



# Allen County



**FEMA**


*Floodplain Mapping Project  
Data Development Kickoff Meeting*

*July 13, 2021*

**wood.**

While we are waiting, please enter your name  
and community in the chat box!





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***Your engagement  
in this process is  
important to the  
success of this  
project, so thank  
you for taking the  
time to be here  
today!***



**THANK  
YOU**



# Introductions

## Kansas Department of Agriculture

**Tara Lanzrath, CFM**  
*Floodplain Mapping  
Coordinator*

**Joanna Rohlf, CFM**  
*Floodplain Mapping  
Specialist*

**William Pace, CFM**  
*Floodplain Mapping  
Specialist*

**Steve Samuelson, CFM**  
*State NFIP Coordinator*

**Cheyenne Sun Eagle**  
*NFIP Specialist*

## FEMA – Region VII

**Andy Megrail**  
*Regional Project Officer*

## Wood Environment & Infrastructure Solutions

**Joe File, PE, CFM**  
*Senior Associate /  
Program Manager*

**Maria Neeland, PE, CFM**  
*Project Manager /  
Engineer*





## *Today's Goals*

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*Share details on the mapping project*

*Get initial feedback on modeling methods*

*Review future steps*



# *Background*

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# Background



- Osage Custom Watershed BLE Project
  - *Kick-off Meeting and BLE Review: October 22, 2019*
  - *Discovery Meeting: February 5, 2020*
- Lower Neosho Custom Watershed BLE Project
  - *Kick-off Meeting and BLE Review: November 19, 2019*
  - *Discovery Meeting: April 15, 2020*

# Background



- Allen County Effective Mapping is dated September 2009 with a PMR done in July 2011 for the City of Iola to de-accredit the levee system.
- Through Discovery and conversations with County stakeholders, it was determined that updated modeling and mapping would benefit Allen County.



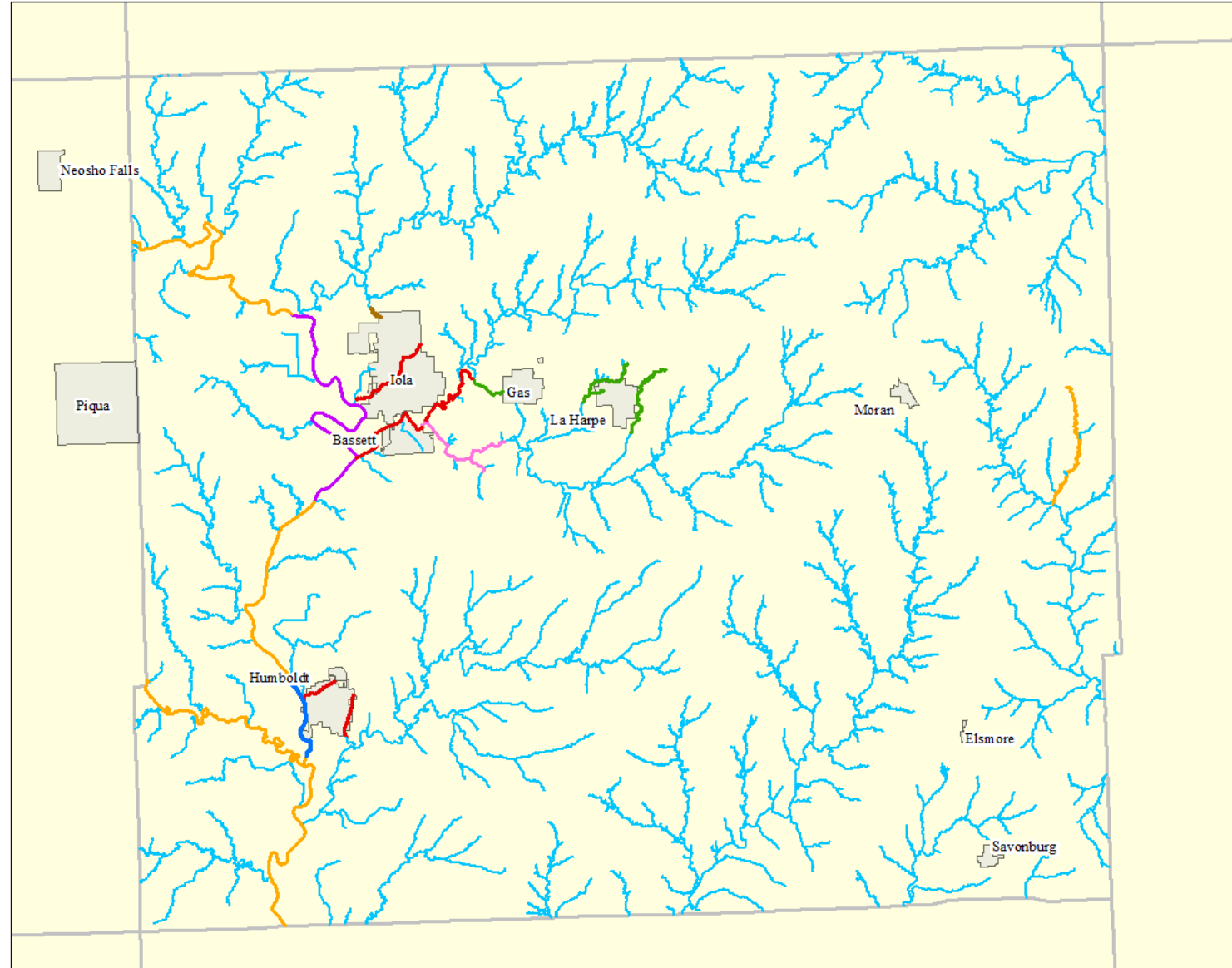
# *Review of the Work Ahead and How We Propose Doing It*

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## Scoped Studies

- New Zone A - Gage Analysis**  
New Zone A studies will be developed for these streams using 2D Hec-Ras hydraulics and hydrology calibrated to Gage Analysis flows.
- New Zone A - Excess Rainfall on Grid**  
New Zone A studies will be developed for these streams using 2D "excess rainfall-on grid" hydrology and 2D Hec-Ras hydraulics.
- New Enhanced Zone A -HEC-HMS**  
New Enhanced Zone A studies will be developed for these streams using 2D Hec-Ras hydraulics and hydrology calibrated to HEC-HMS model flows. Field measured structure data will be incorporated into the modeling.
- New Enhanced Zone A -Excess Rainfall on Grid**  
New Enhanced Zone A studies will be developed for these streams using 2D "excess rainfall-on-grid" hydrology and 2D Hec-Ras hydraulics. Field measured structure data will be incorporated into the modeling.
- New Zone AE with Floodway - HEC-HMS**  
New Zone AE studies will be developed for these streams using 1D or 2D Hec-Ras hydraulics and hydrology calibrated to HEC-HMS model flows. Floodways will be developed. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.
- New Zone AE with Floodway - Gage Analysis**  
New Zone AE studies will be developed for these streams using 1D or 2D Hec-Ras hydraulics and hydrology calibrated to Gage Analysis Flows. Floodways will be developed. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.
- New Zone AE without Floodway - Gage Analysis**  
New Zone AE studies will be developed for these streams using 2D Hec-Ras hydraulics and hydrology calibrated to Gage Analysis Flows. Floodways will not be developed. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.
- New Zone AE without Floodway - HEC-HMS**  
New Zone AE studies will be developed for these streams using 2D Hec-Ras hydraulics and hydrology calibrated to HEC-HMS model flows. Floodways will not be developed. Field measured structure data will be incorporated into the modeling. BFEs will be shown on the maps.

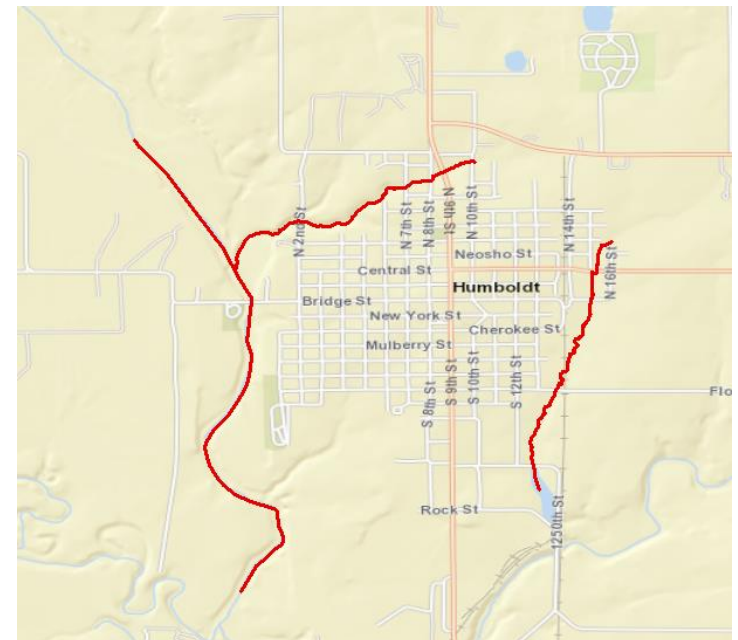
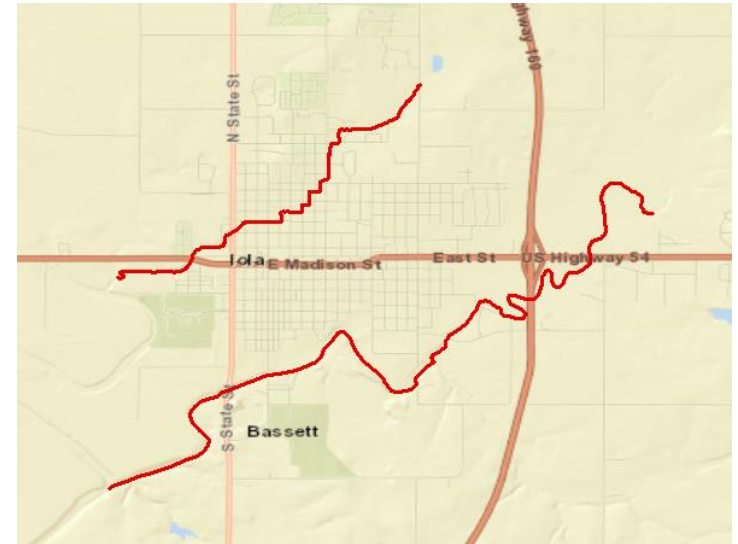






## ***New Zone AE with Floodway***

- Iola:
  - Coon Creek
  - Rock Creek
  - Elm Creek
- Humboldt:
  - Neosho River
  - Cannon Creek
  - 1 Tributary to Coal Creek

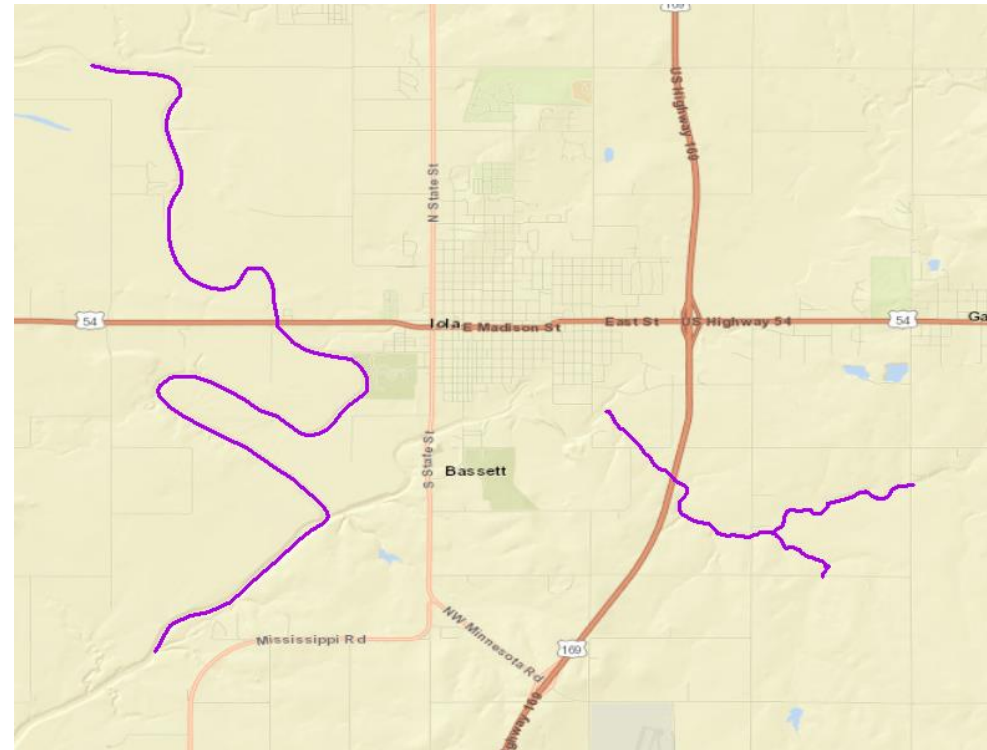






# New Zone AE without Floodway

- Iola:
  - Neosho River
  - Elm Creek and 1 Tributary

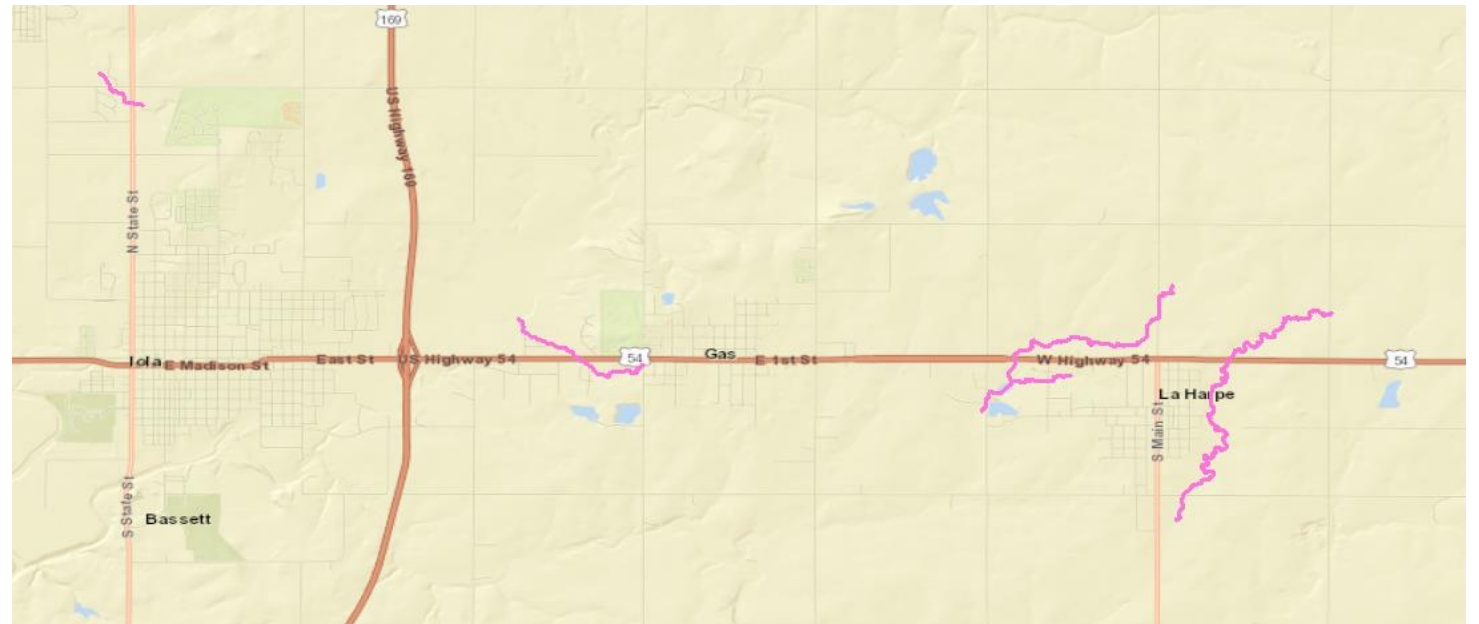






## New Enhanced Zone A

- Iola:
  - 1 Tributary to Deerk Creek
- Gas:
  - 1 Tributary to Rock Creek
- La Harpe
  - 3 Tributaries to Elm Creek

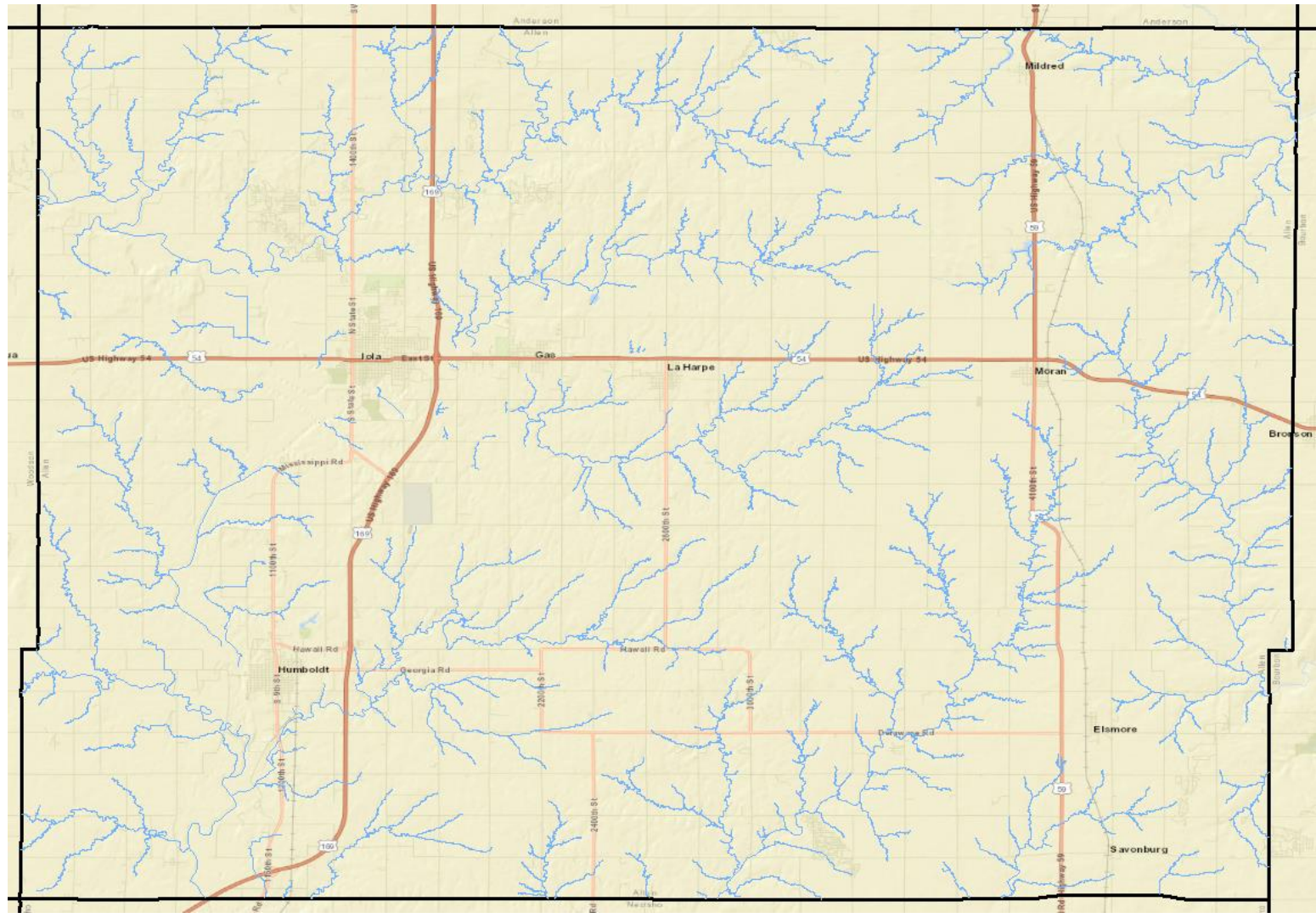






# New Zone A

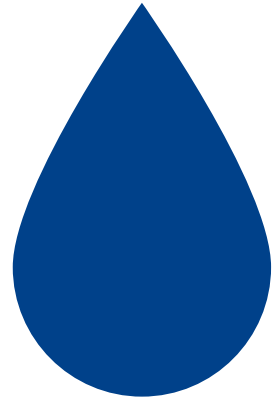
- Remainder of Streams in the County





# Definitions

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**Hydrology**  
*How Much Water?*



**Hydraulics**  
*How High Will Water Get?*





***2D Hydraulic  
Modeling will be  
used for the Zone  
A streams and  
Zone AE without  
Floodway streams***

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- Enhancements will be made to the BLE modeling that was performed for the Zone A and Zone AE without Floodway streams.
  - Comments made and additional information gathered during the Discovery phase will be used to enhance the modeling
  - Enhanced Zone A and Zone AE without Floodway streams will include field measured data for culverts and bridges
- The hydrology is built into the RAS modeling platform using excess rainfall-on-grid methodology.
  - This will be calibrated to gage analysis and HEC-HMS model flows



***1D or 2D Hydraulic Modeling can be performed for the Zone AE with Floodway streams***

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## ***Zone AE with Floodway Hydrology***

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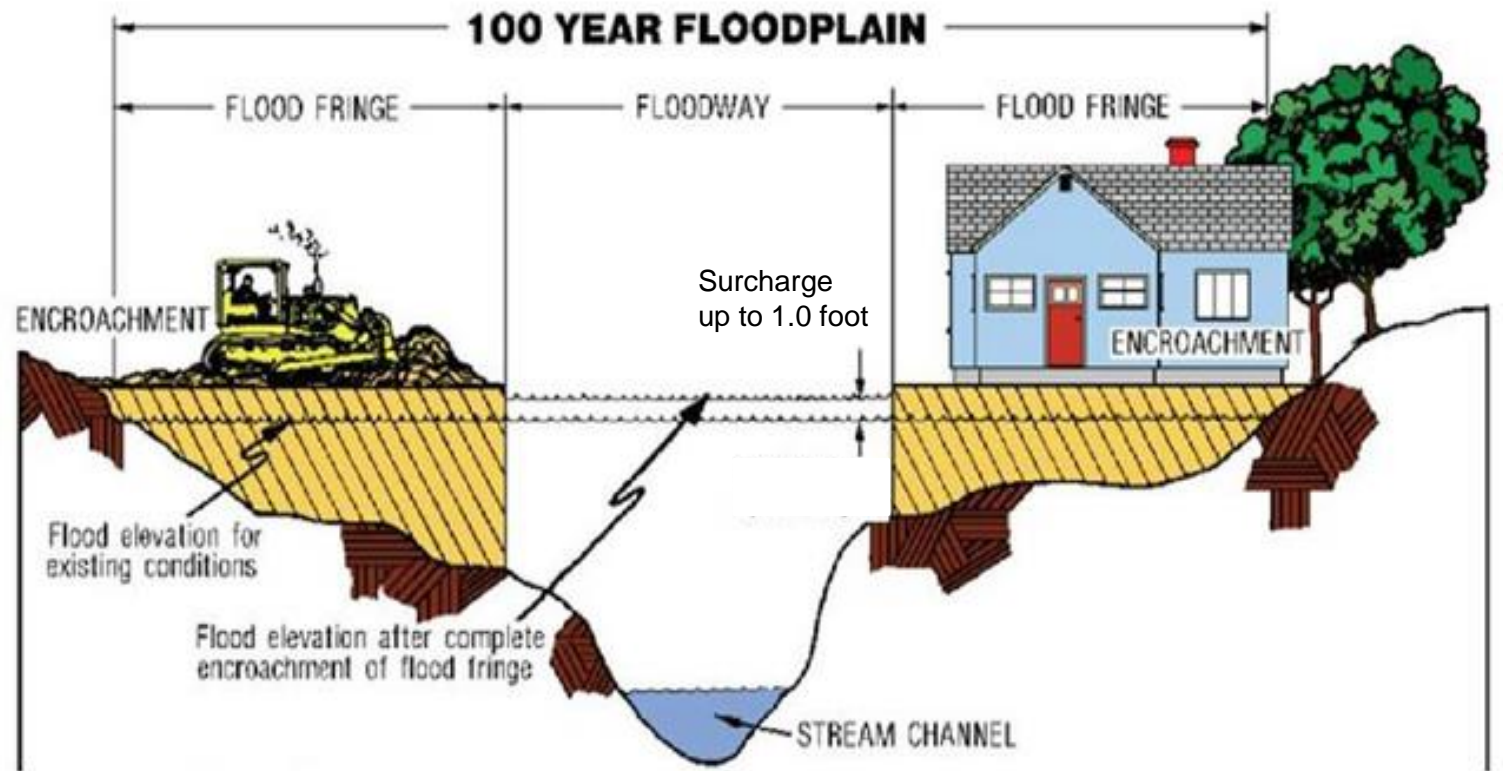
- Gage Analyses will be performed for the Neosho River as it has USGS stream gages
  - Used as flows for 1D modeling or calibration information for 2D modeling
- HEC-HMS (Rainfall-Runoff) Modeling will be performed for the other Zone AE with Floodway streams
  - Used as flows for 1D modeling or calibration information for 2D modeling





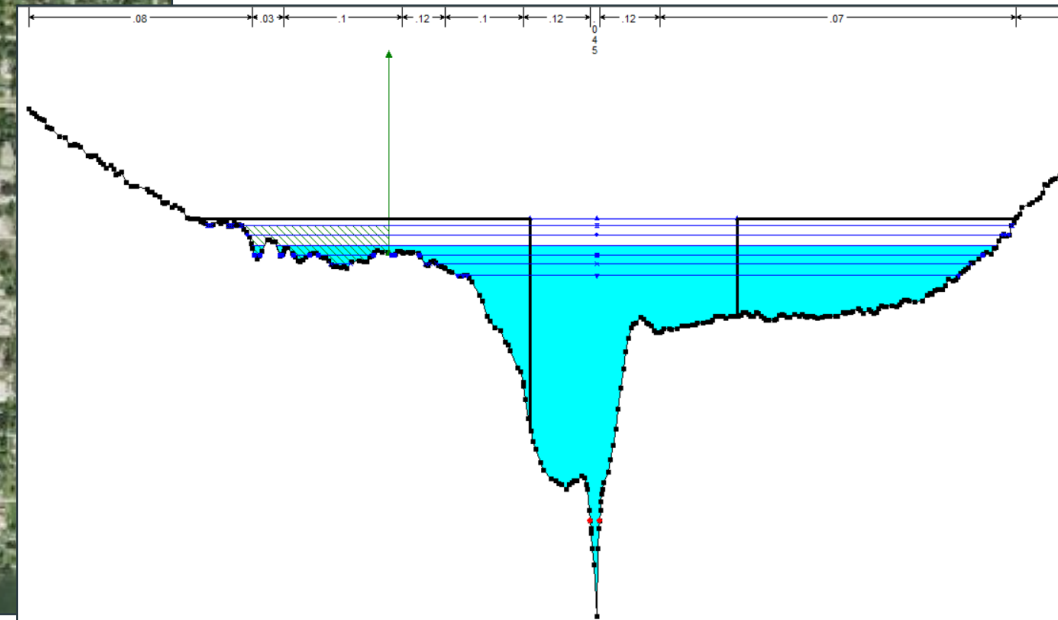
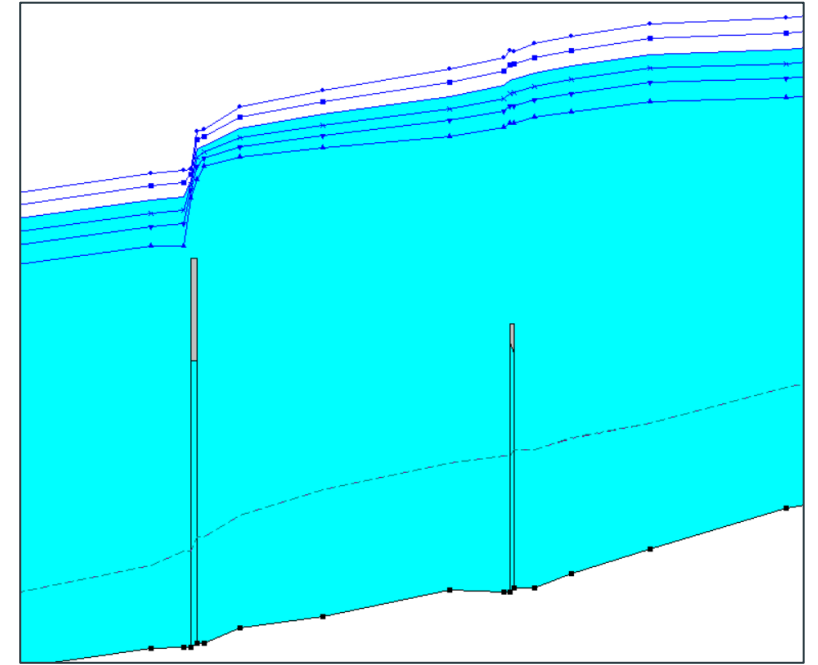
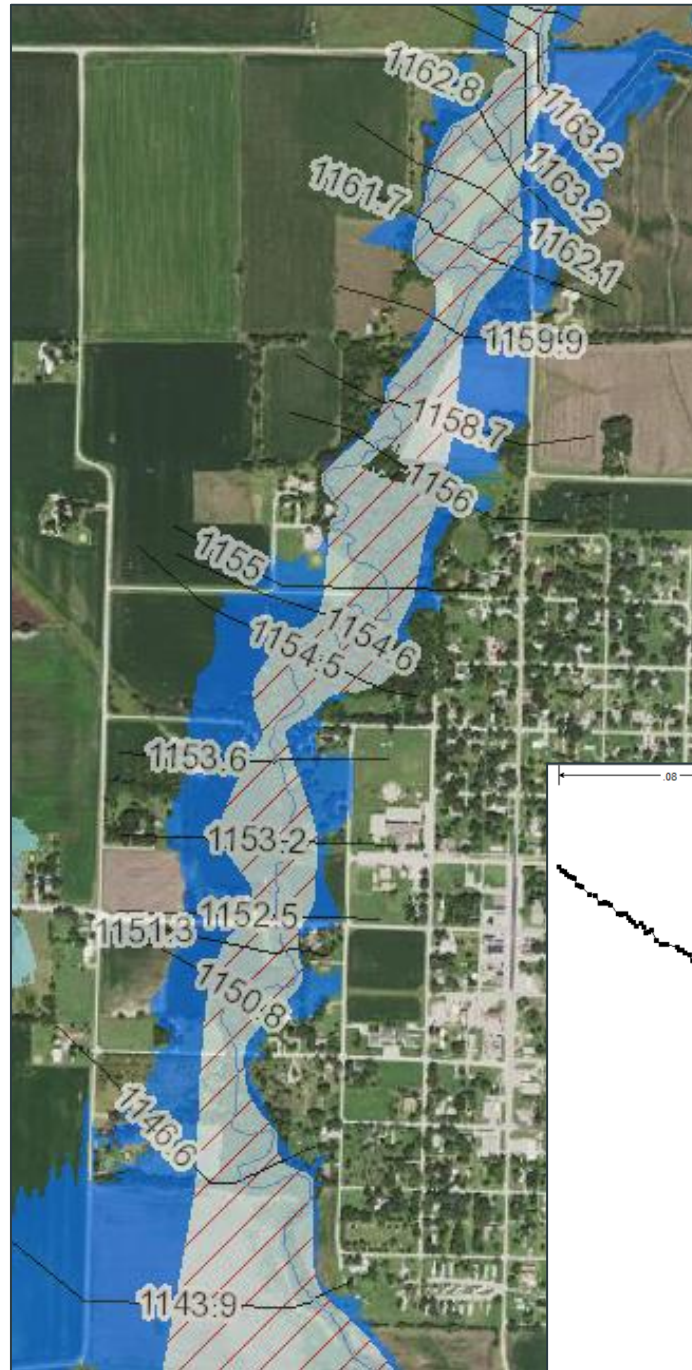
*A portion of the Zone AE modeling includes the development of a floodway*

A Floodway is the area within the floodplain that must be reserved in order to discharge the base flood without cumulatively increasing the WSE by more than 1.0 foot.





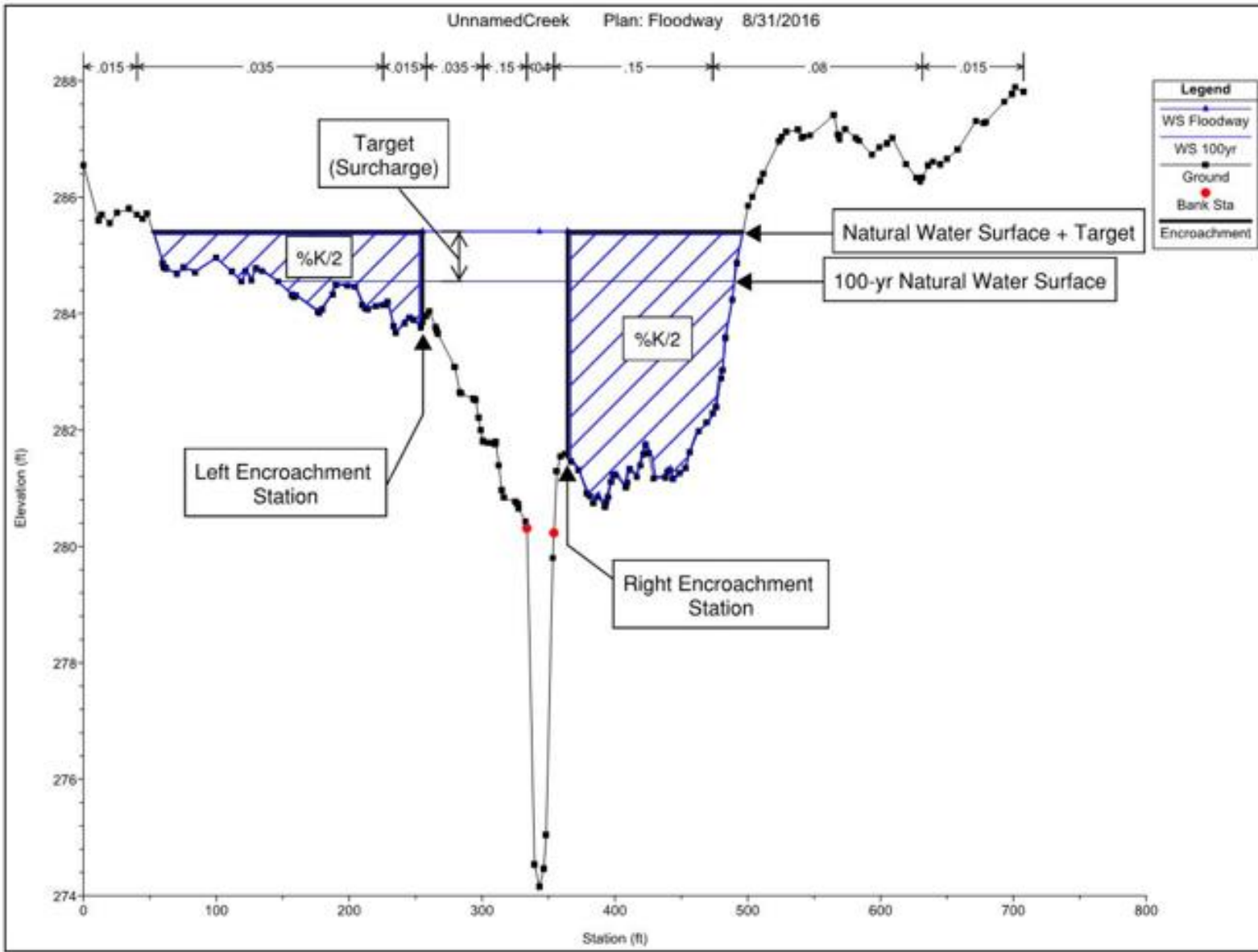
# 1D Modeling







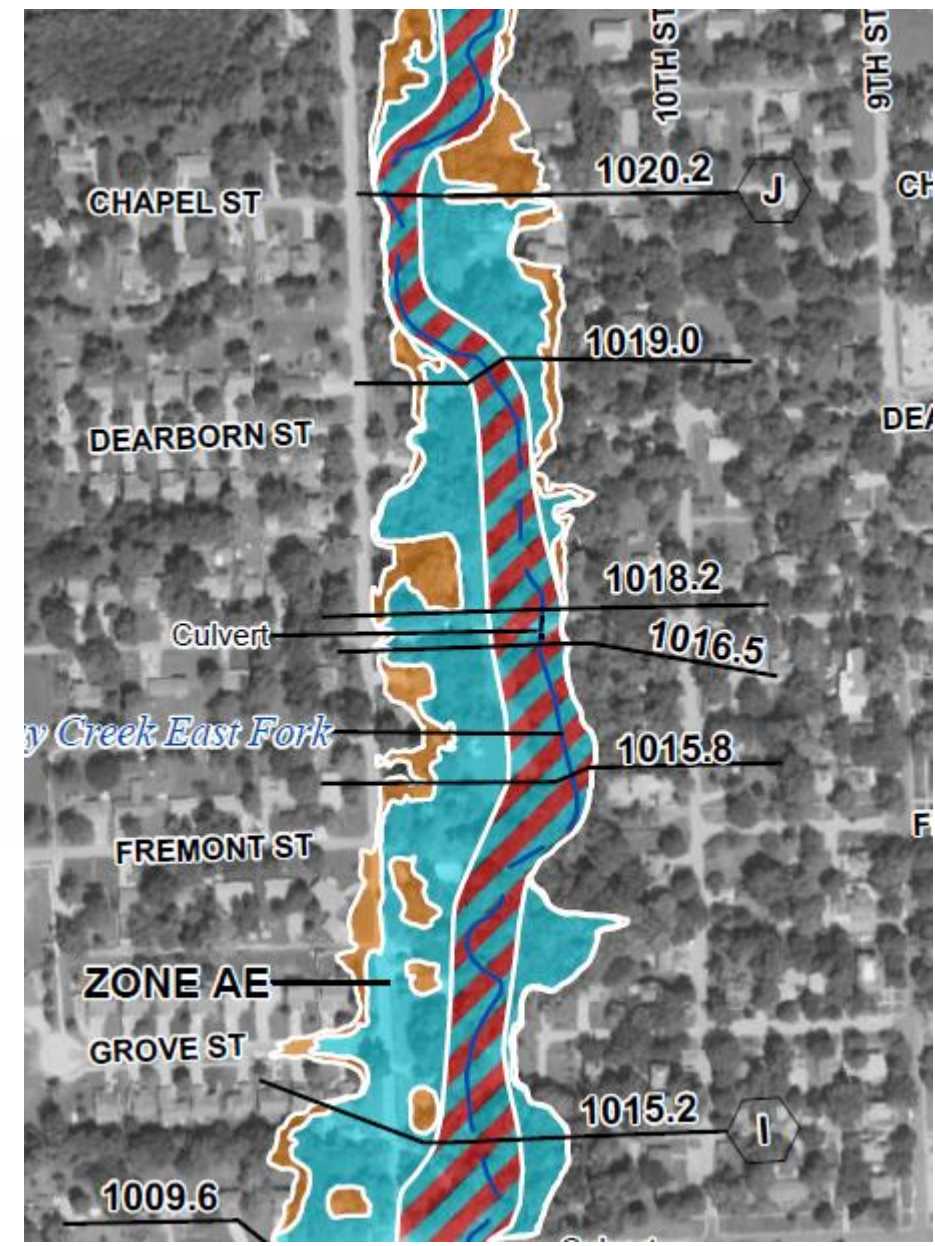
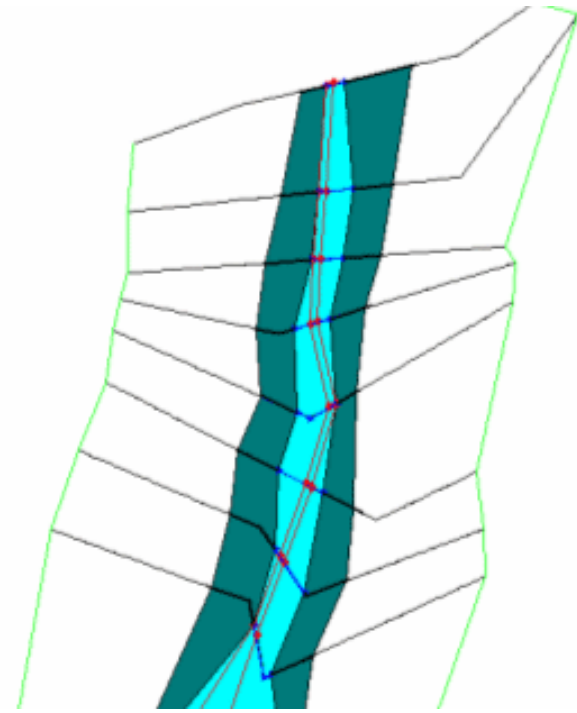
# 1D Floodways







# 1D Floodways







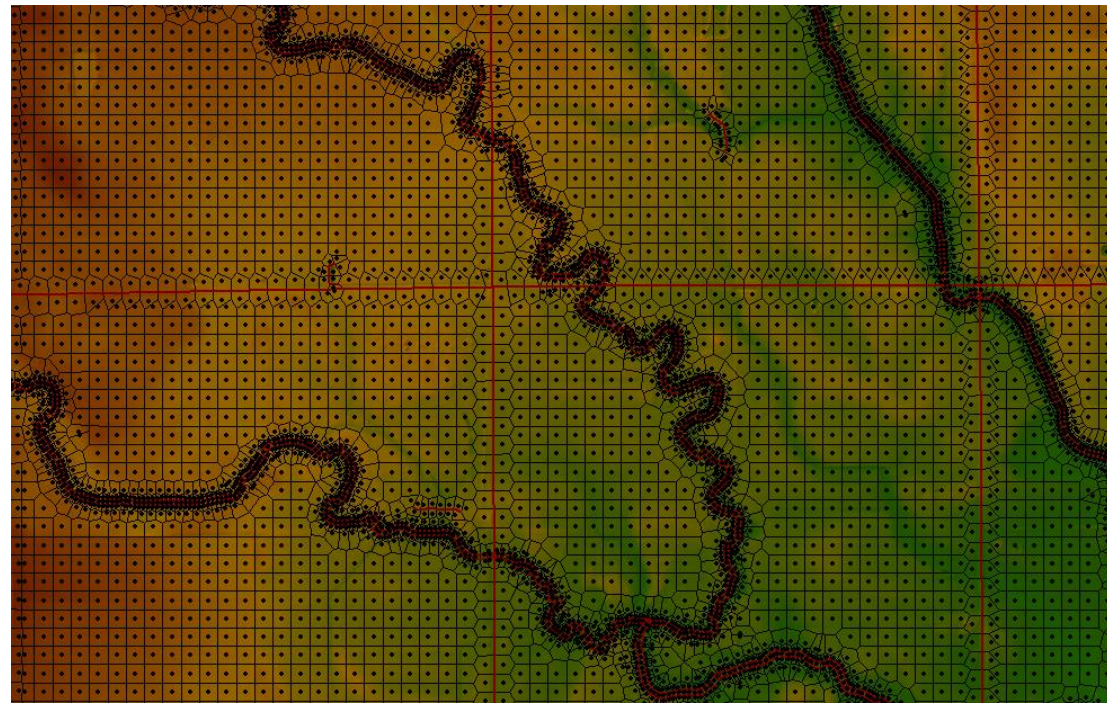
## ***Benefits of 1D modeling for Zone AE streams***

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- The local consulting community has more experience with 1D modeling
  - Especially important when considering LOMR applications and future use of the modeling
- 1D Floodway Guidance is more established
- 1D modeling has similar accuracy to 2D modeling in areas with more relief (steeper terrain)
- The floodway will look more similar to the effective floodways
- The FEMA reviewers are more familiar with 1D floodways

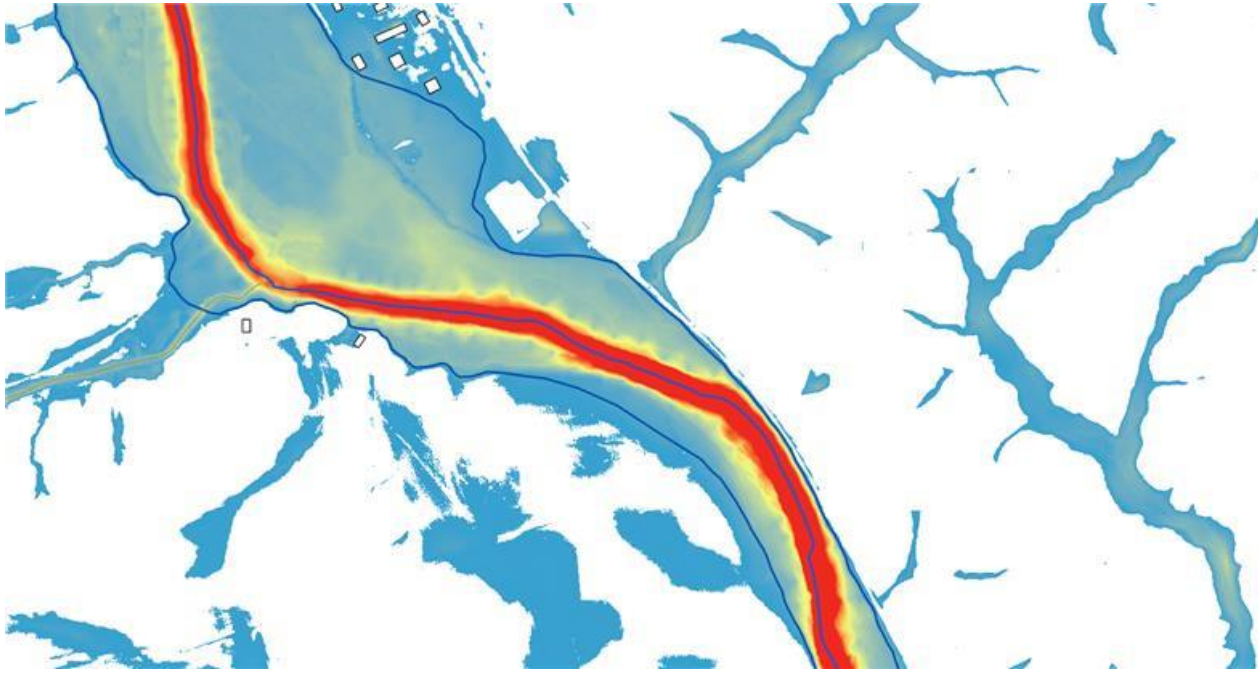


# 2D Modeling





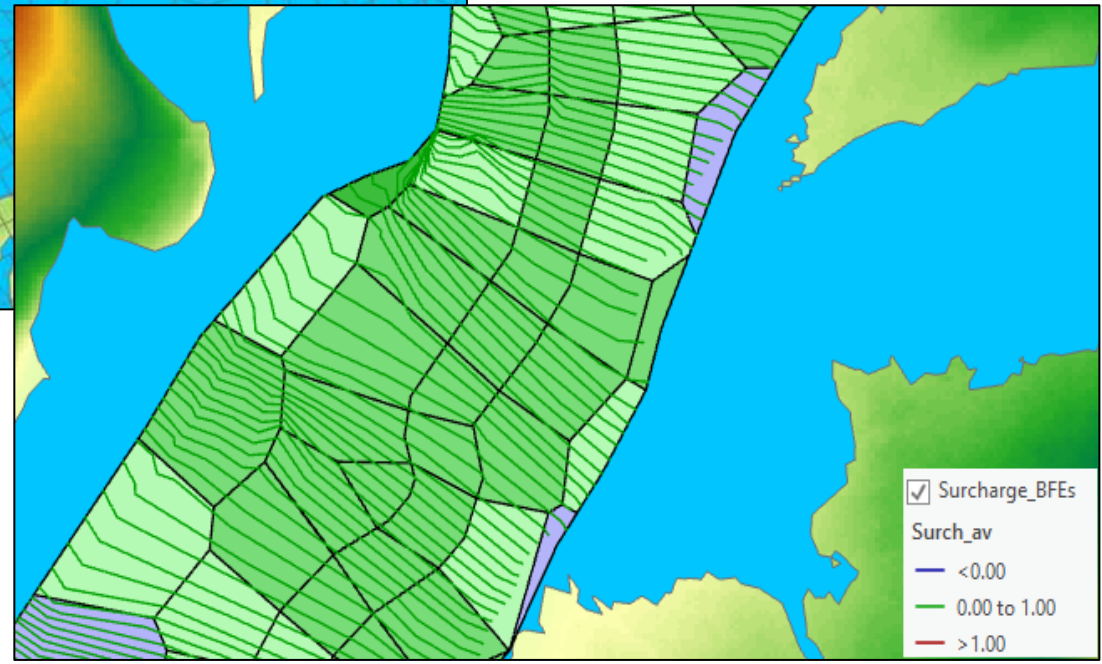
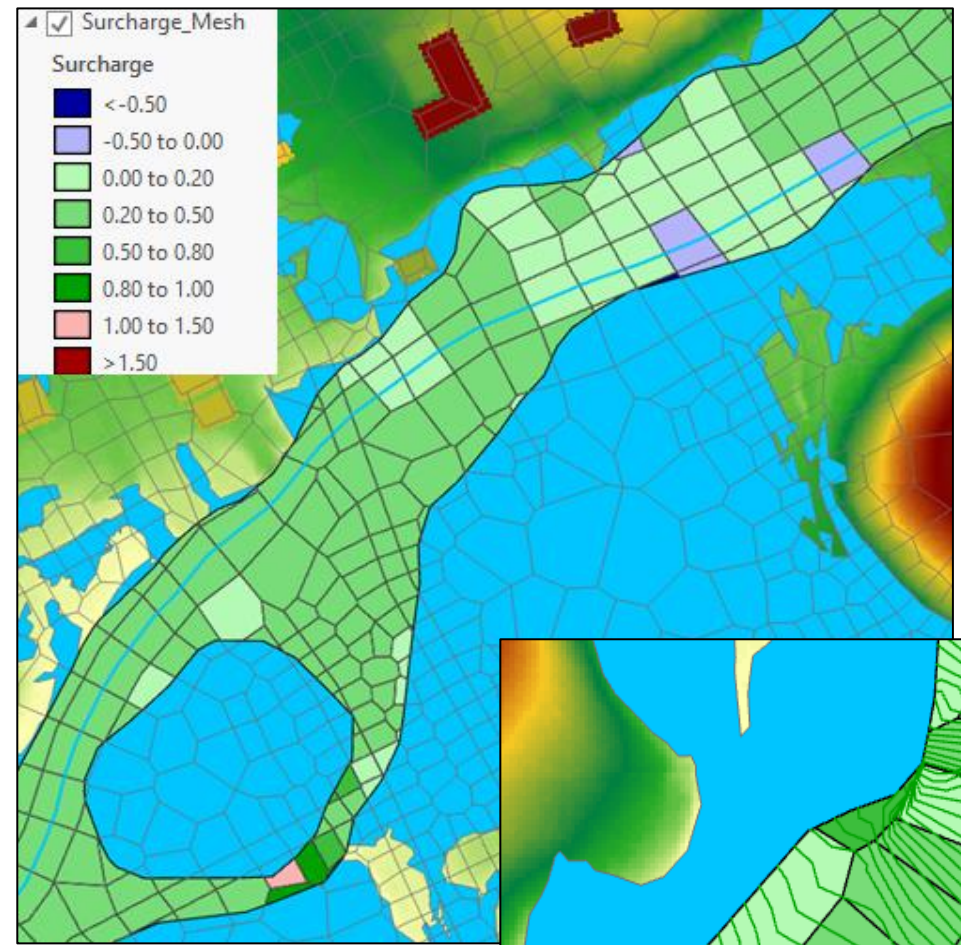
# 2D Floodways







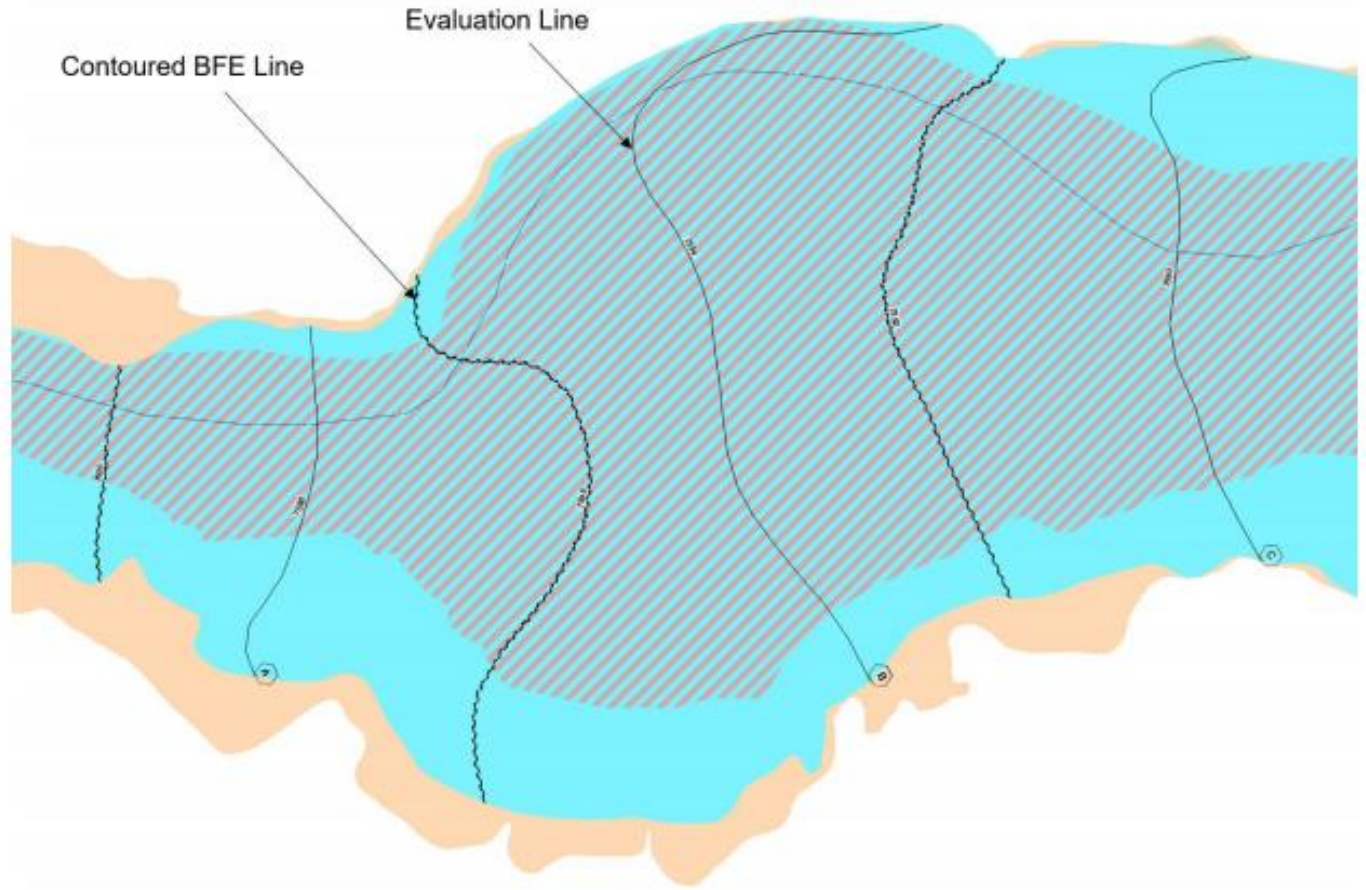
# 2D Floodways







# 2D Floodways







## ***Benefits of 2D modeling for Zone AE streams***

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- 2D more accurately portrays flooding where water flows in multiple directions, such as flat areas and braided streams; as well as shallow flooding.
- 2D modeling is at the forefront of modern modeling practices
  - 2D will be used for the Zone A and Zone AE without Floodway streams as well
  - Note that 2D floodway guidance has been released, but has not been put into practice for long





## ***Zone AE Recommendation and Discussion***

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At this time, it would be Wood's recommendation to pursue 1D modeling for the Zone AE with Floodway streams in this project given the terrain in the area and the limited experience of the local consulting community with 2D modeling, but we want to hear **your thoughts.**





- There is 4 Non-Accredited Ag Levees in the County (LAL-0002, LAL-0003, LAL-0004, LAL-0005)
- These levees are overtopped for the 1% annual chance storm and are considered hydraulically insignificant. They will be mapped as overtopping.

## Non-Accredited Levees

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## ***Non-Accredited Levees***

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- The Iola Levee is a non-accredited levee system
- This levee is not overtopped for the 1% annual chance storm and is considered hydraulically significant. This will be mapped using a with and without levee scenario.



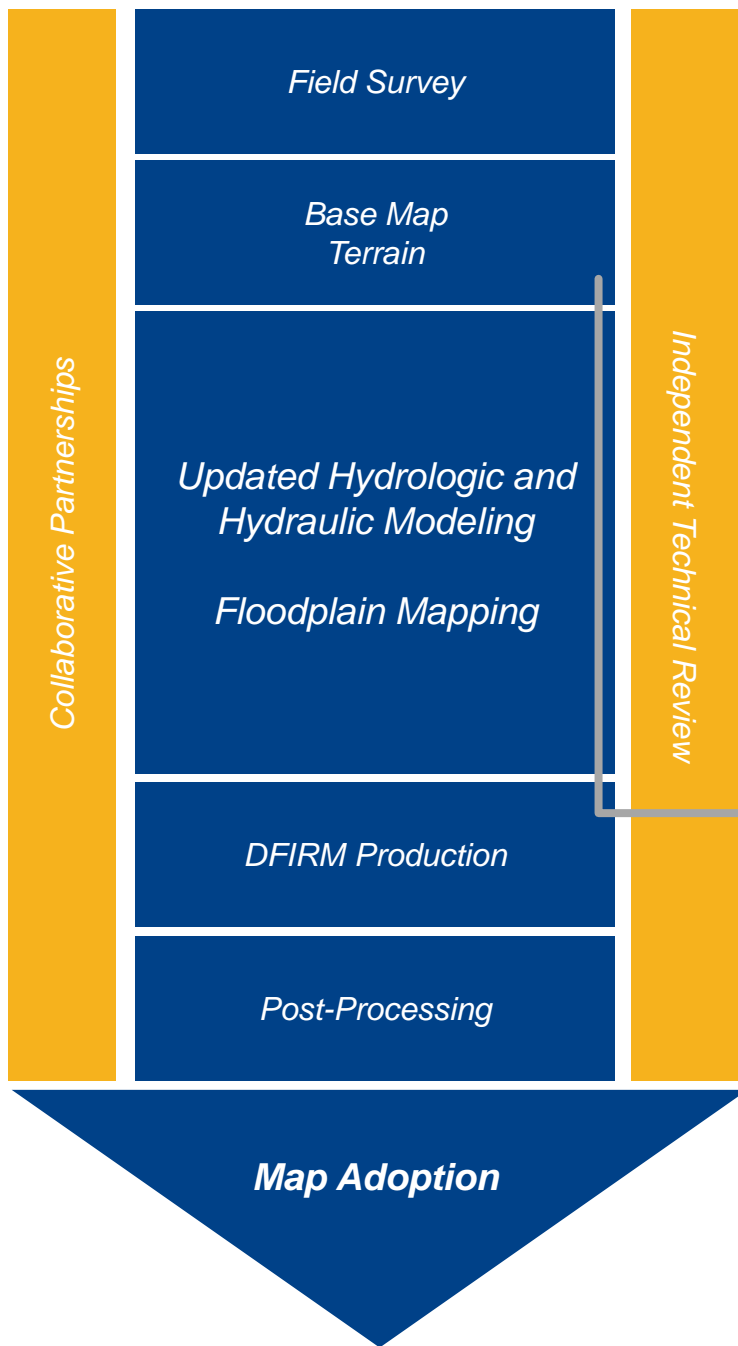


# *Next Steps*

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Data Development



## Project Tasks

1. Field Survey
2. Base Map and Topography Preparation
3. Hydrologic and Hydraulic Modeling
4. Floodplain Mapping
5. DFIRM and FIS Production
6. Post-Preliminary

We are about to begin the modeling task





## ***Our Next Steps:***

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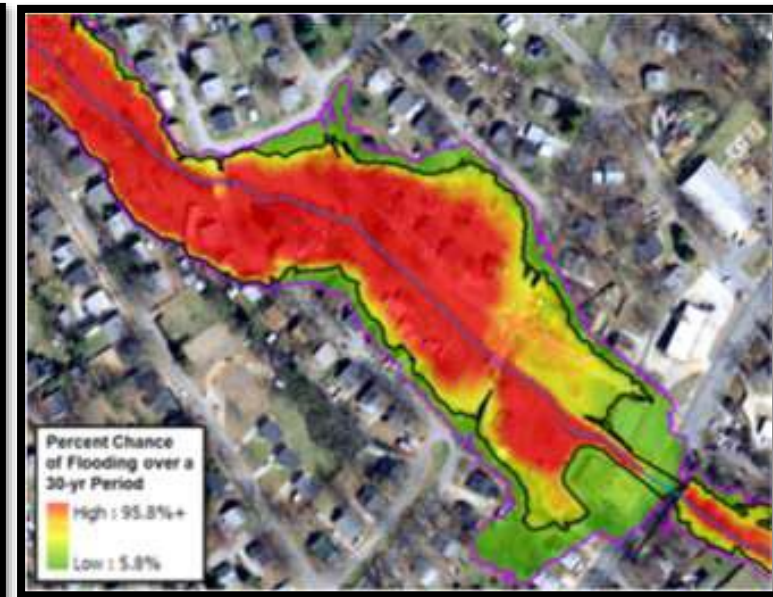
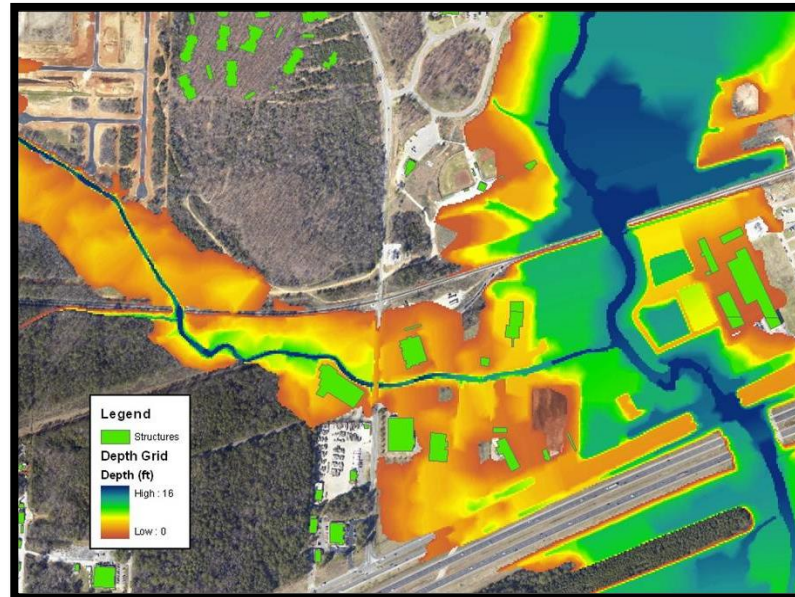
- We will complete the engineering analysis previously described
- We will develop your draft regulatory floodplain maps.
  - Also known as your Flood Insurance Rate Map (FIRM)
- We will develop your draft Flood Insurance Study (FIS).
- We will have a community review period and a public review period





## Our Next Steps:

- We will also be developing flood risk products for all of Allen County as part of this project.
  - Will use the latest data available for all streams





# Project Timeline



**Kick-off Meeting and Initial Community Feedback:**  
[TODAY!]

**Data Development Work:**  
[Now until fall 2021]

- *Base Map*
- *Topographic Data*
- *Field Survey*
- *Develop Hydrologic and Hydraulic Models*
- *Floodplain Mapping*

**Flood Risk Review Meeting:**

[~December 2021]

- *Your **review and feedback** on the draft maps*



## Project Timeline, continued

Community  
**comments** will  
be **addressed**

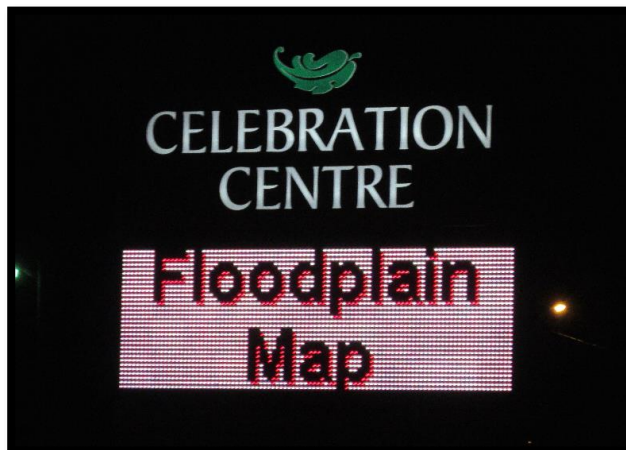
**Public review** of  
the draft maps

- *Includes Public  
Open House*

**Preliminary Map  
Products**

- *Preliminary DFIRM  
Community  
Coordination Meeting*

**Post-  
Preliminary  
Processing**







## *Key Takeaways*

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*Floodplain Mapping Projects take time*

*Your involvement in this process will result in better flood information for your community*

***DON'T HESITATE TO CALL,  
WE ARE HERE TO HELP***



# *Resources*

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# Online Project Information

## Project Website

- Scoping Maps, Project Timeline, Meeting Presentations, Newsletters, Technical Reports, Web Review Map
- <https://www.agriculture.ks.gov/divisions-programs/dwr/floodplain/mapping/mapping-projects/lists/mapping-projects/>

## Web Review Map

- Provide comments on areas impacted by past floods, community needs, etc.
- Review of floodplain data

## Story Maps

- Project Info
- “Floodplain Current”: Mapping Process ‘Nuts and Bolts’



***Any Questions?***

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