

**City of Fayetteville Staff Review Form**

**2015-0375**

**Legistar File ID**

**9/1/2015**

City Council Meeting Date - Agenda Item Only  
N/A for Non-Agenda Item

Chris Brown

8/12/2015

Engineering /  
Development Services Department

**Submitted By**

**Submitted Date**

**Division / Department**

**Action Recommendation:**

Approval for the City of Fayetteville to participate in a grant opportunity with the Arkansas Natural Resources Commission (ANRC) by providing up to \$43,658 in matching funds to continue updating the Flood Insurance Rate Maps (FIRMs) for the community.

**Budget Impact:**

4470.9470.5314.00

4470-Sales Tax Capital Improvements

Account Number

Fund

02108.2015

ANRC/FEMA Risk Map Phase 2

Project Number

Project Title

**Budgeted Item?** Yes

Current Budget \$ 43,658.00

Funds Obligated \$ -

Current Balance **\$ 43,658.00**

**Does item have a cost?** Yes

Item Cost \$ 43,658.00

**Budget Adjustment Attached?** No

Budget Adjustment \$ -

Remaining Budget **\$ -**

V20140710

Previous Ordinance or Resolution # \_\_\_\_\_

Original Contract Number: \_\_\_\_\_

Approval Date: \_\_\_\_\_

Comments:

**MEETING OF SEPTEMBER 1, 2015**

**TO:** Mayor and City Council

**THRU:** Don Marr, Chief of Staff  
Jeremy Pate, Development Services Director  
Chris Brown, City Engineer

**FROM:** Alan Pugh, Staff Engineer

**DATE:** August 5, 2015

**SUBJECT:** Approval for the City of Fayetteville to participate in a grant opportunity with the Arkansas Natural Resources Commission (ANRC) by providing up to \$43,658 in matching funds to continue updating the Flood Insurance Rate Maps (FIRMs) for the community.

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**RECOMMENDATION:**

Approval for the City of Fayetteville to participate in a grant opportunity with the Arkansas Natural Resources Commission (ANRC) by providing up to \$43,658 in matching funds to continue updating the Flood Insurance Rate Maps (FIRMs) for the community.

**BACKGROUND:**

Recently, ANRC, in partnership with the Federal Emergency Management Agency (FEMA) initiated Phase 1 of the Risk Mapping, Assessment and Planning (Risk MAP) Program. This phase included what is referred to as "discovery" and local counties and municipalities were asked to participate by contributing monetarily, \$5,000, and by identifying areas on the currently effective FIRMs in need of update. Fayetteville participated in this discovery by identifying several areas throughout the community where the maps are in need of update or are believed not to be accurate for various reasons. ANRC partnered with a local engineering firm, FTN Associates, to lead the effort and begin to compile the results. Out of that program, Fayetteville was able to receive valuable feedback as well as what are referred to as First Order Approximations (FOA) for many of the special flood hazard areas throughout town with little or no technical information supporting the floodplain designation. As a result, the City is able to utilize these studies to help property owners within these areas more accurately identify the extent of potential flooding. However, the FOA are only a slight step forward. The next step in the process is to begin to analyze or reanalyze the areas that were identified which leads into the Phase 2 portion of the project.

**DISCUSSION:**

The proposed grant opportunity (Phase 2) includes an update to the existing flood insurance study (FIS). In general this project will include updating approximately 29.3 miles of Zone A streams, converting approximately 5.2 miles of Zone A Streams to Zone AE and re-delineating approximately 47.3 miles of current Zone AE streams. The benefits to the City and property

owners would include more accurate flood data, better customer service by staff for residents in that more detailed information for the flood designation can be provided, potential reduction in flood insurance rates for property owners in some cases and a potential for reduction in future flood damage claims. Additional information regarding the project and benefits can be found below and within the attached information.

During Phase I, Discovery Phase, Washington County, including all incorporated and unincorporated areas, was identified as a strong candidate for a Risk Map Phase 2 project. The Phase 2 portion of the project includes engineering and mapping to update the currently effective Washington County, AR Flood Insurance Study (FIS) and FIRMs referred to collectively as an FIS update.

The updated engineering and mapping developed in the proposed Phase 2 Risk MAP project would be based on the newer aerial topographic data recently acquired by FEMA, updated hydrology and hydraulics for the streams currently mapped as approximate, the addition of published Base Flood Elevations (BFEs) added to the FIRMs for some select streams, that are currently mapped as approximate, and updated or new detailed hydrologic and hydraulic analysis for select streams in the Cities of Fayetteville and Springdale.

It should be noted that the referenced updated topographic data is being provided by FEMA/ANRC at no cost to the county or incorporated communities. That portion of the project was initiated in late 2014 in anticipation of the Phase 2 portion of the process and should be complete in the fall of 2015.

This project could benefit the residents of Fayetteville in several ways.

- Current residents who own properties located within Zone A, Base Flood Elevations Not Determined, would have more accurate information supporting the extent of the Special Flood Hazard Area (SFHA) and more accurate information regarding the approximate flood elevations.
- Some of the Zone A Special Flood Hazard Areas would be further analyzed in order to convert them to Zone AE, Base Flood Elevations Determined. This proposal includes approximately 5.2 miles of stream with the City of Fayetteville which covers many of the tributaries to Town Branch. A list of the tributaries is included with the supporting information attached to this memorandum. This will help the city further understand the extent of possible flooding as well as give residents in these areas more accurate information regarding the base flood elevation and what could be done to reduce their risk of flooding. It also aides the resident when attempting to sell or improve their property by being able to use previously determined based flood elevations rather than going through the time and expense of having an engineer develop a base flood elevation for their property.
- Some Zone AE areas will be re-delineated utilizing more recent topographic information. This will in turn likely remove some properties from the floodplain as well as potentially include properties that are not currently located within the floodplain. While the properties brought into the floodplain may be subject to additional regulation, it is important for the owners of those properties and potential developers to understand the risk of flooding and plan accordingly. This can drastically reduce flood claims and property loss in the future.
- Phase 2 will also include new products intended to assist communities in the communication of risk to individual homeowners, local businesses, and emergency managers. These products will include depth and velocity grids which can be used to

identify the depth of water, or the speed of the water, at a given point, such as a flooding roadway. Probability grids can be used to demonstrate what the chance of flooding is for a location over a 30-year period, which is consistent with the period of a typical home mortgage.

The proposed Phase 2 Risk MAP project is proposed to be funded using a grant from FEMA to ANRC that will require local cost share. The total project costs for the 2015 LIDAR acquisition and FIS update are \$250,000 and \$475,209 respectively, or \$725,209 for the total project. FEMA's contribution to the total project will be \$612,657 and the community cost share needed is \$112,552. ANRC is requesting the City of Fayetteville contribute \$43,658, which is 6% of the total project cost, to help us meet the cost share requirements.

**BUDGET/STAFF IMPACT:**

Staff proposes that the funding for the project be allocated out of the Sales Tax Capital Improvements Project 02108 – Other Drainage Improvements in an amount up to \$43,658.

**Attachments:**

ANRC Funding Request

## City of Fayetteville - Purchase Order Request (PO)

(Not a Purchase Order)

**All PO Requests shall be scanned to the Purchasing e-mail: [Purchasing@fayetteville-ar.gov](mailto:Purchasing@fayetteville-ar.gov).**  
**Purchase shall not be made until an actual PO has been issued.**

Requisition No.:	Date: <b>8/11/2015</b>
P.O Number:	

Vendor #: <b>790</b>	Vendor Name: <b>AR Natural Resources</b>	Mail <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>Legistar#: 2015-0375</b>
Address: <b>PUR</b>		FOB Point:	Expected Delivery Date:
City:	State:	Zip Code:    Ship to code:	
Requester: <b>Alan Pugh</b>		Requester's Employee #: <b>4073</b>	Extension: <b>8208</b>

Item	Description	Quantity	Unit of Issue	Unit Cost	Extended Cost	Account Number	Project.Sub#	Inventory #	Fixed Asset #
1	<b>Professional Services. - Risk Map Phase 2</b>	1	Lot	43,658.00	\$43,658.00	4470.9470.5314.00	02108.2015		
2					\$0.00				
3					\$0.00				
4					\$0.00				
5					\$0.00				
6					\$0.00				
7					\$0.00				
8					\$0.00				
9					\$0.00				
10					\$0.00				
*	Shipping/Handling		Lot		\$0.00				

Special Instructions:	Subtotal: <u>          <b>\$43,658.00</b></u> Tax: <u>                  <b>\$0.00</b></u> Total: <u>                  <b>\$43,658.00</b></u>
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Approvals:

Mayor: _____	Department Director: _____	Purchasing Manager: _____
Chief Financial Officer: _____	Budget Director: _____	IT Director: _____
Dispatch Manager: _____	Utilities Manager: _____	Other: _____



# Arkansas Natural Resources Commission



J. Randy Young, PE  
Executive Director

101 East Capitol, Suite 350  
Little Rock, Arkansas 72201  
<http://www.anrc.arkansas.gov/>

Phone: (501) 682-1611  
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Asa Hutchinson  
Governor

July 28, 2015  
[cbrown@fayetteville-ar.gov](mailto:cbrown@fayetteville-ar.gov)

Mr. Chris Brown, P.E.  
City Engineer, City of Fayetteville  
Development Services Building  
125 W. Mountain Street  
Fayetteville, AR 72701

Re: Washington County, AR Flood Insurance Study Update  
ANRC / FEMA Grant – Risk MAP Phase 2 Mapping Activity Statement 13

Dear Mr. Brown:

Recently, Arkansas Natural Resources Commission (ANRC), in partnership with the Federal Emergency Management Agency (FEMA), initiated Phase 1 of the Risk Mapping, Assessment, and Planning (Risk MAP) Program, which is the Discovery Phase. In preparation for and during the Discovery Phase, Washington County, including all incorporated and unincorporated areas, was identified as a strong candidate for a Risk MAP Phase 2 project, which includes engineering and mapping to update the current effective Washington County, AR Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs), referred to collectively as an FIS update. In preparation for a Phase 2 Risk MAP project in late 2014, FEMA, in conjunction with the US Geological Survey (USGS), funded aerial LIDAR acquisition and processing for Washington County. LIDAR is a remote sensing technology used to collect data to prepare a map or model of the ground surface. This model of the ground surface is often referred to as topography and will provide the quality base for the updated engineering and mapping proposed for the Phase 2 Risk MAP project. The LIDAR project was initiated in late 2014 and will be completed in the fall of 2015. The 2015 LIDAR data will be available from FEMA without restriction.

The updated engineering and mapping developed in the proposed Phase 2 Risk MAP project would be based on the newer aerial topographic data recently acquired by FEMA, updated hydrology and hydraulics for the streams currently mapped as approximate, the addition of published Base Flood Elevations (BFEs) added to the FIRMs for some select streams, that are currently mapped as approximate, and updated or new detailed hydrologic and hydraulic analysis for select streams in the Cities of Fayetteville and Springdale.

The proposed Phase 2 Risk MAP project would be funded using a grant from FEMA to ANRC that will require local cost share. The total project costs for the 2015 LIDAR acquisition and FIS update are \$250,000 and \$475,209 respectively, or \$725,209 for the total project. FEMA's contribution to the total project will be \$612,657 and the community cost share needed is \$112,552. We are requesting the City of Fayetteville contribute \$43,658, which is 6% of the total project cost, to help us meet the cost share requirements.

The proposed Phase 2 Risk MAP tasks of a countywide FIS update project will involve several different types of stream analyses and resulting mapping. The following summarizes the types of analyses and stream mileages within your community that are identified to receive new floodplain mapping as part of the proposed FIS update.

- The proposed FIS update will include performing updated approximate hydrologic and hydraulic analyses and updated floodplain mapping of over 436 miles of streams using the 2015 collected LIDAR (topography) throughout the incorporated and unincorporated areas of Washington County. The resulting special flood hazard area (SFHA) mapping will be supported by GIS and engineering data that will be provided to the communities for use in assisting residents/property owners in defining the BFE for their property. In the City of Fayetteville 29.3 miles will be updated with a new approximate analysis.
- The FIS update will include updating the SFHA designation from Zone A to Zone AE on approximately 38 miles of streams within the incorporated and unincorporated areas of Washington County. Floodplain mapping that is designated as Zone AE will have BFEs published on the FIRMs. These specific stream miles were studied previously using a methodology referred to as Limited Detail Study (LDS) as part of the Washington County FIS completed in 2008. These models will also be updated with the 2015 LIDAR data that will allow for recent man-made changes in and around the LDS streams to be accounted for in the model without requiring the filing of individual Letters of Map Change. In the City of Fayetteville 5.2 miles of LDS streams will be updated.
- The FIS update will include what is referred to as redelineation for over 100 stream miles of current effective Zone AE floodplain mapping on the FIRMs. Redelineation retains the results of the previously studied current effective stream model, meaning the established BFEs and floodway remain unchanged with respect to elevation; however the SFHA boundaries will be adjusted to be consistent with the 2015 LIDAR. For example, if the BFE on Big Creek is 1,110 ft, the elevation will remain 1,110 ft; however the boundary of the SFHA will be reviewed and revised against the new LIDAR data to match the ground elevation of 1,110 ft using the new LIDAR. In the City of Fayetteville 47.3 miles of existing detailed streams will be redelineated using the new topography.
- The FIS Update will include new detailed studies of several streams within the Cities of Fayetteville and Springdale where significant changes in the drainage basin and/or the stream channel warrant a revised analysis, or where Zone A areas are present and development pressures exist and a detailed Zone AE SFHA with a designated floodway is warranted. Approximately 13 miles of detailed study will be performed overall which includes 7.8 miles within the City of Fayetteville.

The stream names and associated mileage for the LDS and detailed study are provided as an attachment in addition to a figure providing an overview of the streams to be included in the proposed Phase 2 Risk MAP FIS Update in Washington County and the subsequent level of analysis that will be applied.

The proposed FIS update will provide many benefits to the communities in Washington County. The LIDAR collected during the winter months of 2014-2015 provides an improved level of vertical accuracy, supporting elevations to within  $\pm 1/2$  ft, as compared to the topographic base data on the current FIRMs of  $\pm 2 1/2$  ft. This improved accuracy will enhance the quality of the SFHA mapping and will help reduce the risk for those property owners who wish to develop safely and soundly in areas in/near SFHAs. A better-defined risk area will aid property owners in making sound judgments on development opportunities, rather than having to invest hundreds of dollars in trying to define the risk themselves. Additional benefits will be realized with the distribution of the GIS and engineering data that will be made available to the communities. This engineering support data will provide established base hydraulic condition for

many of the streams in the county, allowing communities and/or property owners to evaluate engineering options such as new hydraulic structures (bridges or culverts) less expensively.

In addition to the updated FIRMs and FIS Report, new products intended to assist communities in the communication of risk to individual homeowners, local businesses, and emergency managers are part of the Risk MAP project. These products will include depth and velocity grids which can be used to identify the depth of water, or the speed of the water, at a given point, such as a flooding roadway. Probability grids can be used to demonstrate what the chance of flooding is for a location over a 30-year period, which is consistent with the period of a typical home mortgage. These new products and related GIS and engineering data also allow communities to customize their own products, such as utilizing new aerial photography, topography, parcel data, 911 data, and building footprints to assist in protecting people and their property and establishing a sound floodplain management program.

Once FEMA confirms the proposed Phase 2 Risk MAP project cost-share requirements have been satisfied, the Washington County FIS Update is expected to begin October 1, 2015 and culminate December 31, 2016 with the delivery of draft FIRMs for community review.

During the community review of the draft FIRMs, ANRC and FEMA will work with the communities to confirm their agreement to proceed to Risk MAP Phase 3, which involves converting the draft FIRMs to formal preliminary FIRMs for publication and public review, and the subsequent regulatory processes required for FIRM adoption. Risk MAP Phase 3 is funded entirely by FEMA. This process generally takes approximately 1 year and will be initiated once the communities, ANRC, and FEMA agree to move forward.

The community participation and commitment to Risk MAP is extremely important, especially during the critical FIS Update engineering and mapping production phase. By collaborating on the engineering and mapping phase, FEMA, ANRC, and our community partners have the opportunity to develop a relationship whereby we all can take ownership of the FIS update process and participate in the development and delivery of quality final products.

We need to complete our grant application, which includes documentation confirming that we have secured our cost-share commitments, by August 21, 2015. Therefore, we respectfully request your confirmation of your level of participation on/before August 20, 2015.

Sincerely,



Michael Borengasser, CFM  
NFIP Coordinator  
Arkansas Natural Resources Commission

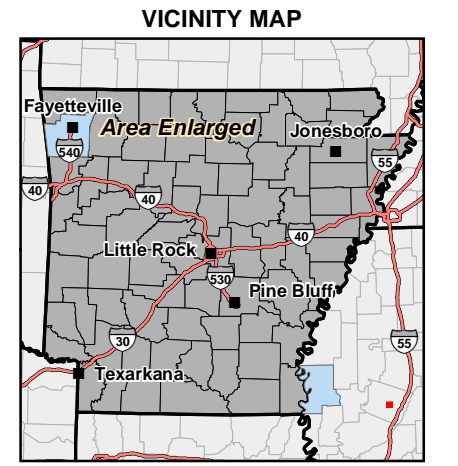
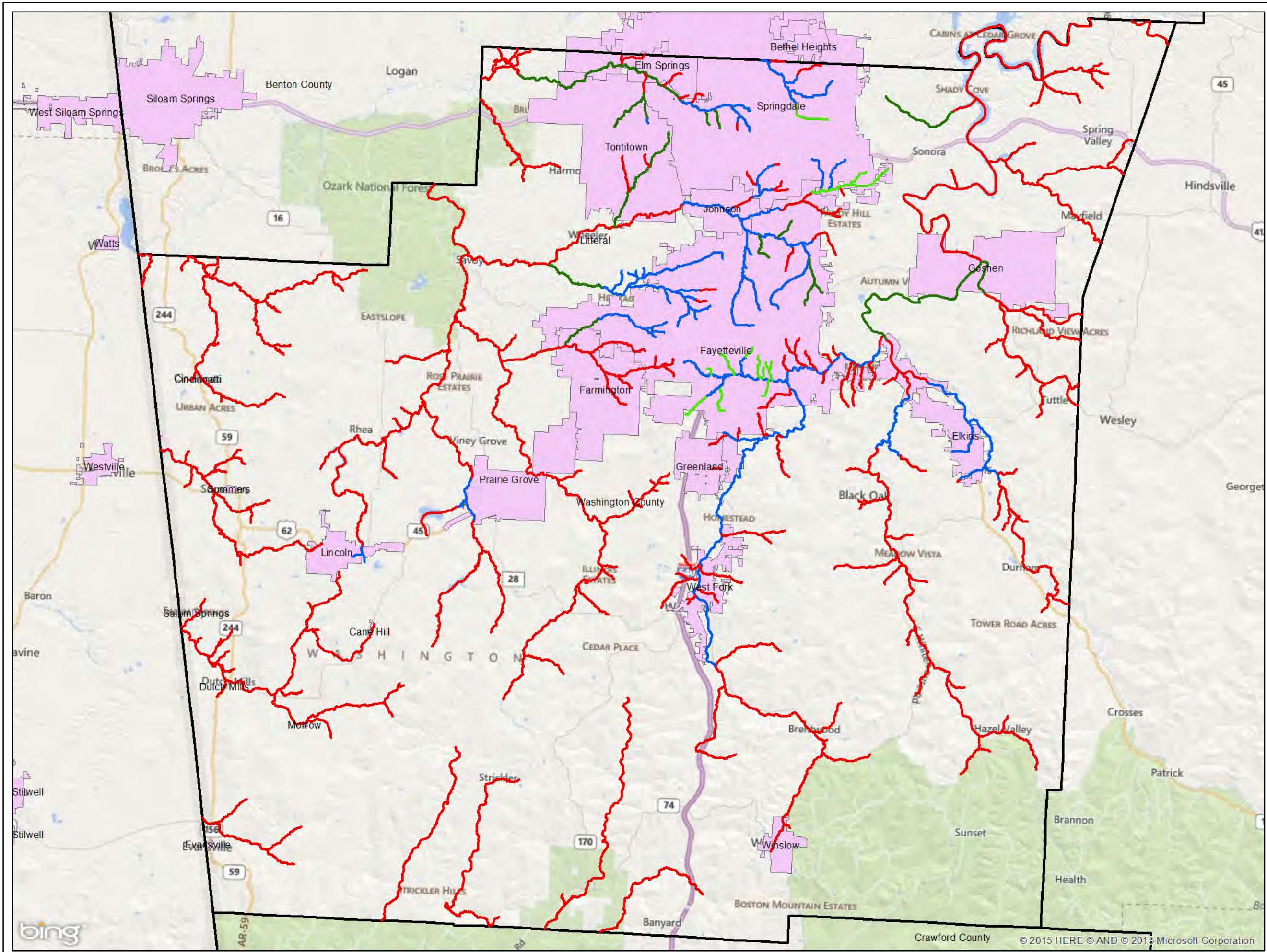
Enclosures: Summary of Stream Names and Mileage  
Washington County Study Streams

Cc: MaryBeth Breed, FTN Associates, Ltd



**Summary of Stream Names and Study Method Mileage – City of Fayetteville**

ID	Flooding Source Name	Current Study Method (Approximate, LDS, Detailed)	Proposed Study Method (Approximate, LDS, Detailed)	Total Mileage (miles)
1	Cato Springs Branch (upstream of S. Shiloh Dr)	Approximate	Detailed	1.1
2	College Branch	Approximate	Detailed	1.1
3	Cummings Creek	Approximate	Detailed	0.8
4	Cummings Creek Tributary	Approximate	Detailed	0.4
5	East Fork Cato Springs Branch	Approximate	Detailed	1.4
6	Spout Springs Branch	Approximate	Detailed	0.5
7	Town Branch Tributary 1	Approximate	Detailed	0.7
8	West Branch	Approximate	Detailed	0.3
9	Unnamed Tributary to Town Branch (West of S. Morningside Dr)	Approximate	Detailed	1.0
10	Unnamed Tributary to Town Branch (East of S. Morningside Dr)	Approximate	Detailed	0.5
11	Futrall Branch	LDS – Zone A	LDS – Zone AE	1.4
12	Kitty Creek	LDS – Zone A	LDS – Zone AE	0.8
13	Owl Creek	LDS – Zone A	LDS – Zone AE	0.8
14	Skillern Branch	LDS – Zone A	LDS – Zone AE	1.2
15	Skillern Tributary	LDS – Zone A	LDS – Zone AE	1.0

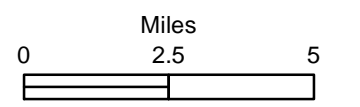


**Washington County  
Study Streams  
Map**

**Legend**

-  Zone A Restudies
-  Limited Detail A to AE
-  Zone AE Restudies
-  Redelineation AE
-  Counties
-  City Limits

Background: (c) 2010 Microsoft Corporation and its data suppliers.



Map Created - July 28, 2015

Map Coordinate System:  
NAD 1983 StatePlane Arkansas North FIPS 0301 Feet