer in that amount will be made from the Capitalized Interest project in the Capital Projects Fund. Finally, $13,045 of additional bond issuance costs will be accommodated with additional miscellaneous revenue.
- CIP Sales Tax Fund - This fund was newly created in 2015 to account for the receipt and distribution of proceeds from the one -half cent sales tax dedicated to capital projects. These funds were previously accounted for in the General Fund. This republication provides 2015 expenditure authority of $2,075,000 which is equal to the amount of sales tax proceeds expected in 2015.
- Tax Increment - Zeck Fund - This fund was newly created 2015 to account for the receipt and distribution of proceeds from various tax incentive programs related to the Zeck redevelopment district created in 2015. This republication provides 2015 expenditure authority of $235,000 which is equal to the amount of tax proceeds expected in 2015.
- Refuse Restricted – increase 2015 expenditure authority by $4,250 to accommodate additional costs for spending for an engineering design contract related to erosion control at the landfill. The expenditure will be supported by an increase in the transfer from the Refuse Fund in that amount.
- Commission and Public Comments:
    - No additional comments

Commissioner Dedeke moved to close the public hearing; seconded by Commissioner Raney and was unanimously approved.

Commissioner Bauder moved to approve the amendment to the 2015 Budget, as presented. Commissioner Dedeke seconded the motion and was unanimously approved.

General Items:

Capital Improvement Program (CIP) 2016-2020 – City Manager Miller stated the Capital Improvements Program (CIP) is a comprehensive plan outlining all capital improvements /infrastructure (streets, bridges, sidewalks, drainage, economic development, equipment, parks, buildings, debt service, etc.) proposed to be pursued by the City of Leavenworth for the next five (5) fiscal years, as constrained, of course, by limited financial resources. The proposed CIP for fiscal years 2016 to 2020 was presented by Paul Kramer, Assistant City Manager, and reviewed and discussed among City Staff and the City Commission at the study session of December 1, 2015. It was the consensus of the Commission to move the program forward for consideration for formal adoption at the next regular business meeting. There were no changes made to the CIP by the Commission at the study session.

Mr. Cameron representing the Kessler's, thanked the City Commission for the drainage project at 16th and Holman.

Mayor Weakley and Commissioners discussed items such as improvements to Fire Station No. 3; the funding of some of the drainage projects; industrial park; roads and infrastructure; and the significant stormwater projects.

Commissioner Dedeke moved to approve the Capital Improvement Program (CIP) 2016-2020. Commissioner Bauder seconded the motion and was unanimously approved.

Cancellation of Outstanding Checks Prior to 2014 – Assistant City Manager Kramer stated according to KSA 10-816a, checks that remain outstanding after a period of two years of issuance may be canceled by the City Commission. The City has a total of 33 checks in the amount of $2,271.99 that remain outstanding after two years of issuance. It is recommended that the City Commission cancel checks that remain outstanding after two years of issuance and that these balances — in accordance with KSA 10-816c revert back to the City Fund upon which such checks were drawn.

Commissioner Bauder moved to cancel the 33 checks in the amount of $2,271.99 that remain outstanding after two years of issuance. Commissioner Raney seconded the motion and was unanimously approved.

POLICY REPORT PWD NO. 16-12

REVIEW DRAFT
STORMWATER MANAGEMENT PLAN

February 2, 2016

Prepared by:

Michael G. McDonald, P.E.,
Director of Public Works

Submitted by:

Paul Kramer,
City Manager

ISSUE
Review Draft Stormwater Management Plan.

BACKGROUND
The City of Leavenworth is a Phase II City for stormwater matters and is regulated by KDHE. The City adopted a stormwater management plan in 2003 that described how the City would implement programs to protect water quality in the creeks and streams within the City, ultimately contributing to improved water quality of the Missouri and Mississippi Rivers. The original document is attached to this policy report.

The City has included comments in the annual reports on the progress of efforts described in the Stormwater Management Plan (SMP). City staff has stated that the annual report reflects the currently approved SMP and no revisions are necessary. KDHE and EPA have suggested that the City should update the SMP, and the current KDHE Permit requires that an updated plan be submitted to reflect changes as required in the current permit. This mostly relates to sampling of streams for water quality.

Staff has reviewed SMP documents prepared by similar cities in the area. There is no standard form for the report other than some limited guidance from KDHE on how the "Six Minimum Control Measures" should be addressed by the City (attached). These six measures are

1. Public Education and Outreach
2. Public Involvement and Participation
3. Illicit Discharge Detection and Elimination
4. Construction Site Stormwater Runoff and Control
5. Post-Construction Stormwater Management in New Development and Redevelopment Projects
6. Pollution Prevention/Good Housekeeping for Municipal Operations

These control measures are addressed by "Best Management Practices" (BMP). This is a broad term that generally relates to an expectation by regulatory agencies that the City will be following good practices for a municipality of our size, such as design standards, permit requirements, record keeping, inspection staff and more.

A draft of proposed revisions to the BMP section of the Stormwater Management Plan (SMP) is attached to this policy report. A narrative must also be drafted and attached to the final SMP.

This revised document is significantly more complex than the previous document, and addresses many specific activities currently performed by the City. It is important to note that these activities will need to be tracked and are expected to be reported each year in the annual report. The SMP prepared by the City of Olathe is attached as a reference.

ATTACHMENT

DRAFT changes for 2016 Stormwater Management Plan for BMP Activity
Draft BMP Activity Summary for the 2015 Annual Report
2003 Stormwater Management Plan
Kansas Six Minimum Control Measures Fact Sheet
Olathe Stormwater Management Plan

POLICY REPORT PWD NO. 16-10

REVIEW DRAFT KDHE ANNUAL REPORT FOR STORMWATER

February 2, 2016

Prepared by:

Michael G. McDonald, P.E.,
Director of Public Works

Submitted by:

Paul Kramer,
City Manager

ISSUE

Review draft annual report for stormwater activities

BACKGROUND

The City of Leavenworth is regulated by the Kansas Department of Health and Environment (KDHE) as a Phase II City for stormwater purposes. The City has been required to submit an annual report on stormwater activities every year since 2003. The report is to summarize the actions the City has taken the previous year to protect and enhance stormwater quality. The guidelines for the activities to be reported on are set by the Stormwater Management Plan (SMP) which was adopted in 2003.

The City has submitted reports in accordance with KDHE requirements in previous years. Recent interaction with KDHE and EPA suggest that the report be reviewed in a public forum rather than simply submitted by staff. The attached documents are a rough draft of the annual report. There is considerable additional information in the appendices that will be included when the report is submitted.

Staff is requesting comments and suggestions from the City Commission related to the content of the report. It is appropriate for the City Commission to seek input from the public on this matter as well.

Key narratives in the report are:

- Executive Summary
- Section F – Recordkeeping and Reporting
    - Summary for Items 1-5
    - Detailed reports on Item 3 (three reports)

Observations and comments on the "Six Minimum Control Measures" are in the tables

The report is due at KDHE on February 26th via digital delivery. It is anticipated that the final draft of the report will be submitted for review by the City Commission prior to that date.

ATTACHMENT

Draft report
KDHE Summary of Six Minimum Control Measures
KDHE Stormwater permit

POLICY REPORT PWD NO. 16-18
RESOLUTION NO. B-2131
2015 ANNUAL REPORT
STORMWATER

February 23, 2016

Prepared by:

Michael G. McDonald, P.E.,
Director of Public Works

Reviewed by:

Paul Kramer,
City Manager

ISSUE:
Approve Resolution No. B-2131 for the 2015 Annual Report for Stormwater.

RECOMMENDATION:
Staff recommends that the City Commission approve Resolution No. B-2131 for the 2015 Annual Report for Stormwater

BACKGROUND:
February 2, 2016 the City Commission reviewed the draft for the 2015 Annual Report for Stormwater that reflects the direction and efforts of the City for the Calendar year of 2015. There have been no significant changes to the report since the meeting

The City of Leavenworth is a Phase II City for stormwater matters and is regulated by Kansas Department of Health and Environment (KDHE). The City adopted a stormwater management plan in 2003 that described how the City would implement programs to protect water quality in the creeks and streams within the City, ultimately contributing to improved water quality of the Missouri and Mississippi Rivers.

The annual report reflects the efforts to comply with the currently approved Stormwater Management Program (SMP) and includes a variety of Best Management Practices (BMP) to implement the plan. The annual report will be submitted to the State of Kansas on or before February 26th 2016.

ATTACHMENTS:
Resolution No. B-2131

POLICY REPORT PWD NO. 16-19

APPROVE RESOLUTION B-2132 ADOPTING THE 2016 STORMWATER MANAGEMENT PROGRAM

February 23, 2016

Prepared by:

Michael G. McDonald, P.E.,
Director of Public Works

Reviewed by:

Paul Kramer,
City Manager

ISSUE

Consider approval of resolution B-2132 adopting the 2016 Stormwater Management Program.

RECOMMENDATION

Staff recommends that the City Commission approve Resolution B-2132 adopting the 2016 Stormwater Management Program.

BACKGROUND

On February 2, 2016 the City Commission reviewed the draft of the Stormwater Management Program (SMP). The SMP incorporates the KDHE "Six Minimum Control Measures" and identifies the Best Management Practices (BMP) to be used to improve water quality in the city. The program narrative is complete and attached to this policy report.

This document identifies a variety of activities the City performs. Staff will track these items and the results will be incorporated in the annual report each year.

ATTACHMENT

Resolutions B-2132
SMP Narrative

- Businesses
- Visitors
- Media Room
- Servicestoggle

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Featured Content

Stormwater Drains
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=1089
THREE STORM SEWER IMPROVEMENTS ARRA ECONOMIC STIMULUS PROJECTS KDOT NO. 52 U-2239-01 KDOT NO. 52 U-2240-01 KDOT NO. 52 U-2241-01 City Project NO. 2009-586 June 9, 2009 Mayor approved the City/KDOT (Ka
Score:100.00 Document Center

Stormwater and Drainage General Guidlines and permit links
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=3322
Score:90.21 Document Center

Stormwater Master Plan permit requirements for the City of Leavenworth
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=3168
City of Leavenworth requires a stormwater permit and a KDHE permit if an area of over .5 acre soil is disturbed.
Score:87.16 Document Center

2015 Storm Water Improvement Projects

http://www.lvks.org/egov/apps/document/center.egov?view=item;id=2949
Project No. 2013-652 5th Ave and Prospect Stormwater Improvement Status: Designed by Water Resources Solutions May 14, 2014 Construction bid opening and awarded to Linaweaver Construction May 27, 2014
Score:15.43 Document Center

Smoke Testing
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=113
The City of Leavenworth uses a process called "Smoke Testing" to detect inflow and infiltration (I/I) sources in sewer systems. Smoke canisters are generally used to generate smoke required for the te
Score:13.91 Document Center

Smoke Testing
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=113
The City of Leavenworth uses a process called "Smoke Testing" to detect inflow and infiltration (I/I) sources in sewer systems. Smoke canisters are generally used to generate smoke required for the te
Score:13.91 Document Center

Pipe repair project set to begin Dec. 15 at 22nd and Lecompton
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=3103
The City of Leavenworth is managing a project to fix stormwater pipes at South 22nd Street and Lecompton Road.
Score:12.44 Document Center

Notice to Contractors
http://www.lvks.org/department/division.php?structureid=140
NOTICE TO CONTRACTORS FOR CONSTRUCTION PROJECT Please check the plan room at the following link; [1]drexeltech.comfor current project information including plans, pre-con meeting, bid openings and bid
Score:7.91 Divisions

2015-05-12 City Commission Minutes
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=3214
2015-05-12 City Commission Minutes
Score:6.89 Document Center

2016-02-23 City Commission Agenda
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=3462
2016-02-23 City Commission Agenda
Score:6.83 Document Center

Sanitary Sewer Overflow Transparency Report
http://www.lvks.org/topic/index.php?topicid=22
Reports on overflows of the City's sewer lines.
Score:6.67 Topics

Rain Garden Guide
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=3230
JUNE 16, 2015 | Public Works Department Rain Garden Information provided from the Kansas State Research and Extension Office and the Environmental Protection Agency. Leavenworth K-State Research and E
Score:6.37 Document Center

Ottawa, 7th to Broadway Watershed Plan
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=3183
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Score:5.77 Document Center

Planned Unit Development Application (PUD)
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=345
Application to apply for a Planned Use Development.
Score:5.50 Document Center

Current Projects
http://www.lvks.org/department/division.php?structureid=138
The City of Leavenworth is currently working on many public improvement projects. Projects that are out for bid are [1]advertised in the Leavenworth Times and on Drexel Tehnologies under the planroom
Score:5.07 Divisions

2014-2018 Capital Improvements Program
http://www.lvks.org/egov/apps/document/center.egov?view=item;id=2839
tion the proposed 2014 - 2018 Capital Improvements Program (CIP) for the City of Leavenworth. The CIP is a comprehensive plan outlining all capital improve ments to be pursued by the City for the next
Score:1.80 Document Center

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Leavenworth, Kansas

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ta.usgs.gov/ks/nwis/uv/?cb_00065=on&format=gif_stats&site_no=0 | USGS Current Conditions fo...

ols Help

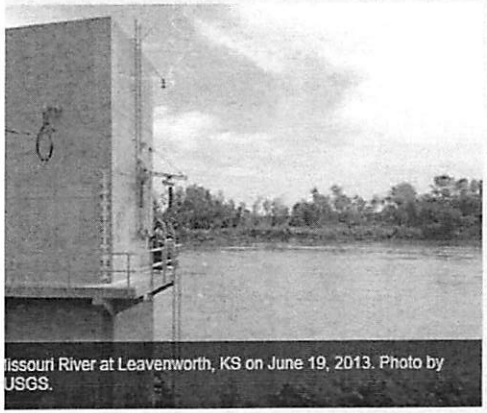
gage-height data may contain erroneous values, such as pressure sensors encased in ice, even if they are flagged as approved. These data are made available to the pub
efully screen the data and contact the USGS Kansas Water Science Center if they have questions or concerns about specific values.

75 MISSOURI R AT LEAVENWORTH, KS

ONAL DATA SUBJECT TO REVISION

Available data for this site | Time-series: Current/Historical Observations | GO

ide station-specific text



issouri River at Leavenworth, KS on June 19, 2013. Photo by USGS.

is operated by the USGS and funded by the USGS National Streamflow Information Program.

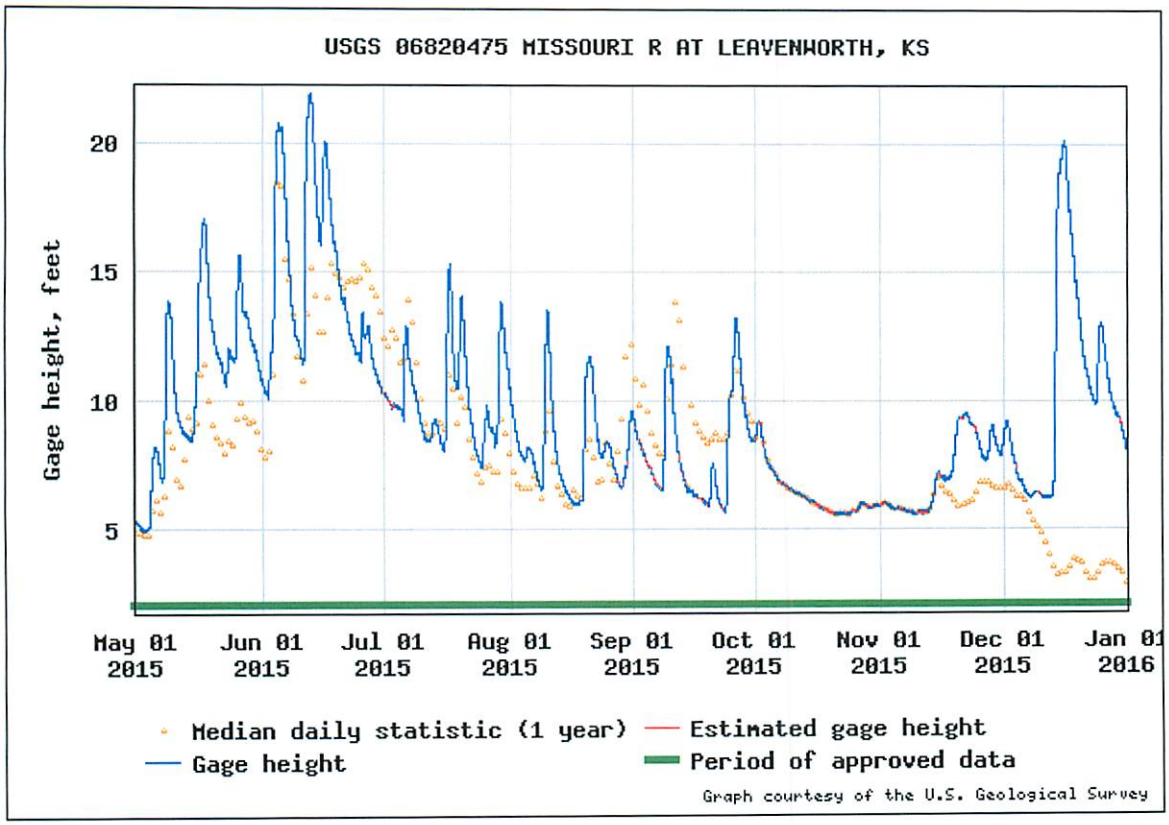
tional Weather Service flood stage for this site is 20.0 ft. (Forecast)

bscribe to USGS WaterAlert to receive push notifications when specific conditions occur at this site.

s not computed at this station.

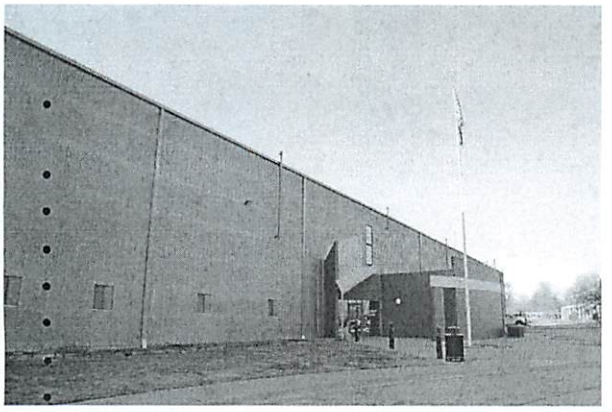
anaged by the Lawrence field office.

Available Parameters	Available Period	Output format	Days (244)	
able Parameters for this site		○ Graph ◉ Graph w/ stats	-- or --	GO
o height	2013-01-26 2016-01-26			


USGS 06820475 MISSOURI R AT LEAVENWORTH, KS
Gage height, feet
20
15
10
5
May 01 2015
Jun 01 2015
Jul 01 2015
Aug 01 2015
Sep 01 2015
Oct 01 2015
Nov 01 2015
Dec 01 2015
Jan 01 2016
Median daily statistic (1 year)
Estimated gage height
Gage height
Period of approved data
Graph courtesy of the U.S. Geological Survey

- Division Services
- Documents & Reports
- More Information
- News & Notices

Solid Waste



The City of Leavenworth Solid Waste Division operates several programs for the citizens of Leavenworth:

Curbside Trash Collection Service of City Refuse Weekly
Recycling Center
E-Waste Recycling
Brush Site
Large Item (Bulk) Pick-Up
Trash Bag Delivery
Household Hazardous Waste
Solid Waste Printable Flyer

TRASH PICKUP

The City of Leavenworth provides residential pick-up by City crews once each week. The City does not work on New Year's Day, President's Day, Martin Luther King Day, Memorial Day, July 4th, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day. When one of these holidays occurs between Monday and Thursday, the normal trash collection day will move one day later. The charge for the trash service appears on your water bill each month. Please review your water bill to ensure you are paying for the appropriate number of units. Should you have any questions, please call our office at 682-0650, week days from 7:30 A.M. to 4 P.M.

Please place refuse in disposable bags (not trash cans) securely tied and set next to the curb by 7 a.m. on your collection day. Trash cans are not allowed on the curb. Trash bags will not be picked up out of trash cans. If you have a container to throw away, please put a note on it that says "throw away" and make sure it weighs less than 60 pounds. City of Leavenworth Ordinance requires that you do not place your refuse out at the curbside more than 24 hours before your regular pick up day, as occasionally there are dogs and other small animals at large which might tear up the bags. You may spray bleach or ammonia on the INSIDE of the trash bags to prevent animals from tearing into the bags.

Trash must (by ordinance) be on the curb by 7 a.m. of your collection day to ensure pick up on that day.

Garbage and household trash cannot be left in the yard and must be disposed of properly. This includes auto parts, appliance, furniture, building materials, tires, cardboard, plastics, or any other materials. Tree trimming and fallen limbs must be disposed of within a week. Trash cannot be set out prior to 24 hours in advance of your regular trash day.

DISPOSAL OF SYRINGES, BROKEN GLASS OR OTHER SHARP OBJECTS:

Replace the protective cover on syringes after use and place them or other sharp items in a sealed box or can. Mark the container ***"Sharp Objects"*** *and place beside the refuse (not in a bag) at the curb for collection. You may also call the Service Center (682-0650) the day prior to your collection and we will post a notice for the crews collecting your address.*

Brush, tree limbs, wood and carpet will be collected with your refuse; however, these items must be cut into five foot lengths and either boxed, bagged or tied into bundles of less than 60 pounds. The City will collect up

to five automobile tires per household (maximum ten tires per year) when left at the curb. Cement or bricks are not accepted.

BOXES: If you have hired a moving company you may ask them if they will return to pick up the packing boxes, if not, the city will pick them up with your regular refuse; however, we ask that you break down as many boxes as possible and tie them into bundles.

Almost everything, except hazardous materials and large appliances will be picked up with your regular refuse. If you have a large appliance you wish to discard, call the Municipal Service Center at 682-0650 by 4:00 p.m. Thursday and we will pick it up on Friday. If you have household chemicals or cans of paint to dispose of, you may call the County Transfer Station at 727-2858 to verify their guidelines.

BAGS: A package of 50 bags are furnished and delivered to your home twice a year (usually the last Saturday of March and September.) If you should run out of bags between deliveries, you may use comparable bags from any store, or you can purchase bags at the City Clerk's Office, City Hall, 100 N. 5th Street, at a cost of $6.00 for a package of 50 (30 gallon) bags.

FREE SATURDAYS

On the FIRST Saturday of each month, the City of Leavenworth offers "FREE Saturdays." This event is an excellent opportunity for residents to utilize the City's services at no charge. On FREE Saturdays the Brush Site is open from 8:00 am to 4:00 pm. At the Recycling Center, dumpsters are provided for residents at the north entrance (Pennsylvania and Lawrence) to drop off materials such as large appliances, furniture, trash and tires, between the hours of 8:30 am to 12:30 pm,. The Recycling Center is always free and is open normal hours from 8:30 am to 12:30 pm for drop off of recyclable items. Any time the FREE First Saturday falls on a holiday it will be held on the 2nd Saturday of that month.

LARGE ITEM PICK-UP

The City of Leavenworth has 2 separate pick-ups for large items. On your regular trash day the City will pick up most large non-metal items such as furniture, hide-a-beds, television consoles, mattresses & box springs and also small metal items such as bicycles, small grills, and push mowers that are empty of fluids. Some of these items will be thrown in the truck by the collection crews and some of them will be collected later by a grapple truck. The crew will note any addresses where they leave a non-metal bulk item and it will be collected later that same day or no later than the end of the next business day by a grapple truck. You can call 682-0650 ahead of time and schedule your pick-up although it is not necessary.

The City collects all metal appliances and other large metal items such as riding lawn mowers or metal desks on Fridays. You must call 682-0650 no later than 3:00 p.m. on Thursdays to get on the Friday list. Your large metal items must be on the curb by 7:00 a.m. Friday morning. All items must by empty of debris such as food or clothing , any liquids must be drained, doors must be removed or securely taped shut, and tall items must be laid down flat on the door.

For both types of collection, please make sure the items placed on the curb are away from any vehicles parked on the street and ensure that adequate space for our equipment to pick up the items is available. Remember, no matter what item is placed on the curb for collection, nothing is to be out more than 24 hours prior to the collection day per City code.

FREE RECYCLING CENTER

The Recycle Center, at Lawrence and Halderman Streets, is open to the public all year and accepts the following items:

Tin & aluminum cans

- Car Batteries & Rechargeable Batteries (i.e. 9-volt batteries and batteries from hand tools)

**Battery sizes D, C, A, AA and AAA batteries are accepted at the Leavenworth County Transfer Station on Gilman Rd in Lansing.

- E-Waste
- Used Automotive Oil
- Plastics—We cannot accept motor oil bottles, pesticide/herbicide bottles, automotive product bottles (brake fluid, windshield washer fluid, etc), plastic bags, plastic toys, expanded #6 polystyrene materials (packing materials such as peanuts or packaging sheets/blocks), PVC pipe or plastic sheet materials.
- Glass—clear, brown or green
- Paper products (cardboard, magazines, paper, etc.)

We ask that you remove all lids and neck rings and clean and rinse any cans, plastic bottles and glass items.

The City of Leavenworth is the first city in Kansas to offer e-waste recycling. Citizens can drop off materials such as TV's, VCRs, DVD's, old cell phones, computers and video players at the Recycling Center near the Municipal Service Center.

The Recycling Center is open** Tuesday through Saturday **8:30 a.m. to 12:30 p.m.

The Recycling Center is always free.

Commercially generated materials are not accepted at the Recycling Center, however commercial contractors can contact the Leavenworth County Recycling Facility and Transfer Station located at 13523 Gilman Rd in Lansing.

Look for information in the City's Media Room regarding other changes in trash pickup or watch Time Warner Cable Channel 2.

- Home
- Departments
- Residents
- Businesses
- Visitors
- Media Room
- Services

- Accessibility Statement
- Privacy Policy
- Terms Of Use
- RSS

BRUSH SITE
1803 S 2ND Street

- The City of Leavenworth operates a Brush Site for residents to drop off organic materials, accepting tree limbs, grass clippings, straw, hay, leaves and other organic materials-general yard waste. Trees must be free of dirt & less than 12" in diameter. .
- The Brush Site supplies free mulch, compost, wood chips & firewood to residents. To pick up mulch, wood chips & compost, residents need to arrive at the Brush Site in a vehicle that can support the weight of the mulch or compost & the vehicle must have sides. The staff will use a Bobcat to place the materials requested in your vehicle once a waiver is signed releasing the City of Leavenworth of any liability. Residents are welcome to load their vehicles by hand with their own tools.
- Leaves and grass clippings are always accepted free-of-charge. All other organic materials are accepted as shown below:

BRUSH SITE FEES

Car or Van	$2.00
Pickup Truck	$5.00
Flatbed/Single Axle Dump Truck	$15.00
Dual Axle Dump Truck/Chipper Box	$25.00
Trailers:	
1' to 8'	$5.00
8' to 16'	$10.00
Over 16'	$10.00
(plus $1.00 for each foot over 16')	

- On the 1st Saturday of each month, the Brush Site is free to City of Leavenworth residents. Commercial contractors still pay.
- OPEN: March-November Tuesday-Saturday 8:00 AM-4:00PM.
  Last load accepted at 3:50 PM
- CLOSED WEEKDAYS: December-February OPEN On Saturdays 8:00AM—4:00PM
- OPEN regular hours two weeks following Christmas for free Christmas tree recycling

Recycling Center One Block West of Municipal Service Center

The City of Leavenworth operates a Recycling Center one block west of the Municipal Service Center, 790 Thornton, at the intersection of Lawrence and Halderman Streets.

E-Waste Recycling

The City of Leavenworth is the first city in Kansas to offer e-waste recycling. Citizens can drop off materials such as TV's, VCRs, DVD's, old cell phones, computers and video players at the Recycling Center near the Municipal Service Center.

The Recycling Center is open Tuesday through Saturday 8:30 a.m. to 12:30 p.m.

The Recycling Center is always free. Commercially generated materials are not accepted at the Recycling Center, however commercial contractors can contact the Leavenworth County Recycling Facility and Transfer Station located at 13523 Gilman Rd in Lansing.

SIGN UP FOR TRASH DELAY NOTIFICATIONS
VISIT OUR WEBSITE
www.lvks.org

PROOF OF RESIDENCY:

1. VALID DRIVER'S LICENSE WITH LEAVENWORTH ADDRESS
2. FOR OUT-OF-STATE LICENSE PLEASE BRING CURRENT UTILITY BILL

County residents and Commercial contractors working in the County, can dispose of brush at the Leavenworth County Transfer Station, 13523 Gilman Rd in Lansing.

The Recycle Center accepts the following items:

- ***Tin & aluminum cans***
- ***Car Batteries***
- ***Rechargeable Batteries*** (i.e. 9-volt batteries and batteries from hand tools)

**Battery sizes D, C, A, AA and AAA batteries are accepted at the Leavenworth County Transfer Station on Gilman Rd in Lansing.

- ***E-Waste***—electronic waste
- ***Used Automotive Oil***
- ***Plastics***– BUT NO: motor oil bottles, pesticide/herbicide bottles, automotive product bottles (brake fluid, windshield washer fluid, etc), plastic bags, plastic toys, expanded #6 polystyrene materials (packing materials such as peanuts or packaging sheets/blocks), PVC pipe or plastic sheet materials.
- ***Glass***—clear, brown or green
- ***Paper products*** (cardboard, magazines, paper, etc.)

We ask that you remove all lids and neck rings and clean and rinse any cans, plastic bottles and glass items.

Hazardous Waste, Paint and Propane tanks are accepted at the County Transfer Station. For additional information about the **County Transfer Station**, please call 913/727-2858 or 913/727-3000. The County Transfer Station's operational hours are Tues. ~ Fri. 8 am to 4 pm and Sat. 8 am to 2 pm.

CITY OF LEAVENWORTH

Solid Waste Services

Trash Services, Recycling Center, Brush Site, & Free Saturday Program

Pick up day will be:
Monday / Tuesday / Wednesday /Thursday
Bags must be on curb by 7:00 A.M.

City of Leavenworth Solid Waste Services

Weekly Garbage & Trash Pick Up

Residential pick-up by City crews is provided once each week. Garbage and household trash cannot be left in the yard and must be disposed of properly. This includes auto parts, appliance, furniture, building materials, tires, cardboard, plastics, or any other materials. Tree trimming and fallen limbs must be disposed of within a week.

Trash cannot be set out prior to 24 hours in advance of your regular trash day.

BAGS ONLY

Please place refuse in disposable bags (not trash cans) securely tied and set next to the curb by 7:00 a.m. on your collection day to ensure pick up on that day.

Trash cans are not allowed on the curb. Trash bags will not be picked up out of trash cans. If you have a container to throw away, please put a note on it that says "throw away" and make sure it weighs less than 60 pounds. Occasionally there may be dogs and other small animals at large which might tear up the bags. You may spray bleach or ammonia on the inside of the trash bags to prevent animals from tearing into the bags.

DISPOSAL OF SYRINGES, BROKEN GLASS OR OTHER SHARP OBJECTS:

Replace the protective cover on syringes after use and place them or other sharp items in a sealed box or can. Mark the container ***"Sharp Objects"*** *and place beside the refuse (not in a bag) at the curb for collection. You may also call the Service Center the day prior to your collection and we will post a notice for the crews collecting your address.*

OBSERVED HOLIDAYS

City offices are closed and trash is delayed on the following holidays:

New Year's Day, President's Day, Martin Luther King Jr Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day and Christmas Day.

When one of these holidays occurs Monday, Tuesday, Wednesday or Thursday, the normal trash collection day will move one day later. The charge for the trash service appears on your water bill each month. Please review your water bill to ensure you are paying for the appropriate number of units.

BUNDLED ITEMS: Brush, tree limbs, wood and carpet will be collected with your refuse; however, these items must be cut into five foot lengths and either boxed, bagged or tied into bundles of less than 60 pounds. The City will collect up to five automobile tires per household (maximum ten tires per year) when left at the curb.

BOXES: If you have hired a moving company you may ask them if they will return to pick up the packing boxes, if not, the city will pick them up with your regular refuse; however, we ask that you break down as many boxes as possible and tie them into bundles.

Cement or bricks—Hazardous materials Household chemicals: Cannot be picked up curbside—Call the County Transfer Station at 727-2858 for disposal guidelines.

BAGS: A package of 50 bags are furnished and delivered to your home twice a year (usually the last Saturday of March and September). If you should run out of bags between deliveries, you may use comparable bags from any store, or you can purchase bags at the City Clerk's Office, City Hall, 100 N. 5th Street, at a cost of $6.00 for a package of 50 (30 gallon) bags.

BULK ITEM PICK UP on regular collection day —The City of Leavenworth will pick up most furniture items, TV's, mattresses and box springs with the regular trash.

SPECIAL PICKUP BY APPOINT—FRIDAYS ONLY—Large metal items such as appliances, metal desks and miscellaneous heavy metal items will be picked up on Fridays. To schedule a pick up, please call the Service Center no later than 3:00 pm on Thursday for pick up on Friday.

FREE SATURDAY

On the FIRST Saturday of each month, the City of Leavenworth offers "FREE Saturdays." This event is an excellent opportunity for residents to utilize the City's services at no charge. On FREE Saturdays the Brush Site is open from 8:00 am to 4:00 pm. At the Recycling Center, dumpsters are provided for residents at the north entrance (Pennsylvania and Lawrence) to drop off materials such as large appliances, furniture, trash and tires, between the hours of 8:30 am to 12:30 pm,. The Recycling Center is always free and is open normal hours from 8:30 am to 12:30 pm for drop off of recyclable items. Any time the FREE First Saturday falls on a holiday it will be held on the 2nd Saturday of that month.

THE FOLLOWING ARE IMPORTANT PHONE NUMBERS TO REMEMBER:

EMERGENCY POLICE/FIRE/EMERGENCY MEDICAL SERVICES	911
POLICE ADMINISTRATION	651-2260
CITY HALL	682-9201
FIRE ADMINISTRATION	682-3346
MUNICIPAL SERVICE CENTER (SOLID WASTE & STREET)	*682-0650*
PARKS AND COMMUNITY ACTIVITIES	651-2203
ANIMAL CONTROL	682-0268
WATER POLLUTION CONTROL	682-1090

(For sewer line problems this number is answered 7 days a week, 24 hours a day)

For questions regarding your weekly trash pick up, call the Municipal Service Center at 913/682-0650

VISIT OUR WEBSITE
www.lvks.org
SIGN UP FOR TRASH DELAY NOTIFICATIONS

Claudia Larkin

om: Melissa Bower
nt: Monday, January 04, 2016 9:16 AM
To: Claudia Larkin
Subject: Stormwater report

One more thing for the Stormwater Report

http://www.kshb.com/lifestyle/holiday/after-rockin-around-the-holiday-tree-recycle-it

After rockin' around the holiday tree, recycle it!

2:49 PM, Dec 25, 2015
1:49 PM, Dec 29, 2015

SHOW CAPTION

KANSAS CITY, Mo. - Residents in the Kansas City metro area can recycle their holiday trees, wreaths and garlands at several curbside pickup or drop-off locations.

Holiday trees and greenery is banned from landfills in Missouri. Kansas landfills discourage them. Area communities are offering residents several ways to recycle natural decorations for good use -- trail surface, landscaping and fish habitat in local lakes.

Visit **www.RecycleSpot.org** or call 816-474-8326 for a list of locations throughout the metro area that will recycle your trees and greenery. Most services are free.

Pick-Up Services

Before placing trees and greenery at the curb, check with your trash hauler to find out if they offer curbside service and if there is a fee. Other area pickup services include:

- **Compost Connection Inc.** — 816-761-8300.
- **Lawn-Corps Curbside Recycling** — 816-761-3046,*Missouri residents only.*
- **Leavenworth** — 913-682-0650, *Leavenworth residents only.*
- **Lenexa** — 913-982-3900, www.troop136.org , *Lenexa residents only.*
- **Merriam** — 913-322-5570, *Merriam residents only.*
- **Nature's Rubbish** — 816-444-4050; *Missouri residents only.*
- **North Kansas City** — 816-274-6004, *North Kansas City residents only.*
- **Olathe** — 913-971-9311, *Olathe residents only.*
- **Sugar Creek** — 816-252-4413, *Sugar Creek residents only.*

Drop-Off Locations

- Visitors
- Media Room
- Servicestoggle

Contact Us

100 N. 5th St.
Leavenworth, KS 66048
Get Directions

- Phone: (913) 682-9201

Rain Garden Guide

JUNE 16, 2015 | Public Works Department

Rain Garden

Information provided from the Kansas State Research and Extension Office and the Environmental Protection Agency. Leavenworth K-State Research and Extension Office, 613 Holiday Plaza; Lansing, KS 66043 (913) 364-5700 can provide additional help with any of the following information.

Kansas City project
http://www.lowimpactdevelopment.org/raingarden_design/downloads/10KRG_BrochureKansasCitySm.pdf

https://www.bridgingthegap.org/lawn-garden/rain-gardens/

Hutchinson: http://www.hutchgov.com/egov/docs/1274904364607.htm

What is a Rain Garden?

Rain Gardens reduce local stormwater runoff and create a beautiful nature area for you to enjoy. They allow stormwater to soak into the ground instead of going into Leavenworth storm drains. Excess water runoff can also cause erosion, contribute to pollution and flooding. A rain garden should be

planted in areas to allow rainwater runoff from areas that don't drain, such as roofs, driveways, walkways, and compacted lawn areas.

Rain Gardens can be as simple as digging a small depression and planting native grasses or complex as you would like. The goal is to help to pool and slow rainwater. Most lawns do not absorb water as readily as other native plants and require chemical treatments and extra water to look good. Below are some FAQ for your consideration to make your rain garden as effective as possible. Another great resource for Rain Gardening can be found at: Kansas State University's Rain Garden Project.

Q: How do I choose the location of my Rain Garden?

Consider the drainage patterns of the area and how you can most effectively capture and filter the most rainwater before it reaches storm drains.

Install your rain garden...

- at the end of the roof gutter to capture run off from the roof.
- along the front walk or driveway to keep runoff from traveling down the sidewalk/driveway and into the storm sewer.
- in places to minimize the amount of area that you have to mow.
- In places where runoff can be channeled away from your house to avoid basement flooding problems, preferably 10 feet from the house.
- in neighborhood common areas where it can most effectively keep runoff from entering the storm sewer.
- It is better to put the garden in full or partial sun and not under a big tree.
- A flatter area that will require less digging.

Q: How do I build the rain garden?

(NOTE: Before you start digging call 811 or 1-800-344-7233 to locate any buried utilities.)

The best time to build a rain garden is in the spring because the plants are more likely to thrive. They can be planted at anytime however, as long as they receive adequate water. Start by laying string around the perimeter of the garden. Dig sloping down towards the edge of the garden farthest from the runoff source, so that edge is the desired depth. While digging the rain garden heap the soil around the 3 edges (not on the one closest to the downspout or runoff) to create a low wall (berm) around the garden that will hold the water during a storm. Using stakes can help you get the correct depth. Shape the berm into a smooth very compacted ridge that tapers into the existing lawn area to prevent erosion. Rocks, bricks or other edging can also be used to create your berm. **You should consider your location and the flow patterns that exist not to negatively impact surrounding areas.**

Q: What type of soil do I have for my Rain Garden site?

Clay soils take longer to absorb water, so rain gardens in clay soil must be bigger than rain gardens in sandy or silt soils. If the soil feels very gritty and coarse, you probably have sandy soil. If your soil is smooth but not sticky, you have silt soil. If it is very sticky and clumpy, you probably have clay soil.

Q: How long and how wide should my Rain Garden be?
The garden typically should be twice as long as it is wide and the length of the garden should be perpendicular

to the downspout so the garden catches the most water possible. Runoff should flow out of the downspout and spread evenly across the entire length of the garden. The rain garden must be as level as possible so water doesn't pool at one end and spill over before it has a chance to infiltrate. This should be adapted based on your location and the flow patterns that exist. Think about how your rain garden will catch water.

Q: How big should my Rain Garden be?

You should keep the size reasonable for your yard size and budget. Any water that seeps into the ground instead of running into a storm sewer helps water quality. A rain garden of any size has a positive impact.

If you want to get technical, (From the EPA Watershed)

1. You should determine the drainage area, find the area of the house foot print (length x width) then divide it by the number of gutter downspouts you have attached to the house. If the rain garden is to be situated further than 30 feet from the house add in the area of lawn between the house and the garden.
2. The next step is to find the infiltration rate. Dig a hole 8 inches deep and 8 inches wide, fill it with water and let it drain once. Once it is fully drained, fill it with water again and measure how quickly it drains. If it drains 3 inches in 6 hours your infiltration rate is 0.5 inches per hour. Multiply this number by 48 to find your infiltration rate in inches per 48 hour period. (24 inches per 48 hour period, for this example) If it does not drain completely in 48 hours consider another location.
3. Divide the drainage area by this infiltration rate. This number is the recommended rain garden area to collect the most runoff. This is only a guideline not a rule.

Q: How deep should my Rain Garden be?

A typical rain garden is between four and eight inches deep depending on the slope of your lawn. A rain garden too deep might pool water too long and a garden too shallow will require a larger area to provide enough space.

If you want to get technical:

- If the slope of your lawn is less than 4%, it is easiest to build a 3-by-5 inch deep rain garden.
- If the slope is between 5 and 7%, it is easiest to build one 6-by-7 inches deep.
- If the slope is between 8 and 12%, it is easiest to build one 8 inches deep.
- If the slope is greater than 12%, consider another location.

Q: What plants should be used?

Choose native plants with long, well established root systems for the garden that will have the most effective absorption and will require the least maintenance. The website www.kswildflower.org is a great resource for Kansas wildflower information, ideas and pictures.

- Swamp Milkweed (full to partial sun)
- Wild Blue Flag Iris (full to partial sun)
- Hop Sedge (full to partial shade)
- Great Blue Lobelia (full to partial sun
- Eastern Purple Coneflower (Echinahea)
- Black Eyed Susan (full sun)

Q: How do I plant and maintain the Rain Garden?

Lay plants out as planned. Space as plant specific instructions indicate. Pack the soil around the plant to remove air pockets. Apply mulch 2 inches thick over entire bed but avoid burying the plants.

Mulching will not usually be necessary after the second growing season unless this is the desired look you want.

Be sure to label the plants so that you can identify them from the weeds as you weed the garden.

After the native plants are established they should out-compete the weeds and weeding will be less necessary.

Immediately after planting, water twice a week during periods of low rainfall. As a rule the plants will need one inch of water per week. Once the plants are established you should not have to water your rain garden.

Leavenworth, Kansas

100 N. 5th St.
Leavenworth, KS 66048
(913) 682-9201

Contact Us

100 N. 5th St.
Leavenworth, KS 66048
Get Directions

- Phone: (913) 364-5804

Request to plant a tree in a park?

Email **Phone:** 913-651-2203

What is the Legacy Tree Program?

Leavenworth is fortunate to have approximately 400 acres of park land through-out the city. One of the greatest assets of any park is its trees, which provide not only beauty but shade and environmental benefits. Many of the trees in our parks are old and are beginning to die or show signs of decay. While much of the funding for necessary pruning and replanting is provided through the Parks Department budget, there is never enough money to accomplish everything that needs to be done. Thus, there is a continuing need for supplemental funding in the tree planting and maintenance budget.

For this reason, the Leavenworth Parks & Recreation Department has established the *Legacy Tree Program*. Through this program, old trees will be replaced and new areas rejuvenated. All contributions to this program are placed in the Park Special Gift Fund and are only used for the planting of Legacy trees. *Legacy Tree Program* supporters will be able to see their contributions live on in each tree that is planted--a gift that keeps giving!

The *Legacy Tree Program* makes it possible to help preserve the rich history of trees in our parks while commemorating either a special person or event.

For a $200 fee, the Parks Department will order, plant, and maintain your tree and order and install the commemorative plaque. Also included is one re-planting if the tree dies.

To Make a Request:

1. Complete a *Legacy Tree Program* Request Form and submit the form and $200 payment to the *Leavenworth Parks & Recreation Department* (Riverfront Community Center lower level), *123 S. Esplanade, Leavenworth, Kansas, 66048.*

2. A maximum of 40 characters and spaces (not including the tree species, which must appear on the first line) may be printed on the plaque.

3. Parks & Recreation staff will be happy to help you select planting locations and tree species. If you have any questions, please call *(913) 651-2203* for assistance.

Contact Information

If you have any questions regarding this service, please contact Marcella Williams.

- Home
- Departments
- Residents
- Businesses
- Visitors
- Media Room
- Services

- Accessibility Statement
- Privacy Policy
- Terms Of Use
- RSS

Leavenworth, Kansas

100 N. 5th St.
Leavenworth, KS 66048
(913) 682-9201

Volunteer

Help the City of Leavenworth meet its goal to pick up all the trash throughout the City in one day. The City will provide gloves, trash bags, and assign each volunteer group an area to pick up trash. Volunteers will receive a T-shirt and one-day pool pass to Wollman Aquatic Center.

Fill out attached form and return to Melissa Bower, 913-680-2610 or mbower@firstcity.org by March 20.

JOIN US for coffee, hot chocolate and doughnuts at the kickoff,
8:30 a.m. Saturday, April 18 at Warren Middle School, 3501 New Lawrence Road Leavenworth, Kan.

Leavenworth Citywide Spring Cleanup Saturday, April 18

Shred

Bring your bags of unwanted paper for free paper shredding offered by Citizens Savings & Loan and the City of Leavenworth. Shredding will take place:

10 a.m. to 12:45 p.m. at Citizens Savings & Loan, 5151 S. Fourth
1 - 2 p.m. at Citizens Savings and Loan, 312 S. Fifth St.
Saturday, April 18

Household

Residents may dispose of items such as tires, furniture, metals, mattresses, appliances and household hazardous waste such as household cleaners, varnish, paint, paint thinners, pesticides, pool chemicals and automotive products.

Items may be dropped off behind the Service Center, Pennsylvania & Lawrence Avenues.
HOURS: 8 a.m. to noon on Saturday, April 18

Recycle

Visit the City's recycling center to recycle:

- *Tin & aluminum cans*
- *Car Batteries & Rechargeable Batteries*
- *E-Waste*
- *Used Automotive Oil*
- *Plastics*
- *Glass — clear, brown or green*
- *Paper products (cardboard, magazines, paper, etc.)*

Residents should remove all lids and neck rings and clean and rinse any cans, plastic bottles and glass items.

Lawrence and Halderman Road (one block west of Leavenworth High School)
Open 8 a.m. to 4 p.m. on Saturday, April 18

Yard Waste

The Brush Site will be available for residents to drop off organic materials. The Brush Site accepts tree limbs, grass clippings, straw, hay, leaves and other organic materials from general yard waste. Compost and mulch are available for residents.

1803 S. 2nd St.
Open 8 a.m. to 3:50 p.m. on Saturday, April 18

Spring CLEAN-UP

Dear Leavenworth residents and businesses,

We are still seeking volunteers to help us meet our goal of cleaning up the entire City of Leavenworth in one day. The 2015 Leavenworth city-wide Spring Cleanup event will soon be upon us.

HERE'S HOW YOU CAN HELP:

1) Volunteer: This year's event begins with a kick-off 8:30 a.m. April 18 at Warren Middle School, 3501 New Lawrence Road. Volunteers will then move to their assigned areas to pick up trash. We hope you can join us for this event. Volunteers who signed up in advance will receive a free T-shirt; free one-day pass to Wollman Aquatic Center; gloves and trash bags; free doughnuts, juice and coffee; a map and instructions on how to proceed with the clean-up. Each volunteer group is assigned a grid on the Leavenworth city map. They are responsible for picking up trash in this area. Please visit our website www.lvks.org and fill out a volunteer form by March 20 to participate.

2) Recycle: Visit the City's recycling Center, one block west of Leavenworth High School at Lawrence and Halderman road, between 8 a.m. and 4 p.m. April 18. We recycle tin, aluminum, car batteries, rechargeable batteries, e-waste such as computers, used automotive oil, plastics, glass, paper, cardboard, magazines, phone books, etc.

3) Shred: Bring your bags of unwanted paper for free paper shredding offered by Citizens Savings & Loan and the City of Leavenworth. Shredding will take place 10 a.m. to 12:45 p.m. at Citizens Savings and Loan, 5151 S. Fourth, and 1-2 p.m. at Citizens Savings and Loan, 312 S. Fifth St.

4) Household Waste: Items such as tires, furniture, metals, mattresses, appliances can be dropped off behind the Service Center, Pennsylvania & Lawrence Avenues, from 8 a.m. to noon Saturday April 18. We'll also accept household hazardous waste items that should not be dumped down the drain. This includes cleaners, varnish, paint, paint thinners, pesticides, pool chemicals and automotive chemicals.

5) Yard Waste: The brush site, 1803 S. 2nd St. will be available 8 a.m. to 3:50 p.m. for residents to drop off items like tree limbs, grass clippings, hay and leaves. Compost and mulch are available for residents.

The Citywide Cleanup volunteers truly make a difference. Each year our Solid Waste Division reports taking several tons of trash and recycling off City streets because of your efforts. Thank you for participating!

Melissa Bower, Public Information Officer,
City of Leavenworth

Thanks for taking pride in your community!

We are proud once again to help sponsor the City of Leavenworth's Annual Spring Clean-Up!

This is our community and it's important for us all to take pride in its appearance.

If you haven't already, please volunteer to be a part of this year's Spring Clean-Up by gathering a group of co-workers, friends, family or other volunteers and contact Melissa Bower at 913-680-2610! Your help picking up trash, bottles, cans, etc., will make a big difference in keeping this community clean.

In addition, Citizens Savings and Loan will host free shredding at our two locations on April 18th. Shredding will take place from 10 a.m. to 12:45 p.m. at 5151 S. 4th St. and from 1 p.m. to 2 p.m. at 312 S. 5th St., so clean out your unwanted documents, tax returns or cancelled checks and unload your boxes at these locations.

It is our hope that this community spirit will spread and our efforts will prevail throughout every day of the year, not just this one day!

This is our City - Let's help keep it clean!

Thanks for your involvement.

Ron Romig, President

Help Keep Leavenworth Clean

Join us on
April 18th, 2015

Brochure sponsored by:

Citizens
SAVINGS & LOAN ASSOCIATION, FSB
MEMBER FDIC

City of Leavenworth

Code Enforcement

The City of Leavenworth Planning and Zoning Office is responsible for overseeing that residents in the city comply with the current housing and property maintenance codes.

The City of Leavenworth has three, full-time code enforcement officers. To report problems with private property overgrown grass, weeds and other nuisances or other code violations, phone (913) 680-2626 or send an email to the Code Enforcement Office at ReportViolations@firstcity.org. Also, don't forget that you can now report a code violation online. Visit www.lvks.org for this very easy options!!!

What are the most common code violations?

These are guidelines only. For actual regulations, see the Leavenworth Municipal Code or the Property Maintenance Code.

Yard Maintenance

Grass and weeds must be kept shorter than 12-inches. All ground covers and vines shall be maintained to discourage undesirable creatures. Any noxious weeds are to be removed. Owners/occupants of properties abutting sidewalks, streets or public property shall maintain all vegetation so it does not interfere with travel or sight. Special care should be taken at intersections. Approximately 30% of overall code violations stem from weeds and tall grass violations. The City Commission approved a regulation that allows the City to charge an additional administration penalty per parcel of private land mowed; this is charged per mowing in addition to the cost of mowing.

Vehicles

All vehicles must be operable and legally licensed or stored in an enclosed structure. All cars not enclosed must be parked in an approved driveway or parking area. Vehicles may not be parked on any lawn/yard area. All vehicle parking spaces shall be paved. Gravel is not allowed.

RVs, Boats, Trailers

Recreational equipment shall not be parked in the front or side yard for more than 48 hours in any month. RVs and Trailers may not be used for living space. All such equipment must be located in an approved parking space or drive, not in the yard.

Garbage & Trash

Refuse, rubbish, garbage, and household trash cannot be left in the yard and must be disposed of properly. This includes auto parts, appliances, furniture, building materials, tires, cardboard, plastics, or any other collected materials. Tree trimming and fallen limbs must be disposed of within a week. Residential trash cannot be placed curbside until the evening, prior to scheduled pickup. It is unlawful to burn garbage within the city.

For more information on trash service, the brush site or for special pick ups of larger items, furniture or appliances, please contact the Service Center at 682-0650.

Open Storage

Property may not be parked, stored, or left inoperable in view of the public or neighboring properties. This includes abandoned, discarded or unused objects or equipment such as automobiles, furniture, appliances, cans or containers, construction materials, junk, trash, or other debris.

Building Maintenance

The maintenance of a structure is the responsibility of the property owner. Exterior surfaces, including out buildings, fences, and attached structures, must be maintained free of breaks, holes, rotten wood, chipped and peeling paint, broken windows or doors, rust, or any other condition which violates health, fire, building or zoning codes, or other regulations.

Fences

All fences require a permit before being built. Electric and barbed wire fences are prohibited. Only 4-foot, see-through fences are permitted in front of the house. Six-foot, solid fences may be permitted on the sides and rear of a house. No fences are allowed on public property.

Signs

All commercial signs require a permit before being installed. Each residence may have a single identification sign not to exceed two-square feet on each side. Real estate sale signs shall be kept behind the sidewalk. No sale signs are permitted off site.

Useful Numbers

City of Leavenworth
- Animal Control: 682-0268
- Code Enforcement: 680-2626
- City Clerk: 682-9201
- Fire Department: 682-3346
- Police Department: 651-2260
- Public Works: 684-0375
- Service Center: 682-0650

Leavenworth County
- Recycling Facility: 727-2858

Leavenworth City Wide Clean-Up

April 18th 2015

It's Finally Here!

The City of Leavenworth is looking for volunteers to help us accomplish our goal of picking up all the trash in Leavenworth in just one day.

Each year, more than 1,200 volunteers come together to remove tons of trash from City streets. Young and old, they come from Girl Scouts, Boy Scouts, Rotary and Lions Clubs, local churches, businesses, and many other civic groups. On Saturday, April 18, teams of these volunteers will once again pick up trash throughout the City. We'll begin with a kick-off ceremony **8:30 a.m. on April 18**, with coffee, drinks and doughnuts available to our hardworking volunteers. The City provides gloves, trash bags and even a one-day pass to Wollman Aquatic Center as a thank you to volunteers.

We will never turn away volunteers who want to pick up trash in our City, but, it helps staff to know in advance who would like to participate so we can provide you with supplies. Please call **913-680-2610 or e-mail Melissa Bower, mbower@firstcity.org, to sign up before April 1.**

In addition to volunteers picking up trash, there are several services available to residents to clean homes on April 18:

Free paper shredding will be offered from our sponsor, Citizens Savings and Loan, 10 a.m. to 12:45 p.m. at Citizens Savings and Loan, 5151 S. Fourth St. or 1 -2 p.m. 312 S. Fifth St.

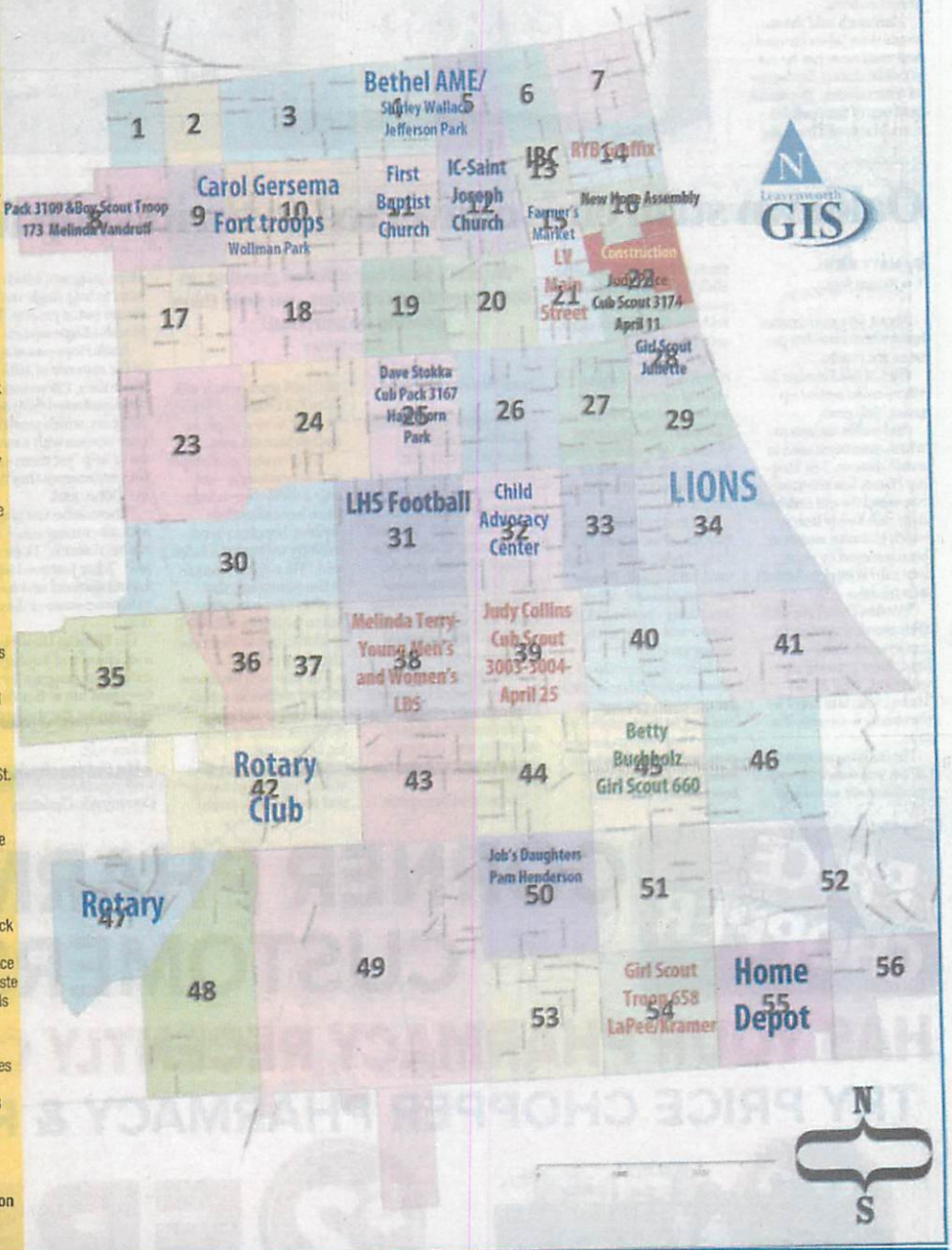
Free recycling for City residents 8 a.m. to 4 p.m. one block east of Leavenworth High School, Lawrence and Halderman Road.

Drop off of large items such as furniture, tires, mattresses and metals from 8 a.m. to noon one block behind the Service Center at the corner of Pennsylvania and Lawrence Avenues. Household Hazardous Waste such as cleaners, paint or chemicals can be dropped off at this location from 8 a.m. to noon.

Drop off of yard waste, brush, leaves and other organic materials at the Brush Site, 1803 S. 2nd St., from 8 a.m. to 3:50 p.m.

Thank you for all you do to make Leavenworth a cleaner place.

Melissa Bower, Public Information Officer, City of Leavenworth



Take pride in your community by volunteering to be a part of this year's Spring Clean-Up. It is our hope that this investment of your time and energy becomes a regular practice that prevails throughout the year and not just this one day. This is our City - LET'S KEEP IT CLEAN!

MEMORANDUM

TO: J. Scott Miller, City Manager

CC: Paul Kramer, Assistant City Manager
Michael G. McDonald, Public Works Director
Ed Davis, Superintendent City Operations

FROM: Melissa Bower, Public Information Officer
Sue Burton, Solid Waste Administrative Clerk

SUBJECT: **SPRING CLEAN UP 2015 – AFTER ACTION REPORT**

DATE: May 5, 2015

The annual Citywide Spring Cleanup took place April 18, 2015. There were 1,206 volunteers signed up to pick up trash throughout the City of Leavenworth. Because of rainy weather, some picked up trash on a different day. Group leaders were given the option to do this before the event.

The weather had some effect on disposal programs offered by the Municipal Service Center. Finance figures compared to 2013-14 are not applicable, because for those years we combined the free first Saturday with the Citywide Spring Cleanup. In 2015 the event was moved because of the Easter holiday.

The City offered free branch and limb disposal at the Brush Site on South Second Street. Forty-eight (48) residents took advantage of this free day, hauling in approximately 77.6 cubic yards of brush. In 2014, 114 residents took advantage of Free Saturday/Spring Cleanup day and brought about 115 cubic yards of brush on site.

There were 379 citizens who utilized the free services that included recycling, use of dumpsters (trash disposal) and the Community Shredding Event sponsored by Citizens Savings and Loan. (199 – Recycling Center; 37 – Misc. trash disposal; 95 – paper shredding). The number of citizens participating in the event this year was down 304 from last April.

Household Hazardous waste; paint, cleaners and poisons were also accepted by trained City of Leavenworth Solid Waste and Leavenworth County Transfer Station personnel on site for proper disposal. Approximately 37 gallons of paint, oil and chemicals were dropped off at the Service Center for disposal.

There was a total of about 1 ton of recyclables hauled to the Batliner Recycling. Recyclables were down 5.08 tons versus 2014.

4.93 tons of trash was hauled to the Leavenworth County Transfer Station. The total tipping fees were $772.69. In comparison, in 2014 there were 33.55 tons of trash and 23.16 tons construction & demolition debris hauled to the Leavenworth County Transfer Station, with a cost of $3238.25.

Approximately 4 residents brought in E-waste that was collected and sent to UNICOR for further recycling.

136 tires were brought in to the Service Center with an approximate cost of $510.00 for disposal.

Personnel costs were $1752.24.

The Solid Waste Division provided manpower by staffing one event supervisor and six collectors/equipment operators assisting residents at the drop-off site. Two collectors worked with hazardous material. The Brush Site had one additional collector to assist the Brush Site Attendant in operations. There was one collector taking count of residential customers at the Shred-It locations. The Recycling Center had normal staffing with its site attendant.

Recommendations

In closing, this was a well-received event by the community. About 1,200 volunteers pick up trash each year. Although it may not always lead to a high volume of trash removed from City streets on a rainy day like April 18, children as young as 4 can participate and learn about the importance of a cleaner environment.

Citizens Savings and Loan has been commended for their efforts in providing a free community shredding event. Each year they split the expense of this event with the City and also pay for advertising of the event. Citizens bank employees went above and beyond the call of duty this year, volunteering in pouring rain to help shred documents while community members were able to remain in their vehicles.

This is the third year scouts have picked up large quantities of trash from Havens Park. Although it was initially thought that some of the trash may have accumulated over time, volunteers are telling us they are finding trash in areas that were previously cleaned the year before. We may have a situation with illegal dumping. Code Enforcement staff have been notified.

Below are photos of the event.

Cub Pack 3109 Hawthorn Park

Cub Pack 3109 Hawthorn Park

Cub Pack 3109 Hawthorn Park

New Beginnings Missionary Baptist Church

Fort Leavenworth scouts – there are more than 100 who meet at Wollman Park, with a Cub Pack and Boy Scout troop. They cleaned up Monday, April 20.

Older boy scouts from the Fort branch out of Wollman Park and make sure neighborhoods are free of trash. They cleaned up Monday April 20.

University of Saint Mary students

Leavenworth Farmers Market
April 20 at 8:47am

Leavenworth Farmers Market took part in the Leavenworth City-wide Clean Up on Saturday. Mark Jirak, shown here with his youngest son, brought his four helpers to help get the job done. Thanks to all the farmers and vendors who came on a chilly, wet morning to help.

Like · Comment · Share

The Treasure Box, Ron-Carolyn Neuharth, Vhangie Mi Amore and 7 others like this.

Appendix E
Stormwater Management Program

- **Narrative**
- **Program (adopted February 23, 2016)**

City of Leavenworth
Stormwater Management Program

February 2016

Program History

The City of Leavenworth was established in the 1850's along Three-Mile Creek and on the banks of the Missouri River. Since that time the City has grown to include most of the Three-Mile Creek and Five-Mile Creek watersheds.

There has been a history of flooding since the founding of the city, with notable examples in the attached Appendix. The most recent dramatic example was in October 2005 where an estimated eleven inches of rain fell in a four hour period, causing significant property damage throughout the community. On July 6, 2015 over three inches fell in a one hour period also causing significant damage.

It is understandable that the city focused efforts since at least the 1980's to improve stream capacity to reduce flooding. Key improvements include:

- Replaced Major Bridges (at least 8)
- Channel Improvements on Three-Mile Creek between Missouri River and Broadway
- Stormwater Master Plan (1997)
- FEMA Floodplain Revisions on Three-Mile Creek (2014 and 2015)
- Approved Sales Tax with dedicated stormwater funding (1995, 2005,2015)

During the late 1980's the Environmental Protection Agency (EPA) determined that stormwater discharges from urban areas were having a negative impact on the nation's waterways. In the 1990s Congress expanded Clean Water Act authority to regulate municipal stormwater discharges under the National Pollutant Discharge Elimination System (NPDES). Phase I regulations were implemented in 1990 for large municipalities and Phase II regulations were implemented in 1999 for smaller municipalities such as Leavenworth

The City of Leavenworth received its first NPDES stormwater permit from the Kansas Department of Health and Environment (KDHE) in 2004, along with 58 other regulated entities. All regulated Phase II entities have the same six minimum requirements:

1. Public outreach and education
2. Public involvement
3. Municipal pollution prevention
4. Construction site stormwater control
5. Illicit discharge detection and elimination
6. Post construction stormwater control.

A new NPDES permit was issued to City of Leavenworth in 2014 which includes the same six minimum control measures, along with additional requirements for water quality testing and an updating of the Stormwater Management Program

Stormwater Program Goals

The stormwater program of the city has two goals:

- Protect people and property from flood events
- Protect and enhance water quality

The city works to meet these goals by having a qualified staff and appropriate standards for design and construction of improvements.

Staff

The Public Works Department staff includes engineers, inspectors, technicians, GIS mappers and project managers that review plans for all projects. The Community Development Department reviews plans for compliance with zoning ordinances

The Street Division has significant staffing and equipment resources to assist in addressing stormwater matters that may occur, and there are two full-time stormwater employees who inspect, evaluate, clean and perform small repairs on existing stormwater infrastructure. The Community Development Department has two full-time inspectors to evaluate zoning matters within the city including stormwater concerns. Employees of Water Pollution Control (wastewater) perform the measuring and testing work required.

Program Tools

The City uses a variety of tools to assist in the evaluation and management of stormwater issues including:

1. Stormwater Master Plan (1997) by Black & Veatch)
2. Stormwater Design Guidelines (March 2015)
3. American Public Works Association Section 5600 as a guideline (2011)
4. MARC/APWA BMP Manual as a Guideline (2012)
5. Floodplain Management (20103CV000B, July 2015)
6. Requiring a "Land Disturbance Permit" for most construction activity (March 2015)
7. Various City Ordinances
8. Submit Annual Report to KDHE after review by City Commission

Stormwater Management Program Implementation

City Staff has created goals related to the six minimum control measures in an effort to meet the needs of the community and comply with the NPDES requirements. These are shown in the attached pages.

Please do not hesitate to contact the Office of the City Engineer should you have any questions regarding this program

Michael G. McDonald
City Engineer
Public Works Director
City Hall
100 N Fifth Street
Leavenworth, KS
mmcdonald@firstcity.org
913-684-0375

Attachments

- FEMA Narrative on Flood events from FIS 20103CV000B
- Stormwater Management Program Goals

Minimum Control Measure #1 - Public Education and Outreach

BMP	Measure	Responsibility	Schedule (Permit Year)
Web Page link to stormwater infrastructure information – Master Plan, Management Plan, Map	# of visitors	Leavenworth	1,2,3,4,5
Place documents in Public Library stormwater infrastructure information – Master Plan, Management Plan, Map	# Check-out requests	Leavenworth	1,2,3,4,5
Include articles or stories related to stormwater in city newsletter in at least two issues per year	# Articles/Stories # Issues	Leavenworth	1,2,3,4,5
City generated posts on social media related to stormwater issues at least ten occurrences per year	# Posts	Leavenworth	1,2,3,4,5
Provide Information to Citizens regarding the City of Leavenworth Solid Waste Division.	Distribute trash bags to citizens with proper disposal handout	Leavenworth	1,2,3,4,5
Show Stormwater Information on Local cable TV Station	Broadcast community forums, in which continued water quality discussions take place	Leavenworth	1,2,3,4,5

Minimum Control Measure #2 - Public Participation and Involvement

BMP	Measure	Responsibility	Schedule (Permit Year)
Hold Public Information Meetings Regarding Stormwater Issues	Annual review by City Commission of Stormwater Annual Report Review of Stormwater projects in annual Capital Improvement Plan	Leavenworth	1,2,3,4,5
Create an "Adopt a Stream Program"	# Streams Adopted # Streams Cleaned	Leavenworth	1,2,3,4,5
Improve Lines of Communication with the Public through use of website and social media	Integrate contemporary methods of providing and receiving information to the Public.	Leavenworth	1,2,3,4,5
Annual City-Wide Clean-up Program	# Groups # Participants	Leavenworth	1,2,3,4,5
Customer Surveys – conduct at least one survey each year on stormwater related issues in an on-line environment	# of responses	Leavenworth	1,2,3,4,5
Encourage groups to participate in activities such as inlet stencil program and similar	# groups # programs	Leavenworth	1,2,3,4,5

Minimum Control Measure #3 - Illicit Discharge Detection and Elimination (IDDE)

BMP	Measure	Responsibility	Schedule (Permit Year)
Inspect complaints of Illicit Discharge	Inform public of methods to communicate concerns regarding illicit discharges # reports investigated	Leavenworth	**1,** 2, 3,4, 5
Update Stormwater Outfall Maps	Continue efforts to accurately locate and measure existing and new stormwater infrastructure	Leavenworth	1,2,3,4,5
Inspect Outfalls	# outfalls inspected	Leavenworth	1,2,3,4,5
Collect Yard Waste at City Composting Facility	# customers	Leavenworth	1,2,3,4,5
Collect Tree and Brush Debris at Brush disposal site	# customers	Leavenworth	1,2,3,4,5
Collect Household Hazardous Waste as part of Citywide Clean-up Event	# pounds of household hazardous waste recycled	Leavenworth	1, 2, 3,4, 5
Conduct Free Disposal Saturdays (First Saturday)	# Events # Tons Collected	Leavenworth	1,2,3,4,5
Staff Training	# of staff trained	Leavenworth	1,2,3,4,5

Stormsewer Maintenance and Inspection	Provide dry weather storm sewer inspection.	Leavenworth	1,2,3,4,5
Inspection of Sanitary Sewer Systems	Inspect residential and commercial sanitary systems for improper discharge into storm drains. Inspect sanitary sewer system to reduce number and volume associated with SSO Coordinate SSO events between Wastewater Staff, Building Officials and Engineering.	Leavenworth	1,2,3,4,5
Commercial Grease Trap Inspection Program	Review status of commercial grease traps through record review and physical inspection	Leavenworth	1,2,3,4,5

Minimum Control Measure #4 - Construction Site Runoff Control

BMP	Measure	Responsibility	Schedule (Permit Year)
Construction Drawing plan review and Site Runoff Control	# plans reviewed # LDP Issued	Leavenworth	1, 2, 3,4,5
Publish Updated Standard Details and Design Criteria for Erosion Control*	Make available on-line Review annually with staff	Leavenworth	1,2,3,4,5
Staff Training on Runoff Inspection	# inspectors trained	Leavenworth	1,2,3,4,5
Inform Local Contractors of LDP	Annual notification of LDP requirements LDP documents available on-line	Leavenworth	1,2,3,4,5
Pre-Construction Meetings with Owner and Contractor - Require meetings with owner and contractor prior to commencement of grading operations.	# Meetings	Leavenworth	1,2,3,4,5
Construction Site Inspection and Enforcement - Increase the frequency of inspections and communications back to owner/contractor	Documentation of inspections	Leavenworth	1,2,3,4,5

Minimum Control Measure #5 - Post Construction Runoff Control

BMP	Measure	Responsibility	Schedule (Permit Year)
Construct Sediment vane traps on new and reconstructed inlets	# Inlets	Leavenworth	1,2,3,4,5
Protect sensitive areas, such as wetlands and riparian areas through plan review and selected land acqusition from developers and at tax sales	# tracts acquired from developers # tracts acquitted from Tax sale # Acres acquired/year	Leavenworth	1,2,3,4,5
Enforce Post Construction Runoff Control Ordinance	# LDP Releases Documentation of Inspection and communication	Leavenworth	1,2,3,4,5
Conduct Long Term BMP Maintenance Inspections	Documentation of inspection and communication	Leavenworth	1,2,3,4,5
Analyze Existing Structural BMP Performances at selected sites (particularly detention basins)	# sites evaluated	Leavenworth	1,2,3,4,5
Measure rain gage and creek depth to evaluate flow quantity and duration from at least March – October.	# Rain gages # Stream gages	Leavenworth	1,2,3,4,5

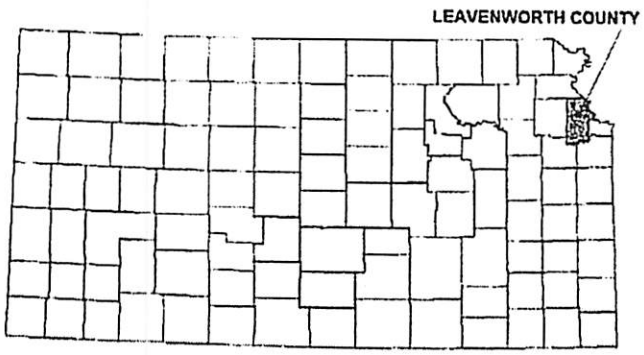
Minimum Control Measure #6 - Municipal Pollution Prevention

BMP	Measure	Responsibility	Schedule (Permit Year)
Review City Facilities for water quality concerns and develop plans to address them, goal is at least three facilities per year	# Reports Prepared	Leavenworth	1,2,3,4,5
Street Sweeping Program – goal is residential areas three times per year and collector/arterial streets once per month (8 months)	# Times completed Residential Area Sweeping # Times completed Collector/arterial Sweeping # hours sweeping	Leavenworth	1,2,3,4, 5
Snow Removal Operations - Use ground speed control and GPS equipment to keep salt use within guidelines	# tons of salt used per year # pounds per lane mile per storm	Leavenworth	1,2,3,4,5
Stormwater Inlet Cleaning	# Inlets	Leavenworth	1,2,3,4, 5
Continue Citywide Leaf Collection Program (currently one-half of city each year)	# loads	Leavenworth	1,2,3,4,5

FLOOD INSURANCE STUDY

LEAVENWORTH COUNTY, KANSAS
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
BASEHOR, CITY OF	200187
EASTON, CITY OF	200188
LANSING, CITY OF	200189
LEAVENWORTH, CITY OF	200190
LEAVENWORTH COUNTY UNINCORPORATED AREAS	200186
LINWOOD, CITY OF	200191
TONGANOXIE, CITY OF	200192



REVISED: July 16, 2015

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER

20103CV000B

September 1970. Unfortunately, precise data regarding flood levels reached by these events have not been documented. The following extracts from the Leavenworth Times described two of the events that were experienced. "On July 30, 1958, more than four and half inches of rain fell in the area." Hundreds of area residents were delayed in reaching their homes by streams that were overflowing their banks at many locations. On October 13, 1961, three to four inches of rainfall occurred in the area.

The City of Lansing is above the floodplain of the Missouri River except for the areas where Sevenmile Creek and other right bank tributaries enter the Missouri River. The only recorded damage to the City, caused by flooding from the Missouri River, occurred when an emergency levee failed during the April 1952 flood. The flood caused a total of $125,200 damage to the Leavenworth and Lansing areas. The damages were $112,000 to business property, $12,600 to homes, and $600 to public property (Reference 1). The main sewers are subject to silting and other damage by flooding from the Missouri River.

City of Leavenworth

The flood producing characteristics of Threemile, South Branch, and Fivemile Creeks are typical of small watersheds in the Midwest region. Past flood flows have usually been caused by short duration thunderstorms having high intensity rainfall. Conversely, flood problems associated with the Missouri River are usually caused by long protracted fronts occurring over large areas. There are no natural obstructions to flood flow in the Threemile Creek floodplain. Obstructions restricting floodwater flow have been created by man's continued encroachment on the Threemile Creek floodplain. Severe restrictions to flood flow have been created in the past by construction of many bridges located in the floodplain between Tenth Street and the mouth. In addition, a portion of the creek channel had been enclosed in a box culvert located under the railroad yards between Seventh Street and Broadway. Because of inadequate openings in these bridges and culvert, a cumulative aggravation of flood backwater occurred in the lower floodplain

The City of Leavenworth embarked on a substantial effort to improve flooding conditions downstream of Tenth Street in the early 1980's. The bridge on Tenth Street was replaced in 1983, the bridge on Cherokee (west of Broadway) in 1981, and the bridge on Shawnee west of Tenth in 1985. The rail yard trestles were removed by 1988. In addition, new bridges have been constructed at Third Street, Sixth Street, Seventh Street, Broadway and Shawnee Streets since 1988. Construction of a pedestrian trail at creek level between Esplanade Street and 7th Street contributed to larger channel cross sections between Fourth Street and Seventh Street and generally improved flow characteristics. A new bridge at Second Street is expected to be constructed in 2015. A significantly larger natural open channel was constructed between 6th Street and Cherokee Streets in the early 1990's.

The improvements since the last FIS have had a significant impact on the critical area near Cherokee and Broadway Streets. At this location flood flows were impeded by small bridge openings at Cherokee Street and at Broadway Street that forced excess water out of banks through the developed floodplain area along Cherokee Street. Flow from this area attempting to return to the channel was further impeded by the now removed railroad yard culvert. Flooding at Cherokee Street occurs less often with the construction of the noted improvements.

Channel restrictions between Cherokee Street and Shawnee Street west of Broadway remain. These restrictions continue to pose a threat to structures along Miami St. between 8th St. and 10th St.

Since there is no stream gaging stations on Threemile Creek or its South Branch, documentation of flood problems affecting Leavenworth in the past rely completely upon historical accounts. Detailed investigations have been made of flooding which occurred in July 1958 and October 1961. In addition, fragmentary records of 11 additional floods have been found through a search of newspaper files. It appears that the maximum known flood prior to 1972 occurred in 1904. This flood had an estimated peak discharge of 7,000 cubic feet per second (cfs) at the mouth (between the discharge of a 50-year and 100-year flood), and 6,500 cfs at Seventh Street. The following composite accounts describe the July 1958 and October 1961 events experienced on Threemile Creek.

On July 30, 1958, more than 4 1/2 inches of rain fell in the Leavenworth area. Damage estimated at $30,000 was reported from businessmen and homeowners from the resulting flood on Threemile Creek. The downtown area was hardest hit, especially on Cherokee from Broadway to Seventh Street where the discharge of the flood was estimated at 4,300 cfs.

On October 13, 1961, three to four inches of rainfall fell in the Leavenworth area. The resulting flood on Threemile Creek exceeded bank full capacity at 7:00 PM, crested at about 9:00 PM, and receded to within-bank stages at 11:30 PM. The flood caused $71,000 damage in Leavenworth, of which $58,700 was damage to 24 business places and 16 residences, and the remainder was damage to transportation facilities and municipal property. The discharge at Seventh Street was estimated at 4,000 cfs.

The City of Leavenworth Public Works Department has identified the following significant flood events since 1972 (Reference 12). In all cases – water overtopped the banks upstream of Cherokee Street and flowed east along Cherokee Street, returning to the banks of the creek at 6th Street. Flooding of the 800 and 900 blocks of Miami also occurred in the same years noted below causing damage to residences and businesses. Water has been as high as two feet deep in Miami Street. The city has purchased several homes using "buy-out" programs, and worked with businesses to ensure that they take appropriate measures to minimize risks from flooding. Some of the more notable events include:

- July 6-7, 1986- 10.4 inches of rain fell, causing water to flow down Cherokee Street and floating several automobiles and trailers.
- May 15, 1990 – 4.4 inches of rain fell causing minor flooding.
- October 4th 1998 – between six and eight inches of rain fell in a twelve hour period causing damage on Cherokee Street and areas upstream of Shawnee (west of Tenth Street). Damage was also noted in the 800 and 900 blocks of Miami Street.
- 1993 – Local heavy thunderstorms combined with an elevated water surface in Three-Mile Creek from record flooding on the Missouri River resulted in significant flooding along Cherokee Street.

- October 2nd 2005 – A NWS gage recorded 5.6 Inches of rain, but eyewitness accounts and anecdotal evidence supports between seven and eleven inches of rain falling in a four hour period in some locations. The resulting flood was identified as the worst in memory, and flooded structures between 11th Street and downstream to 6th Street. A new bridge was under construction at 6th Street, and the debris caused the complete collapse of the falsework. The floodwater and debris and falsework passed through the old railroad Bridge at Esplanade Street which acted as lens and focused the stream upon the mouth of the creek at the Missouri River. The jet of water undermined the sanitary sewer along the banks of the Missouri River. A hole that later measured as over forty feet deep appeared where the sewer had been buried twenty feet below the creek bottom. The sewers were repaired by late 2006 at a total cost of about $1,000,000. Estimates of flow were later determined by Black & Veatch Engineers as being in excess of 7500 cfs at Esplanade Street.

- There has been no further flooding of Cherokee Streets between 2005 and October 2014.

Flood damage along South Branch of Three-Mile Creek has typically been much less severe than that along the Main Branch of Threemile Creek. Damage to road crossings and property near Eleventh Street as well as scouring is likely to take place during floods.

Severe restrictions from bridges across Five-Mile Creek have been addressed with new structures at Fourth Street, Second Avenue/Limit Street and Shrine Park Road since 1972. Inadequate openings of the older bridges had caused a cumulative aggravation by flood backwater in the floodplain.

Newspaper accounts provide most of the history of flooding on Fivemile Creek prior to the 1970's. These accounts reveal that flooding has occurred several times in the past. Notable floods were reported in June 1942, July 1958, October 1961, April 1969, and September 1970. Unfortunately, precise data regarding flood levels reached by these floods have not been documented.

The flood of July 30, 1958, had Fivemile Creek flooding Shrine Park Road, Limit Street and U.S. 73 at Black Bridge (Reference 1).

The flood of October 12, 1961, swept away cut brush laying in the vicinity of the sewage treatment plant at Second and Fivemile Creek (Reference 1).

On April 26, 1969, Fivemile Creek ran 10-12 inches deep across Shrine Park Road, just south of the entrance to the golf club. Along south Fourth Street the stream spread out for a half mile or more and at Second Street, in the vicinity of the sewage disposal plant, the creek rose to the edge of the street (Reference 1).

Heavy rains since 1988 often result in water flowing across Shrine Park Road at low areas north of the new bridge and across Tenth Avenue at Wellington Drive. These events also result in significant erosion and scouring of the creek bank. Water has crossed the bridge at Second Avenue and Limit Street on several occasions at depths up to six inches since 1988. One notable event occurred on October 4, 1998, when 4.74 inches of rain fell in two hours (measured in south Leavenworth), and it resulted in ten

inches of water across Tenth Avenue at Wellington, 24 to 30 inches across Shrine Park Road north of the bridge, and six to eight inches across Limit Street (Reference 12). A new larger bridge at this site is completed (2014) and is expected to reduce and possibly eliminate roadway flooding at this location.

The City of Leavenworth is above the floodplain of the Missouri River except for the areas where Threemile and Fivemile Creeks and other smaller right bank tributaries enter the Missouri River. Recorded damage to the city, caused by flooding from the Missouri River, occurred when an emergency levee failed during the April 1952 flood. The flood caused a total of $125,200 damage in Leavenworth. The damages were $12,000 to business property, $12,600 to homes, and $600 to public property. The Wastewater Treatment Plant had never been threatened by flooding until it was inundated in the 1993 Missouri River Flooding, with repair costs in excess of $1 million required to restore service. The plant has been threatened to a level requiring sandbagging and other measures at least three additional times since 1993, most notably in 2011 due to releases from Corps of Engineers dams upstream when the levels were within six inches of the city closing the plant.

Second Street north of Five-Mile Creek is subject to standing water and flooding from high water in the Missouri River and is then closed to protect the public. This has happened at least five times since 1988.

The Riverfront Community Center (Union Railroad Depot) was protected from flooding in 1993 when nearly four feet of water from the Missouri River threatened the structure. Heroic efforts by the community created a sizable protective sandbag wall that prevented flooding, but the building suffered related damage requiring over $300,000 in repairs. It has been necessary to construct flood protective measures at least three times since 1993 with expenses typically in excess of $10,000 on each occasion. The City expects to construct a permanent floodwall with a FEMA grant in 2015 to reduce expenses and damage from future floods.

A combined effort of Leavenworth County, City of Leavenworth and City of Lansing resulted in a recording stream gage being installed at the Leavenworth Waterworks Intake structure on Dakota Street in September 2012. This is expected to improve flood evaluation and forecast activities.

2.4 Flood Protection Measures

There are several flood protection measures operable for the benefit of Leavenworth County. The Mud Creek Levee Unit meets the requirements and provisions of Section 65.10 of the NFIP regulations. The levee system provides flood protection for the 1-percent annual chance flood event on Mud Creek. The levee system is currently in the USACE PL 84-99 levee program and is periodically inspected by the Kansas City USACE District. There are some low frequency private agricultural levees along Stranger Creek that do not meet the FEMA 3-foot freeboard requirement and any other provisions of Section 65.10 of the NFIP regulations. There are no major structural flood protection measures planned for this study area. However, the adoption of State and local development regulations concerning floodplain management will help alleviate storm related losses.

Appendix F
Land Disturbance Permit

- Narrative and Summary Report
- Meeting Notices
- Application Form
- Simple Erosion Control Plan hand-out
- Adopted by the Commission April 13, 2015

City of Leavenworth
Land Disturbance Permit Program
2015 Summary

February 26, 2016

The City of Leavenworth recognized the need for improved control over runoff and pollution from construction sites. This includes both during and after construction. It was determined that the city must implement a program to educate, regulate and inspect all construction sites.

The City of Leavenworth program was created after a staff review of other programs in the Kansas City area. The program is intended to meet the needs of the community as well as the expectations of EPA and KDHE. Key aspects of the program are

1. Approval of the Stormwater Design Guidelines by the Commission in March 2015 also included the approval of the creation of a Land Disturbance Permit program
2. A handy handout to address the basic program and an application form was created.
3. A meeting with local contractors and developers was held on April 22, 2015 A key part of this meeting was that all current projects needed to have a permit and were subject to inspections
4. Permit issuance and inspections began on March 30, 2015.

Additional details of the process are described below

The program requires anybody disturbing soil to complete an application for review. The location and type of work being completing determines what "Best Management Practices"(BPM) should be utilized. The Engineering Department oversees the program and approves all applications. Upon approval, the permit is assigned a number and an inspector. The assigned inspector will attempt to perform an initial inspection and document with pictures, but in some cases especially when utility repairs are made they are unable to.
Justin Stewart, Senior Engineering Technician, monitors work being completed in the right of way, which is primarily for utility repairs and maintenance. Additionally, he oversees any City projects that may require a permit.

The Building Inspection Department oversees projects that are within private property boundaries. Permit and correspondence records are maintained by the Building Inspection's clerk.

To ensure the BMPs are being maintained, staff monitors each project on a biweekly schedule or any recorded storm event with more than a half of an inch of precipitation being recorded. The permit holders are also asked to assist with inspections by providing documents upon request. When a significant rainfall event occurs, the Building Inspection's clerk sends a mass email with a copy of the necessary forms to remind open permit holders to perform the required inspection. Permit holders are asked to submit the required form with the results within twenty four hours of the inspection. Permits holders are primarily notified of deficiencies by phone and email. In the event the permit holder fails to react to the notices, a stop work order is issued until an inspection is completed to verify all deficiencies have been addressed.

After the project has been completed and verification of the minimum standard have been met, a final inspection report with a photo for documentation shall be submitted by City Staff. A Certificate of Compliance will be issued to each permit holder for each project after the permitted project has been accepted according to the guidelines set forth in the City ordinance.

By the end of 2015 there were a total of one hundred seventy six permits issued. Ninety permits were successfully closed prior to the end of 2015. Of the ninety that were closed, four received notices of deficiencies in either erosion control or failure to remove erosion control from right of way. All deficiencies noted in 2015 were rectified within a timely manner.

Staff opinion is that the following would improve the program over time:

1. Creation of fee and fine structure for Land Disturbance Permits would have some value to assist with the inspection program, especially for delivery of requested inspection records
2. Improvement in the forms and use of electronic devices to facilitate permit issuance and inspection would improve efficiency
3. Integrating additional related requirements into the process (such as NOI and SWPPP) would increase effectiveness.

April 13, 2015

<Business Owner Information>
<address>
LEAVENWORTH, KS 66048

RE: CITY STORMWATER REQUIREMENTS CURRENT PERMITS

Dear < Permit Holder>:

The City of Leavenworth is required by both Federal and State law to regulate storm water quality within the boundaries of the city. The system is commonly referred to as the "Municipal Separate Stormwater System" (MS4). The EPA through the State of Kansas issues a general permit for the City of Leavenworth to develop, implement and enforce a stormwater management plan. Six "Best Management Practices" (BMP) are outlined for compliance:

1. Public Education and Outreach
2. Public Participation and Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Runoff Control
5. Post-construction Runoff Control
6. Housekeeping and Pollution Prevention

A handout identifying key parts of the regulations is included with this letter.

You are receiving this letter because you or your business currently or recently were involved in activities such as land disturbance, water detention, construction, etc.; that may involve items covered by the MS4 Permit. Please be advised that the City has been directed to improve the enforcement of State and Federal laws related to water quality in the City of Leavenworth. This covers a variety of situations, the most visible and significant one being prevention of erosion from construction sites.

Current permits are required to address erosion related issues.

There are two actions the City is currently taking related to existing permits. This letter is to inform you of these actions as it is an important matter:

- Inspection of current permits for proper erosion control.
- Requiring a Land Disturbance Permit for many current projects.

Please review all of the information in the attached documents. City staff has set up an informational meeting to review this with interested parties in an informal manner on April 22, 2015, from 3 p.m. to 5 p.m. in the Commission Chamber at City Hall. Should you be unable to attend this informational meeting, you can contact the City Building Inspection or Engineering Offices to ask questions at 913-684-0375.

Sincerely,

Michael G. McDonald, P.E.,
Director of Public Works

ATTACHMENTS:

- Single Family Dwelling Handout
- Stormwater Guidelines
- Land Disturbance Permit Application

City of Leavenworth
Verify Status of erosion at current projects
April 13, 2015

I. Inspection of current Projects

IT IS IMPERATIVE that you do the following immediately:

- **Inspect your site** to ensure that there is no mud or erosion or concrete washout in the creek, stream or street. Keep a record of the date of your inspection and note any deficiencies found, and actions to be taken. It is recommended that you keep these records in a separate notebook on-site. Be prepared to provide a copy of your inspection record to the city upon request.
- **Take immediate action** to clean any mud or erosion or concrete washout from the creek, stream or street.
- **Review the attached drawing** and install necessary controls for construction driveways. The number of construction driveways must be kept to a minimum.
- **Take immediate positive action** by placing silt fence, hay bales, or using other approved methods (see handout) to protect the stream, creek or street from further erosion.
- **Take immediate action** to place silt protection at the nearest downstream inlet or drain from your site(s) to provide additional level of protection.
- **Review and complete the Land Disturbance Permit Application within ten days of the receipt of this letter.**

The City will be inspecting all open permits to ensure compliance with the regulations. Failing to make an affirmative action to address erosion, silt, mud or other construction related debris is subject to legal action by the City.

City staff has set up an informational meeting to review this with interested parties in an informal manner on April 22, 2015, from 3 p.m. to 5 p.m. in the Commission Chamber at City Hall. Should you be unable to attend this informational meeting, you can contact the City Building Inspection or Engineering Offices to ask questions at 913-684-0375.

City of Leavenworth
Verify Status of erosion at current projects
April 13, 2015

II. Requirement for Land Disturbance Permit

The City has created a **"Land Disturbance Permit"** which replaces the "Fill/Excavation Permit" process to be completed to ensure compliance on these issues. This permit is required to be part of any construction project involving excavation or fill such as house construction, room additions, or driveway replacement. It is important to note that any disturbance over 1 acre in size also requires a KDHE permit with 60 day notice prior to the issuance of the permit. Although not required, a professional engineer is recommended to help develop a plan.

The rules and enforcement related to erosion and the land disturbance permit are in effect immediately. There no "grandfathering" of ongoing projects. If you have a house under construction, a stockpile of dirt, a fill permit, or any other project currently in progress please see "Item I" above and begin the process of obtaining the appropriate permit.

You may be required to modify the current project plans to meet the run off control requirements. In the case of new home construction, a final sign off on the building permit will not take place until the "Post Construction Runoff Control" requirement has been satisfied, and a compliance Certificate has been issued. In most cases that will require established vegetation.

City staff has set up an informational meeting to review this with interested parties in an informal manner on April 22, 2015, from 3 p.m. to 5 p.m. in the Commission Chamber at City Hall. Should you be unable to attend this informational meeting, you can contact the City Building Inspection or Engineering Offices to ask questions at 913-684-0375.

City expects that the Land Disturbance Permit Application will be submitted by May 6, 2015. At this time there is no additional fee associated with the issuance of a new "Land Disturbance Permit" if it is associated with a current permit.

Bob Patzwald		684 0375
MIKE HOOPER		684-0392
MANCIL KING		
WILLARD WICKY		775 2305
JOEY DENNEY		682 2182
Brian Garson		683-9613
Pat Garrett	Water	682 1513
JOEL MANNKEN		682-1513
Dustan Thornton		306-1354
Brian Schwinn-Geiger		913-433-6882
Billy Daniels		913-208-1399
Steve Sands	Sandscore	913 306-4015
Henry Sprague	Henry Contracting	913 306-1563
Digger Jim		913-683-0404
CHRIS FREDERICK		816-769-2532
MIKE MCDONALD		
Hal Bordette		

City of Leavenworth

LAND DISTURBANCE PERMIT APPLICATION

(Fill Permits Require An Additional Application)

City of Leavenworth Public Works
100 N. 5th Street
Leavenworth, KS. 66048
913 684 0375

Date _____

Reviewed By: _____

Applicant Name: _____ Phone: _____

Address: _____ Zip Code: _____

Email: _____ Fax: _____

Project Type

____ Single Family Home

____ Commercial/Mutli-family

____ Single Family Subdivision

____ Building Addition

____ Utility Extension

____ General Grading/Filling

____ Public Improvement Project

____ Other: explain Below

_____

Project Location

Property Address: _____

Name of Project or Subdivision: _____

Owner of Record : _____ Phone number: _____

Proposed Land Use: _____

Total Site Area: _____ Acres/or _____ Sq. Feet

Total Area of Land Disturbance: _____ Acres/or _____ Sq. Feet

Describe the Proposed work: _____

_____

City of Leavenworth

LAND DISTURBANCE PERMIT APPLICATION

Parties Responsible for Maintaining Erosion Control

Check one: Contractor _____ Or Property Owner _____

Name: _____

Address: _____

Business Phone : _____ Cell Phone _____

Email: _____

Contractor:

Company Name: _____

Address: _____

Business Phone: _____ Cell Phone: _____

Email: _____

Engineer:

Company Name: _____

Responsible Engineer: _____

Address: _____ Zip Code: _____

Business Phone: _____ Cell Phone: _____

Email: _____

Erosion Control:

Company Name: _____

Address: _____

Business Phone: _____ Cell Phone: _____

Email: _____

Revised: September 10, 2015

City of Leavenworth

LAND DISTURBANCE PERMIT APPLICATION

Does work include any construction activity in the FEMA regulated floodplain?

Yes ____ No ____

Note; Additional permits for work in floodplain are required. Attach any additional information to this permit application.

LAND DISTURBANCE APLLICANT CHECK LIST

_____ Completed Land Disturbance Application
_____ Attached site specific Stormwater Pollution Prevention Plan (SWPP Plan)
_____ Attached site specific Erosion Control Plan
_____ Attached site specific grading plan
_____ Attached Schedule for duration of land disturbance
_____ Attached NOI if required (over 1 acre-SWPP required)
_____ This is a single family building project or home addition and I as applicant will follow the attached "Single Family Lot Erosion and Sediment Control Plan"

_____ The applicant by submitting this application does agree to perform all necessary work to include bi-weekly inspections and inspections after each ½" rain event (24 hour). The applicant will supply the City of Leavenworth with all inspection records upon request, and copies must be provided in order to obtain a Compliance Certificate.

The applicant fully understands that the responsible party shall comply with this permit and repair all substandard erosion control within a 24 hour period after notification of failure to comply with the plan. Failure to comply within the allotted time frame is a violation and shall be reason for the City of Leavenworth to issue a **Stop Order** on all work, repair the damaged erosion control, and clean all surrounding grounds. The contractor/owner shall be held responsible for all expense incurred to remedy the violation and may be charged with a Nuisance Complaint in Municipal Court.

Applicant Signature: _____

Owner Signature: _____

PROJECT INSPECTION LOG FORM

Location **Inspector** **DATE ISSUED**

Owner: _____ **Phone #** _____

Contractor: _____ **Phone#** _____

Day	YEAR: 20____											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
1												
2												
3												
4												
5												
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Erosion and Sediment Control Inspection Report Form

Project Name and Location

Weather:

Rain in last 24 hrs (inches):

Owner / Permittee:

A. Current Construction / Active Areas:

Pollution Control Measures (BMP) Checklist:

____ Inlet Barrier (ie: gravel bags)
____ Sediment Barriers (ie: ditch checks)
____ Erosion Blankets, Hydromulch / Seed, etc
____ Stabilized Construction Entrance
____ Stream Crossings
____ Seed / Sod Areas
____ Sediment Basins & Discharge Locations
____ Borrow Areas
____ General Site Condition (trash, etc)

B. Problem Areas / Special Observations(*Note problem areas ONLY below*):

BMP	Location	Observations, Effectiveness, & Corrective Actions Ordered

C. Listing of Areas where construction operations have permanently or temporarily stopped; stabilization measures initiated.

D. Have items noted on last inspection been corrected? Yes No (if No, Explain:)

Note: Inspection comments above indicate deficiencies only. Deficiencies must be corrected within 24 hours, unless otherwise noted. All other BMP's on site are considered to be in good working condition.

Date of Inspection

Inspector Signature

6 Goals • No Sediment Leaves the Site • Lines of Defense Everywhere & Always • Cover Quickly • Protect the Swale, Ditch ,and Channel • Keep Clean Water Clean • Inspect, Clean & Fix

BMP INSPECTION CHECKLIST

General notes about Inspections:
1) Site inspected bi-weekly (City Staff)
2) Within 24 hours of the end of a storm with rain >0.5" (Owner/Contractor – Document and submit to the City upon request)
3) Deficiencies corrected within 24 hours of inspection

Key elements to look at during inspection
1) Proper installation
2) Operation
3) Maintenance

Inlet Barriers (ie:sand bags, gutter buddies, straw wattles)
- √ Is the structure deteriorating
- √ Is sediment >1/2 the height of structure?
- √ Evidence of water/sediment getting **around or under** barrier?
- √ Are there other structures that require inlet barriers?

Sediment Barriers (ie:ditch checks)
- √ Are they trenched in or falling down?
- √ Evidence of sediment/water getting **around** or **under** barrier?
- √ Is sediment more than 1/2 height of structure?
- √ Are there areas where more sediment barriers are required or need extended?

Perimeter Control (ie: silt fence, straw wattles)
- √ Is all the off-site water being diverted where applicable?
- √ Evidence of water/sediment getting **around** or **under** barrier?
- √ Are there areas that need extended or additions to other locations?

Stabilized Construction Entrance
- √ Is gravel clean or getting filled with mud?
- √ Evidence of sediment being tracked off site onto public streets?

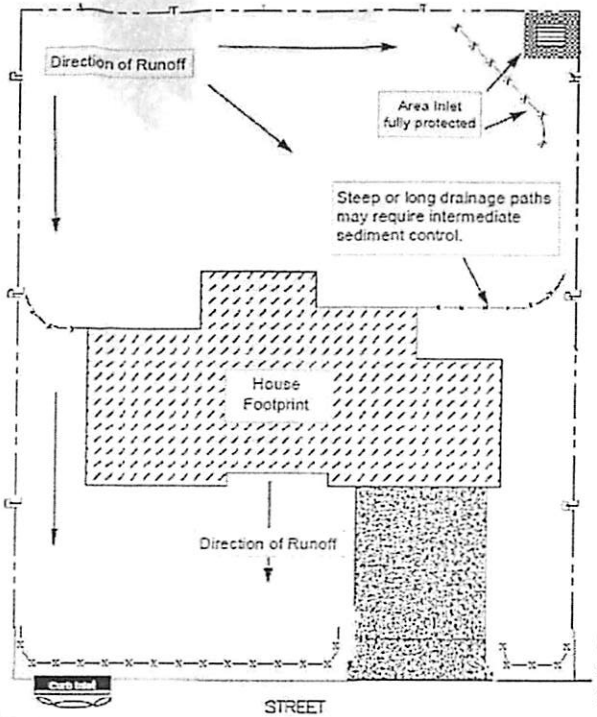
Stream Crossing
- √ Is crushed stone in place?
- √ Wash outs?

Final or temporary Stabilization area
- √ Mulches/Grasses-are areas thinning or have been disturbed? Re-application req'd?
- √ Straw Blankets-are they deteriorating and need replaced?

Borrow Areas
- √ When on site or offsite borrow areas, which include contractor furnished, are to be excavated below ground elevations, an earth berm must be constructed around the borrow area to prevent runoff from entering excavation area

Sediment Basin
- √ Note the basin depth. Is the basin more than ½ full of sediment from original design?
- √ Condition of basin side slopes
- √ Evidence of overtopping embankment
- √ Condition of outfall

General Site Conditions
- √ Trash barrels-any evidence of trash lying around site
- √ Location of porta potties
- √ Leaking vehicles
- √ Concrete Washouts Designated



Single Family Lot Erosion and Sediment Control Plan

This sample plan represents a typical single family lot. Users of this plan must make their own assessment (or seek professional advice) as to the conditions and drainage patterns of individual sites. These conditions should determine the selection and location of appropriate BMPs.

Sediment Control (Silt Fence, Wattles, Buffers)

Lot Access

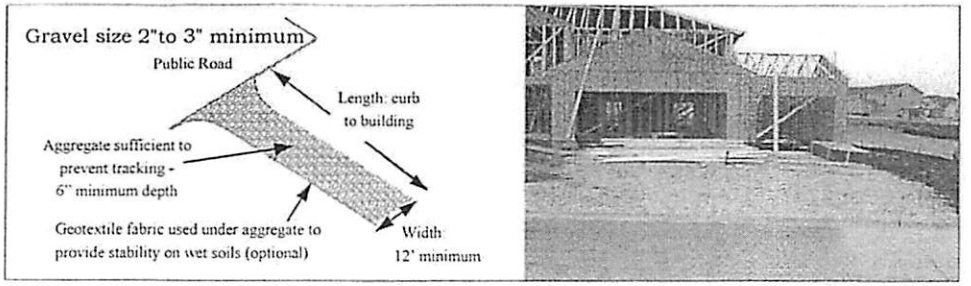
Direction of Surface Water Runoff

Area Inlet with Buffer (grass, sod, blanket)

Curb Inlet with Filter Protection

NOTE: Once sidewalk is installed, BMPs should be installed back of sidewalk to prevent sediment from reaching the sidewalk.

Lot Access



Silt Fence Alternatives

Straw wattles, compost logs, silt dikes, grass buffers and mulch are good alternatives to silt fence, reducing erosion and filtering sediment. These BMPs can be installed in all weather conditions and are easily repaired if necessary. They are appropriate for perimeter control on most individual building lots. Installation of manufactured products should follow the instructions provided with the product.

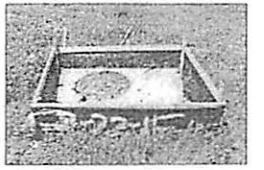
Wattle / Log

Silt Dike

Mulch

Inlet Protection

Many products are available for inlet protection. Regular maintenance of all inlet BMPs is critical to prevent localized flooding and to prevent sediment from entering the stormwater system. Area inlets can be protected with a stabilized buffer and wattle placed in front or by wrapping the inlet with reinforced silt fence. Curb inlets can be protected with a manufactured product or clean gravel placed in a non-biodegradable bag.

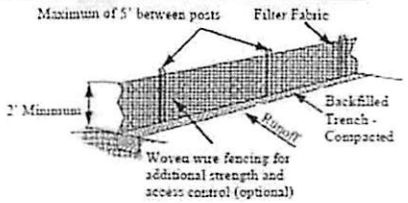


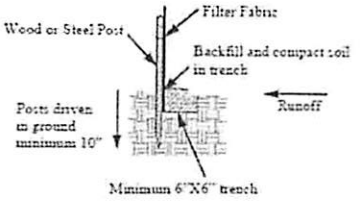
Other Pollutants

In addition to sediment, other pollutants must also be controlled on a construction site. Some common pollutants requiring BMPs include, but are not limited to, concrete washout, mechanical fluids, paint, stucco, sanitary waste, trash and dewatering discharge.

Silt Fence

- Turn ends of silt fence uphill to capture runoff.
- Overlap to next stake when joining two sections.
- Remove accumulated sediment to maintain capacity and reduce stress on fence.





City of Leavenworth
Stormwater Management

The City of Leavenworth requires all construction sites regardless of size to comply with Best Management Practices as outlined in this document or as described on the KDHE Permit for projects over 1 acre. The goal of the program is to prevent sediment and other pollutants from leaving the construction site.
Lack of controls can allow sediment and pollutants to enter local streams, lakes and the Missouri River.

Newer subdivision designs include an erosion control plan. The plans have been approved by KDHE and the City of Leavenworth.
Older subdivisions and/or infill lots must still comply with basic standards of erosion control as presented in this document. If you have questions concerning specific requirements contact the subdivision developer or KDHE.

It is important to realize that the City of Leavenworth is required by law to perform regular inspections of the project erosion control during construction. The City must also perform post construction inspections until such time as all chances of erosion have been eliminated. Inspections will be performed on a bi-weekly basis. The responsible party will inspect whenever the area receives ½" of rain in a 24 hour period. The City may review the inspection record upon the next visit, and will require copies of the inspection records before a Compliance Certificate is issued.

Contact Numbers - City of Leavenworth Public Works 684-0375
KDHE – 785 296 5500

Erosion Prevention and Sediment Control Policy

Compliance Checklist

The items below are basic BMPs (Best Management Practices). The requirements for specific lots may be different so always review the plan for your specific site;

Perimeter Control - BMPs are installed along back of curb and along the lot-line of adjacent properties which are downhill and receive runoff from permitted lot. Following sidewalk installation the BMPs are moved to the back of the sidewalk to prevent sediment from reaching the sidewalk. BMPs are maintained to ensure proper function, including repair or replacement of torn, degrading, missing or otherwise ineffective material. Sediment deposits are removed as necessary to provide adequate protection.

Lot Access – Required for each individual lot. A surface suitable for parking and unloading that prevents the tracking of mud and rock onto the streets is installed. A minimum depth of 6" of aggregate is suggested. All vehicles that access the lot shall use the construction entrance. Restrict other access if necessary to prevent tracking onto the street.

Inlet protection – BMPs in place and functioning for area inlets and curb inlets along streets. Maintenance includes removal of sediment following each rain event and replacement of failing materials. Do not allow sediment to enter inlet during maintenance.

Stockpiles – Stockpiles protected to prevent sediment from reaching the street and adjacent properties. Stockpiles are located away from street and property lines.

Intermediate Control – Long or steep drainage paths have intermediate or interior BMPs installed to help slow the flow of runoff. Failure of perimeter control due to force of runoff often determines the need for intermediate controls. Straw mats or wattles are recommended.

Other Pollutants - Dewatering is done in such a manner as not to deposit sediment offsite or cause erosion. Trash and debris are contained. All wastewater, including concrete washout is properly disposed of. Materials and chemicals are properly stored.

Contact Us

100 N. 5th St.
Leavenworth, KS 66048
Get Directions

Phone:
(913) 682-9201

Email Us

Staff Directory

Land Disturbance Documents

Documents necessary for construction projects, demos, or working in the Cit'y right of way.

Associated Documents

- Land Disturbance documents
  - Bi Weekly Erosion and Sediment Control Inspection Report Form
  - BMP Inspection Checklist
  - Land Disturbance Permit Application
  - Project Inspection Log
  - Single Family & Small Project Erosion Control Plan Example
  - SWPPP Handout

Appendix G
Grease Trap Inspection Program

- **Summary and Summary of Program**
- **Examples of communications**

City of Leavenworth
Grease Prevention Program
2015 Summary

February 26, 2016

The City of Leavenworth has implemented a formal grease trap/interceptor inspection and maintenance program as part of the effort to prevent backups in the sewer lines. This effort is expected to reduce the number of instances where the contents of the sanitary sewer overflowed into homes, yards or streets

The Building Inspections office has been tasked with implementing and overseeing the program. This includes the following general activity:

1. Contact property owners and tenants whose buildings require a grease trap/interceptor with a letter informing them that the devices are required and that the devices require routine maintenance to operate properly
2. Perform selected and random inspections of the grease traps/interceptors to ensure that they are installed correctly
3. Communicate the need for routine maintenance by sending letters, requesting copies of records and performing an annual inspection of the devices.

In 2013 approximately 100 survey letters were mailed to various businesses in an attempt to determine which food preparation establishments would be required to have proper grease prevention devices in place. A total of 44 surveys were returned. The Plumbing Inspector used the returned surveys and other public records to determine that there were 69 establishments that would likely need to have a grease trap/interceptor installed in the plumbing system.

A second letter was mailed June 6, 2014 to verify installation of devices. It was then determined that the majority of the establishments already had working devices in place.

A third letter was mailed May 14, 2015 informing the businesses that the City would begin requiring businesses to keep maintenance/cleaning records on the grease traps/interceptors and that the City would begin performing annual inspections on the devices.

Four establishments responded to this letter with a statement they were going to have a grease trap installed. All devices are required to be installed by a City licensed

Plumbing Contractor, and the Building Inspections office performs inspections to ensure that the installation meets Plumbing Code requirements. All four businesses installed approved devices by the end of 2015.

The Building Inspection office mailed additional letters in July of 2015 requesting either

1. Copies of maintenance records be supplied, or
2. That the establishment schedule an inspection of the grease trap/interceptor.

The program goal is to send six letters each month requesting copies of maintenance records, and six letters each month requesting that the establishment contact the Building Inspection office and schedule an inspection of the grease trap/interceptor at their location. This ensures that each establishment will receive each letter every year and one inspection will be performed each year. As other establishments are built or identified as needing to have a grease trap/interceptor, the number of letters sent and inspections performed each month will increase.

An adequate response related to copies of inspection records has been received, although multiple requests are necessary at times. Physical inspections have revealed some operational issues that have been adequately addressed by the company management through education. There have been no significant issues requiring changes in the direction of the program.

Staff opinion is that creation of fee and fine structure for grease trap installations would have some value to assist with the inspection program.

October 31, 2013

Abe's Place
5101 10TH Ave
Leavenworth, KS 66048

Dear Aaron,

The City of Leavenworth is attempting to gather information in regards to grease interceptors and traps that are installed throughout the city. We understand all kitchens will create some grease, and the grease may end up the sewer main, but commercial facilities are required by the plumbing code to install grease interceptors or traps in order to reduce the amount of grease being introduced into the public sewer system.

Grease retention devices need to have a regular maintenance schedule. Interceptors are generally pumped out and grease traps are usually cleaned by hand. The City of Leavenworth would like to better understand the type of equipment you are using in your establishments, and the maintenance that is performed.

At this time the surveys that we collect will be used as informational data only. However, the City may require some changes in the future in accordance with the plumbing code.

In order to do so, we are asking for your cooperation in filling out the attached survey. For your convenience, we have enclosed a self-addressed, stamped envelope for you to return the survey.

I appreciate your time for and attention to this matter. Should you have any questions, please feel free to contact me.

Sincerely,

Mancil A. King
Plumbing Inspector
City of Leavenworth

Grease Trap Survey for City Of Leavenworth

Please check the appreciate box ('s)

Compay Name _____

Owner's name _____

Phone number _____

Address _____

1) Is your Operation Primary

Sit down ☐

Take-out ☐

Combination of both ☐

2) Do you use washable plates, cups, utensils

Yes ☐

No ☐

3) Is your operation a

Breakfast only ☐

Lunch only ☐

Dinner ☐

full menu ☐

4) Do you have a grease interceptor (large 1000 gal tank)

Yes ☐

No ☐

5) Do you have a grease trap (small trunk like metal box)

Yes ☐

No ☐

If yes, how often is the device cleaned _____

Thank you for your time. Please return this in the self addresses envelope.

April 14, 2015

RE: Grease Trap Requirements

Dear entrepreneur:

In previous letters the City asked for information about establishments throughout the city related to use and maintenance of grease traps and/or interceptors. The responses to those letters have been evaluated and this letter is to identify important new procedures.

1. GREASE TRAPS REQUIRED

Per The 2006 IPC, International Plumbing Code section 1003.3.5, Restaurants shall have automatic grease removal devices, interceptors and separators or grease traps to prevent the discharge of oil, and grease into public sewer.

Effective immediately, if you do not already have a grease trap or interceptor in place, you will be required to install one. Please note all work must be performed by a city licensed contractor and a plumbing permit will be required. A list of licensed contractors is available upon request.

It is also required that all grease traps be inspected regularly and cleaned as necessary. Records of these inspections and maintenance shall be kept on site for inspection as requested.

2. CITY INSPECTIONS of GREASE TRAPS

City staff will begin annual inspections of all grease prevention devices. These inspections will include a physical inspection of the device as well as a review of your maintenance records.

Should you have any questions, please feel free to contact me.

Sincerely,

Mancil A. King, Plumbing Inspector

100 N. 5th Street • Leavenworth, Kansas 66048-1970 • (913) 684-0378
www.lvks.org

June 4, 2014

Dear Sir or Madam,

Thank you for returning my survey in regards to grease traps and interceptors. According to your reply, you have one these devices installed at your place of business.

As mentioned in the previous letter, grease retention devices need to have a regular maintenance schedule. Interceptors are generally pumped out and grease traps are usually cleaned by hand. Please consider this a friendly reminder to maintain a regular maintenance schedule to avoid possible grease build up in your lines and or the City's main which helps avoid blockages and often costly repairs. Please note the City will request a copy of maintenance records periodically.

In the event your traps or interceptors fails, you will need to have a plumbing contractor licenses by the City make necessary repairs.

Should you have any questions or concerns, please feel free to contact me.

Sincerely,

Mancil King
Plumbing Inspector

January 7, 2016

Crown Lanes
834 Spruce
Leavenworth , KS 66048

Re: Grease interceptors

Dear entrepreneur,

Per The 2006 IPC, International Plumbing Code section 1003.3.5, and an attempt to prevent grease from entering the city's sanitary sewers you were informed you would be required to have either a great trap or interceptor at your place of business, and annual inspections would be performed. The inspections will include a physical inspection of the device as well as a review of your maintenance records.

Please call to schedule your annual inspection within 10 days of receiving this letter unless the box below is checked "provide maintenance records only." In this case, you are only required to send in copies of your maintenance records.

X	Provide copies of maintenance records.
	Schedule your annual inspection and have you maintenance records available.

Thank you for your time and assistance with this matter.

Mark Kramer
Plumbing Inspector

CC: address file

Appendix H
Map Showing Stormwater System and Outfalls

A DVD containing the Map of the City showing creeks, streams, inlets, outlets, outfalls and other stormwater related information was mailed separately to Rance Walker of KDHE February 23, 2016

LEAVENWORTH POST OFFICE
LEAVENWORTH, Kansas
660489998
2842230593-0096
02/23/2016 (800)275-8777 10:06:04 AM

Sales Receipt

Product Description	Sale Unit Qty	Price	Final Price
@@ TOPEKA KS 66612-1367			$2.54
Zone-1			
First-Class Mail Parcel			
2.80 oz.			
Expected Delivery: Thu 02/25/16			
USPS Tracking #:			
9500 1111 0055 6054 3631 15			
Issue Postage:			$2.54
Total:			$2.54

Paid by:
VISA $2.54
Account #: XXXXXXXXXXXX0526
Approval #: 080230
Transaction #: 982
23903221026

@@ Text your tracking number to 28777 (2USPS) to get the latest status. Standard Message and Data rates may apply. You may also visit USPS.com USPS Tracking or call 1-800-222-1811.

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Clerk:10

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YOUR OPINION COUNTS

Stormwater C.D.

Rance Walker
KDHE Bureau of Water
1000 SW Jackson, Ste 420
Topeka KS 66612-1367