



FEMA

Flood Risk Review Meeting

Clay County, IL

February 18, 2020 Flora, IL

RiskMAP
Increasing Resilience Together



Agenda

- 1. Introductions**
 - Mary Richardson, CFM
- 2. Meeting Goals and Brief Overview of Project**
 - Glenn Heistand, P.E., CFM
- 3. Hydrology & Hydraulic Details**
 - Addison Jobe, EIT, CFM
- 4. Review of Draft Work Maps**
 - Ryan Meekma, GISP, CFM
- 5. Next Steps and Desired Outcomes**
 - Glenn Heistand, P.E., CFM
- 6. Comment Forms- Review and Discussion**
 - Meeting attendees

Introductions

■ ISWS Staff

- Mary Richardson – Outreach Lead
- Glenn Heistand – Senior Hydraulic Engineer
- Addison Jobe – H&H Engineer
- Ryan Meekma – GIS Team Lead
- Curt Abert – GIS, Associate Geologist
- Diana Davisson – Mapping Program Engineer

Meeting Goals

Community input throughout the FEMA map revision process is essential to flood risk management. You are getting the first possible look at the analysis and DRAFT results so that you can provide your feedback early on.

Flood Risk Review Meeting Goals:

1. Provide an overview of the Hydrologic and Hydraulic Analysis
2. Present the DRAFT Results
3. Answer questions about the analysis
4. Collect your concerns/feedback/technical data
5. **Understand your flood risk**

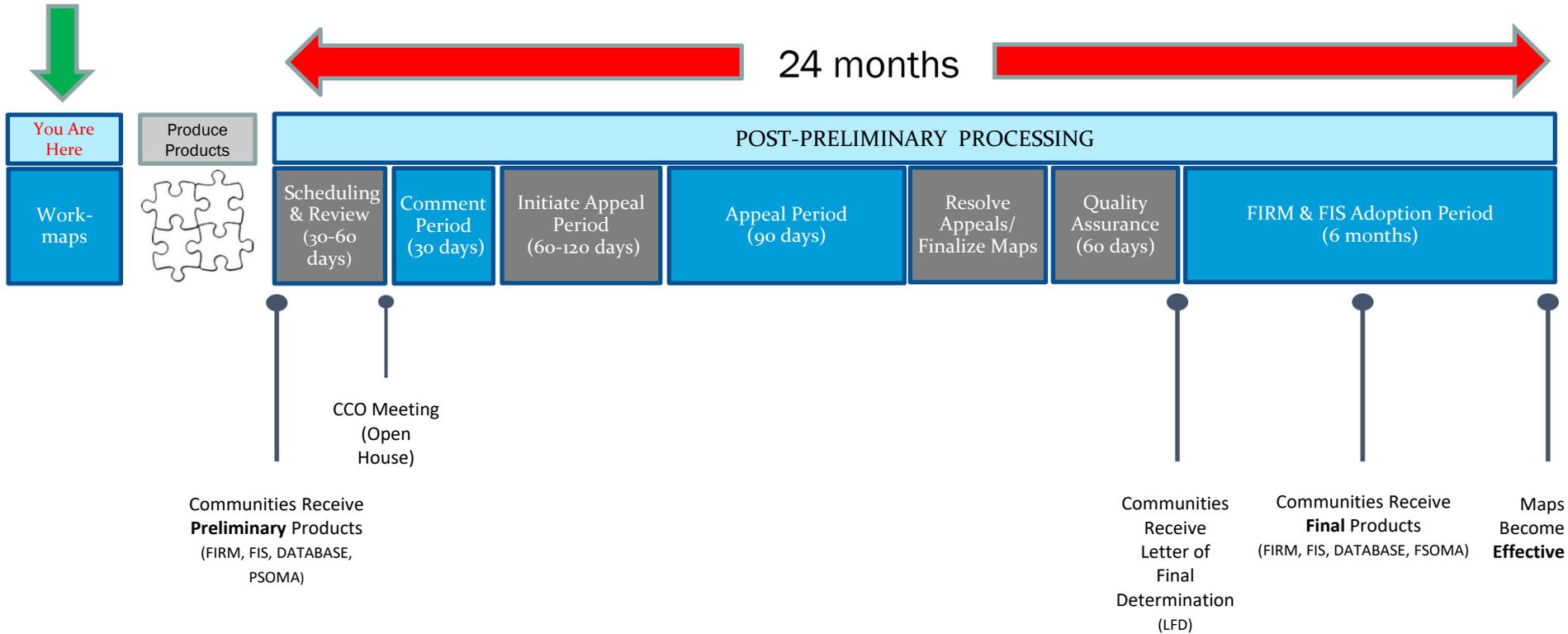
Risk MAP Overview

1. Discovery Meeting
2. Data and Product Development
3. **Flood Risk Review Meeting**
4. Resilience Meeting
5. Distribution of Maps and Data
6. CCO (Consultation Coordination Officer) Meeting and Public Open House
7. 90-Day Appeal Period
8. Flood Risk Products
9. Effective FIRM and FIS Report Issuance
10. Planning For Mitigation Action



<https://www.fema.gov/risk-map-flood-risk-project-lifecycle>

Flood Insurance Rate Map (FIRM) Timeline



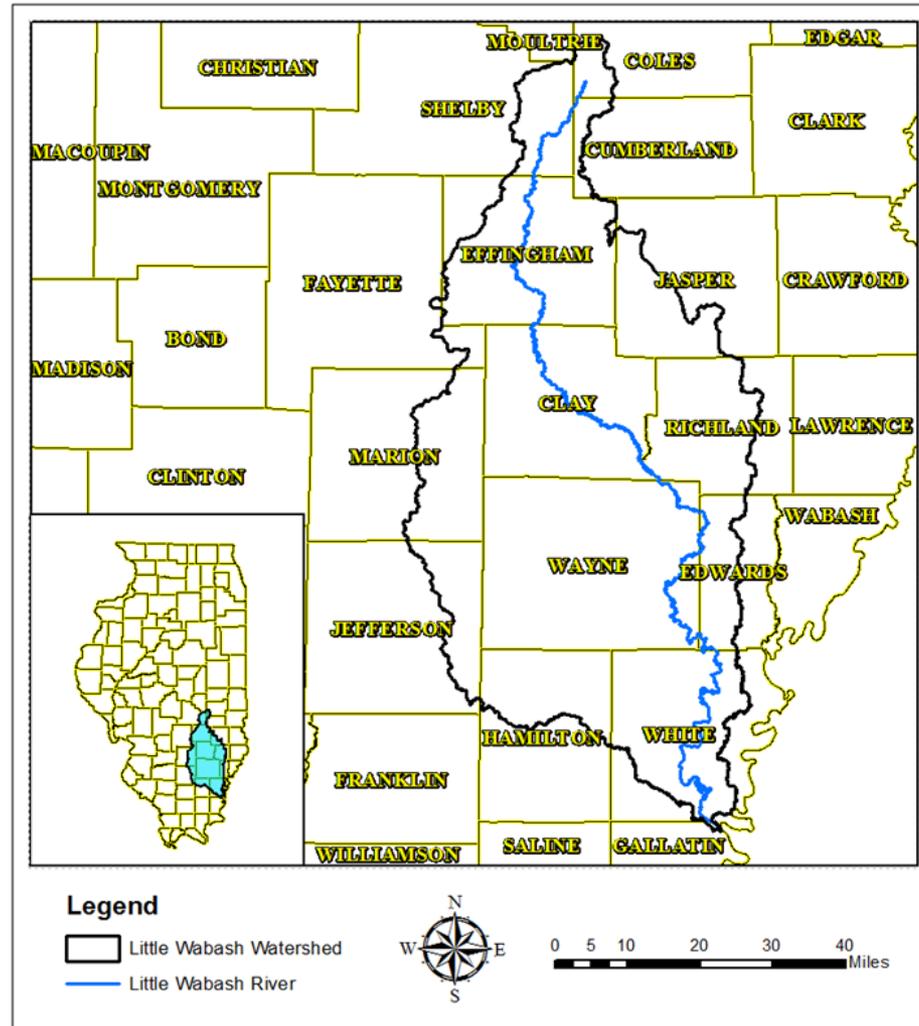
Project Overview

▪ Definitions

- Zone A
 - 1-percent annual chance floodplains that are determined by **approximate methods** of analysis. Because detailed hydraulic analyses are not performed for such areas, no Base Flood Elevations or depths are shown within this zone. Mandatory flood insurance purchase requirements apply.
- Zone AE
 - 1-percent annual chance floodplains that are determined by **detailed methods** of analysis. In most instances, Base Flood Elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone. Mandatory flood insurance purchase requirements apply.
- Zone X
 - Areas outside the 1-percent annual chance floodplain. No Base Flood Elevations or depths are shown within this zone. Insurance purchase is not required in these zones.

Project Overview

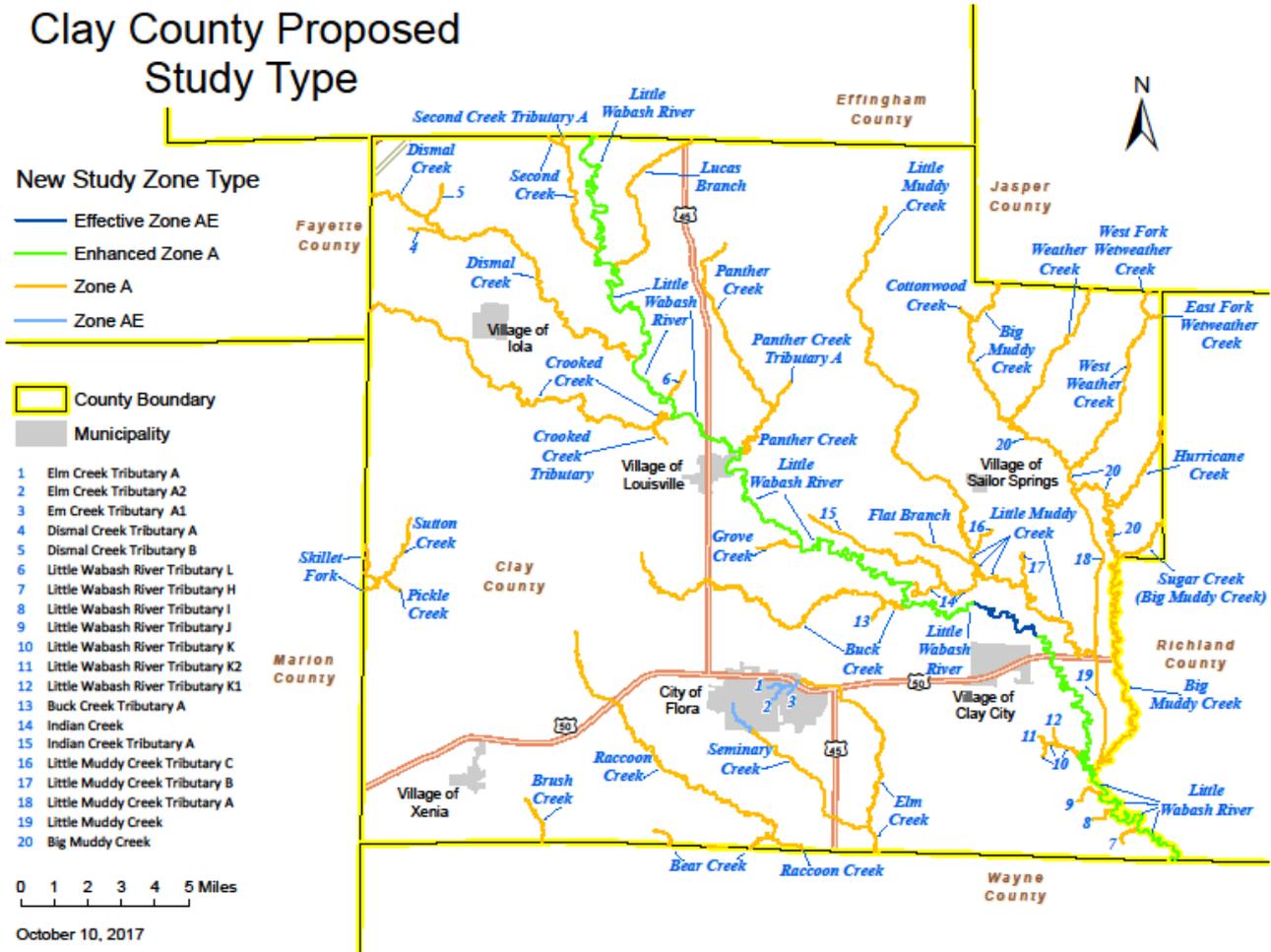
- 979 miles of Zone A streams
- 74 miles of Zone AE streams
- 175 miles of Enhanced Zone A on Little Wabash main-stem



Project Overview

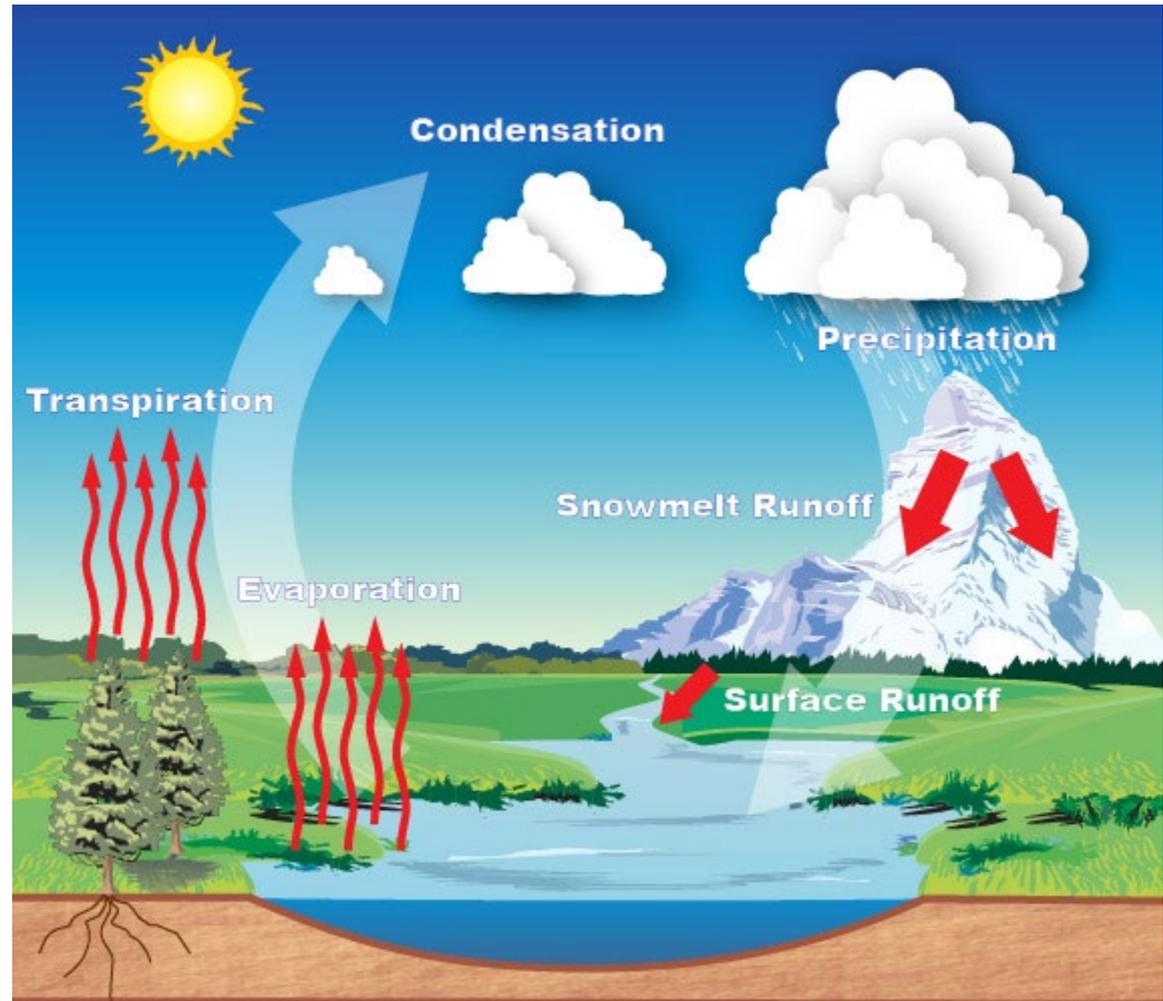
- 237 miles of new Zone A tributary stream studies
- 7 miles of Zone AE tributary streams
- 54 miles of Enhanced Zone A on Little Wabash main-stem
- 4 miles of Zone AE on Little Wabash main-stem

Clay County Proposed Study Type



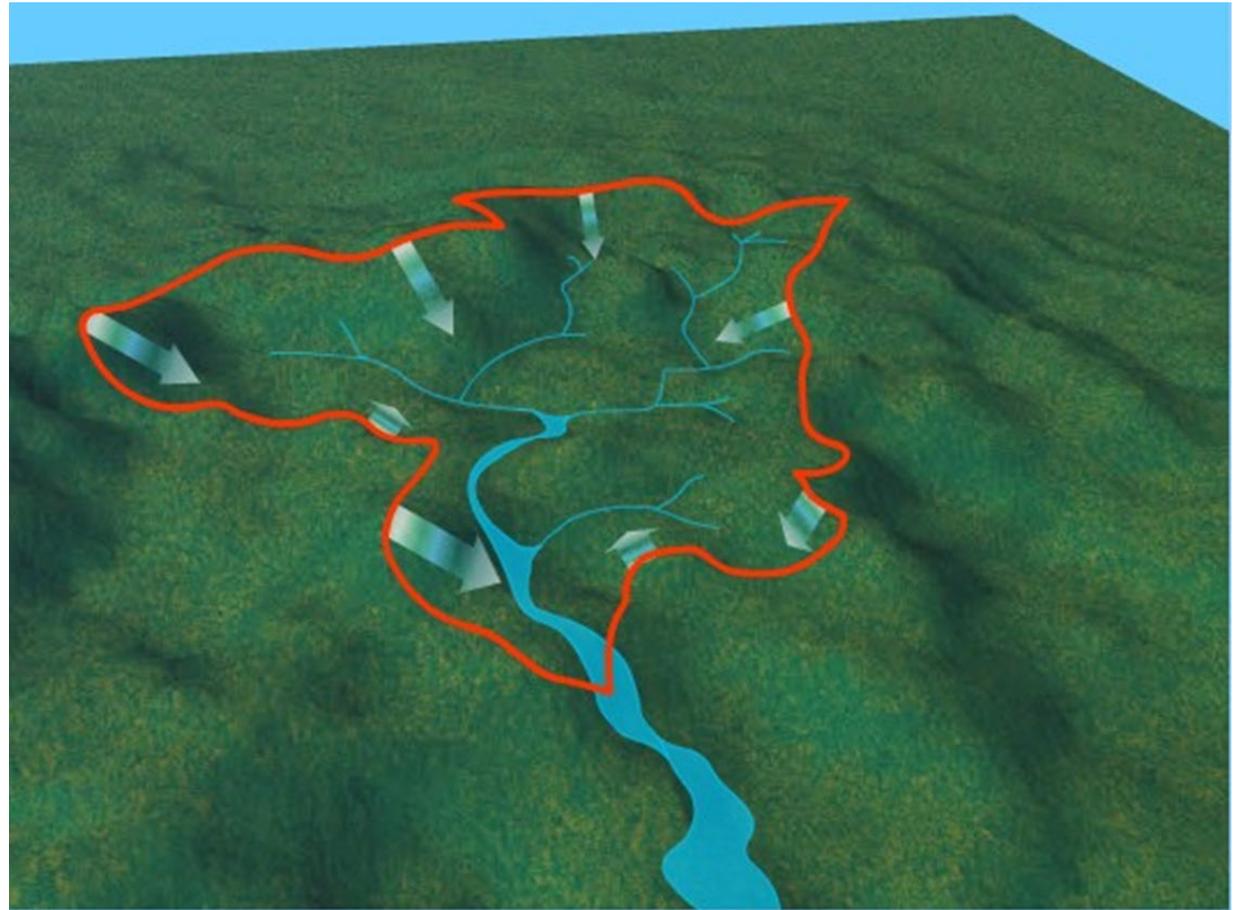
Hydrology & Hydraulics

- Hydrology and Hydraulic modeling is used to estimate flooding conditions
- Hydrology is the study of water: rainfall runoff amounts
- Hydraulics is the study of fluid motion: depth and velocity of runoff



Hydrology

- It all starts with run-off
- 2, 5, 10, 25, 50, 100, 100+, 500 year return-interval rainfall events studied
- 50%, 20%, 10%, 4%, 2%, 1%, 1%+, 0.2% annual chance rainfall events



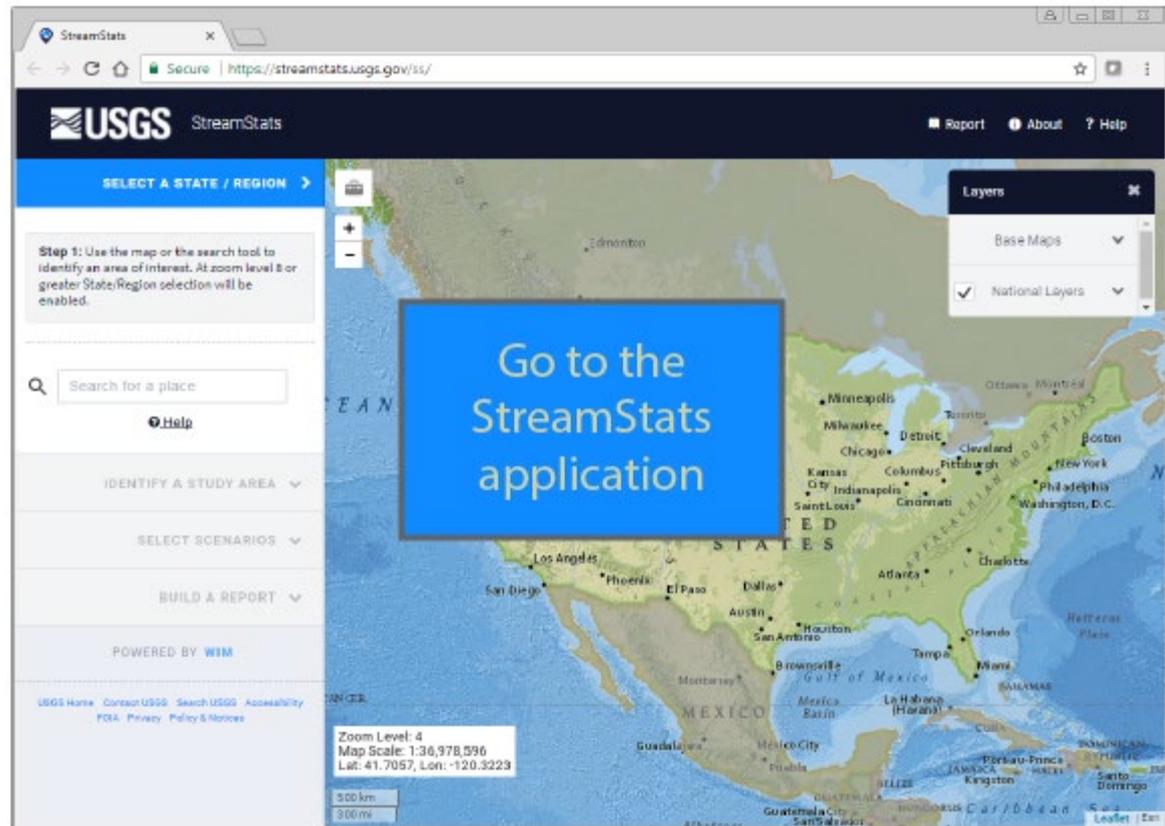
Hydrology

- USGS stream gages used at four locations along the main-stem Little Wabash River
 - Carmi
 - Clay City
 - Louisville
 - Effingham
- Regional increasing trend in annual peak flows in the Little Wabash River watershed
 - Climatological changes
 - Land-use changes



Hydrology

- **USGS StreamStats**
 - Web Application
 - Regression Analysis
 - Peak Flow output (static flow)
 - Based on gage data of Illinois streams
 - Used for Zone A studies



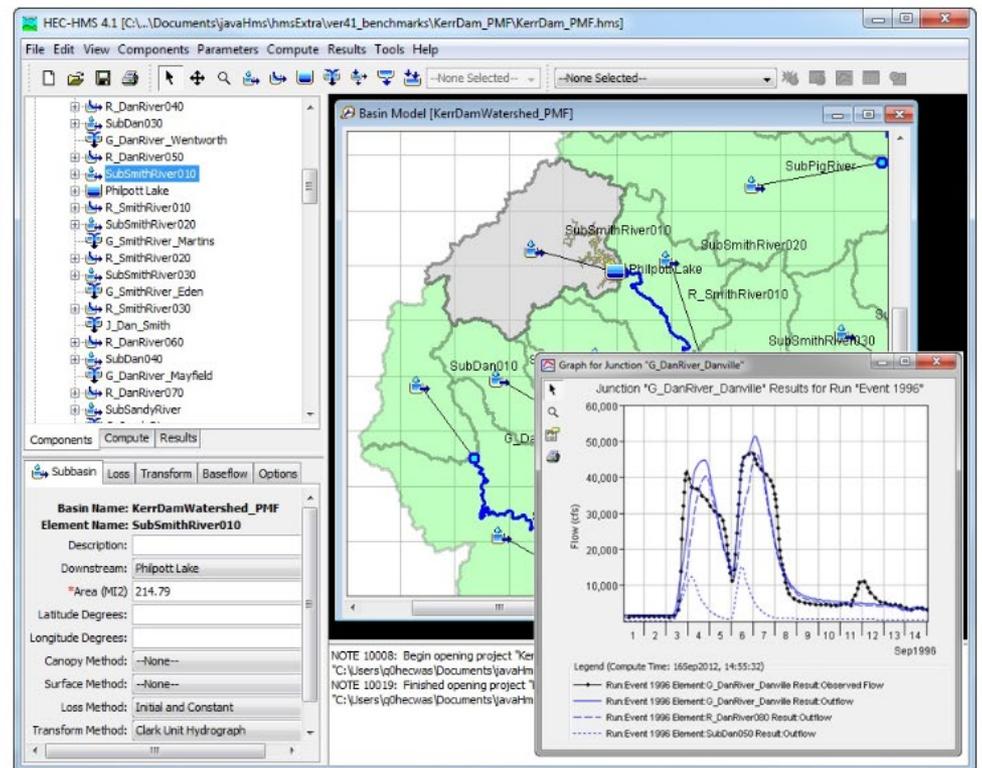
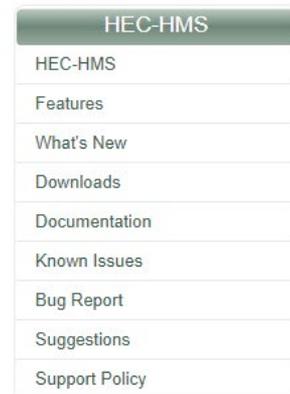
Hydrology

- **USACE HEC-HMS**

- Rainfall-Runoff Analysis
- Hydrograph output (flow changes with time)
- Bulletin 70 rainfall amounts
- Huff distribution
- 24-hr duration
- Used for Zone AE studies

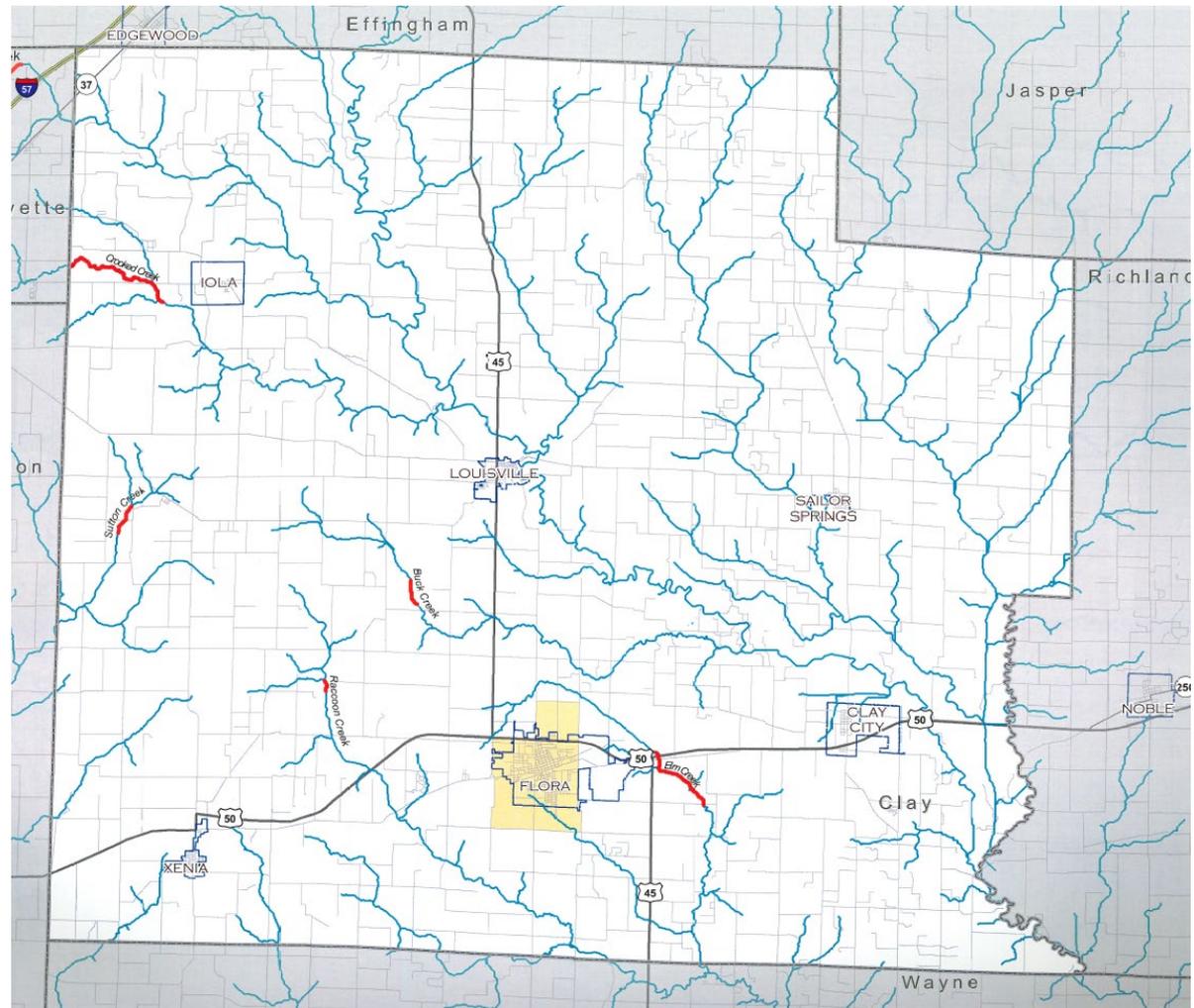


HOME > SOFTWARE > HEC-HMS



Hydrology

- **Drainage Area Considerations for Tributaries**
 - Urban = 1 square mile or larger
 - Rural = 10 square mile or larger
 - Plus any Effective miles less than 1 square mile



Hydraulics

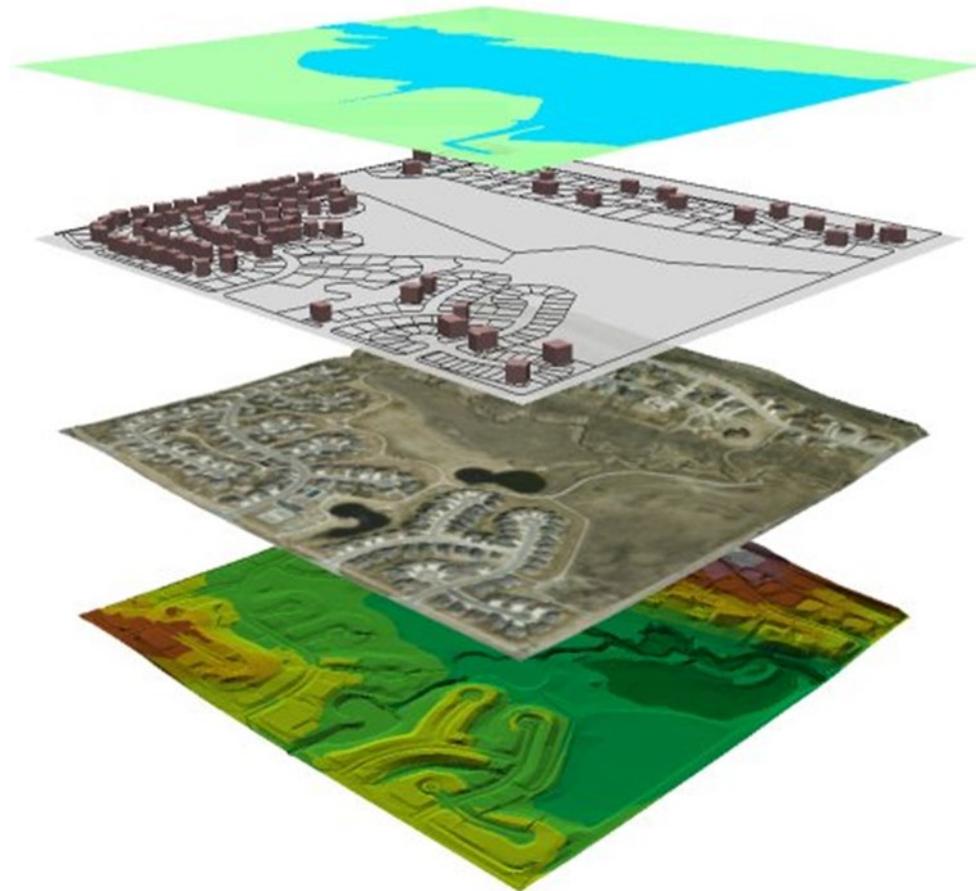
- **USACE HEC-RAS**
 - Step-Backwater Model
 - 1-D Steady State
 - Used for Zone A & AE studies

The image displays the US Army Corps of Engineers website header and a screenshot of the HEC-RAS 5.0.0 software interface. The website header includes the USACE logo, the text "US Army Corps of Engineers", and a navigation menu with links for "HOME", "ABOUT", "NEWSLETTERS", "SOFTWARE", "PUBLICATIONS", "TRAINING", "VISITORS", "LINKS", and "CONTACT". Below the website header is a navigation bar for "HEC-RAS" with links for "HEC-RAS", "Features", "What's New", "Downloads", "Documentation", "FAQs", "Known Issues", "Bug Report", "Suggestions", "Demo", "Sponsors", "Collaborators", and "Support Policy". The software interface shows a 3D topographic map of a river channel, a "Stage and Flow Hydrographs" plot, and a "RAS Mapper" window displaying a 2D velocity map of the same river channel. The hydrograph plot shows stage (ft) on the y-axis (ranging from 620 to 680) and time on the x-axis (ranging from 0 to 100000). The velocity map shows flow velocity in ft/s, with a color scale from blue (low velocity) to red (high velocity).

Hydraulics

- GIS Data

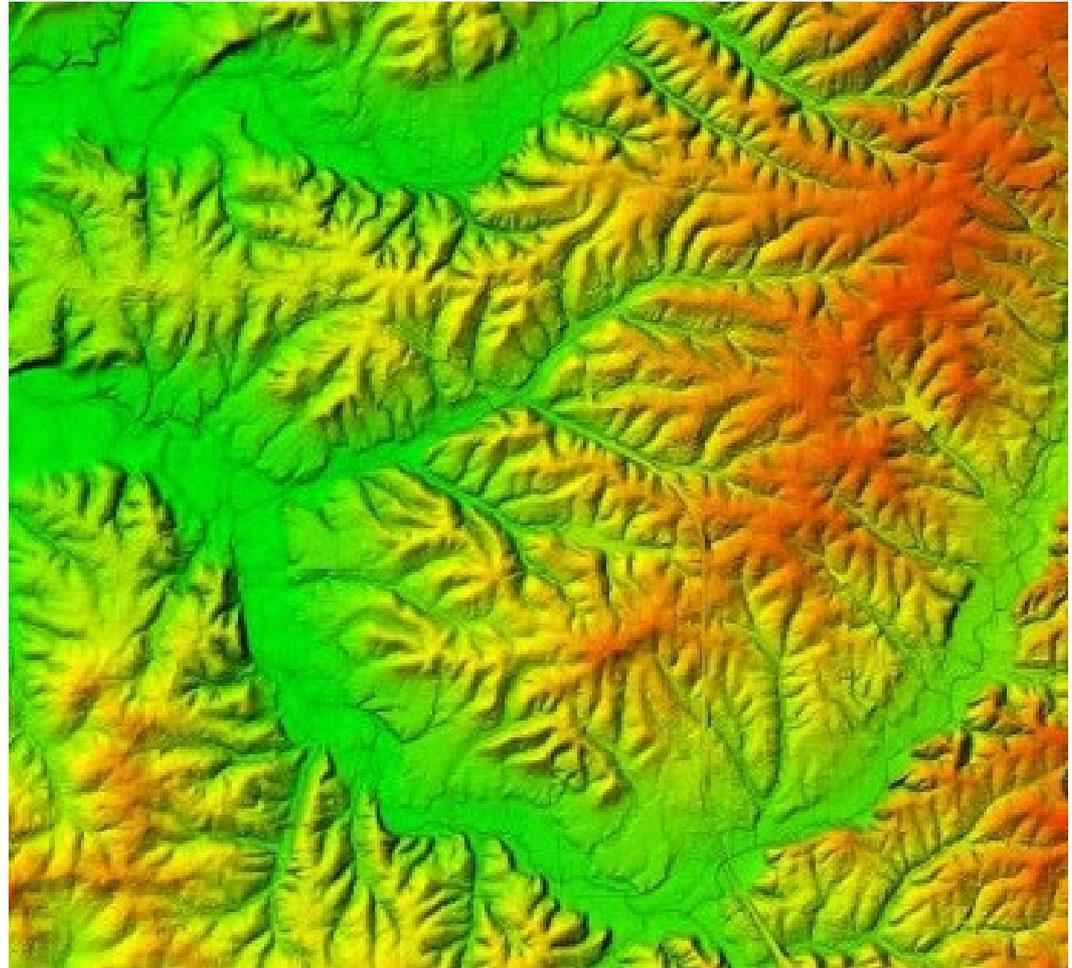
- LiDAR
- Ortho Photos
- Digital Elevation Model (DEM)



Hydraulics

■ LiDAR

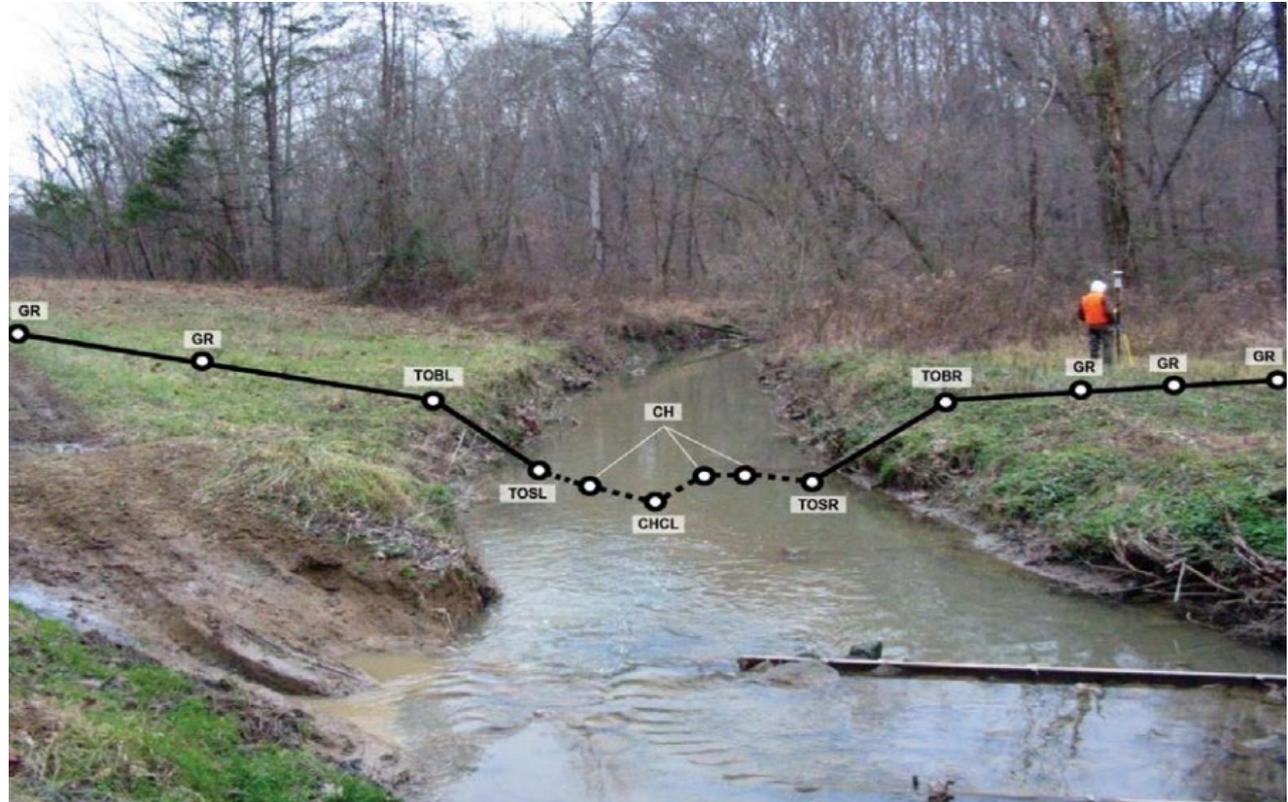
- Zone A studies
- Zone AE studies
- Overbank, above streamflow depth



Hydraulics

■ Field Survey

- Zone AE studies
- Channel cross-sections
- Bridge/culvert measurements



Hydraulics

- **Berms/Embankments/Levee-Like Structures (BELLS)**
 - Non-accredited levees
 - Ditch dredging spoils
 - Agricultural levees
 - Roadway embankments
 - Railroad embankments
- **Modeled in variety of ways**
- **Mapped without protection**



Hydraulics

- HEC-RAS cross-section



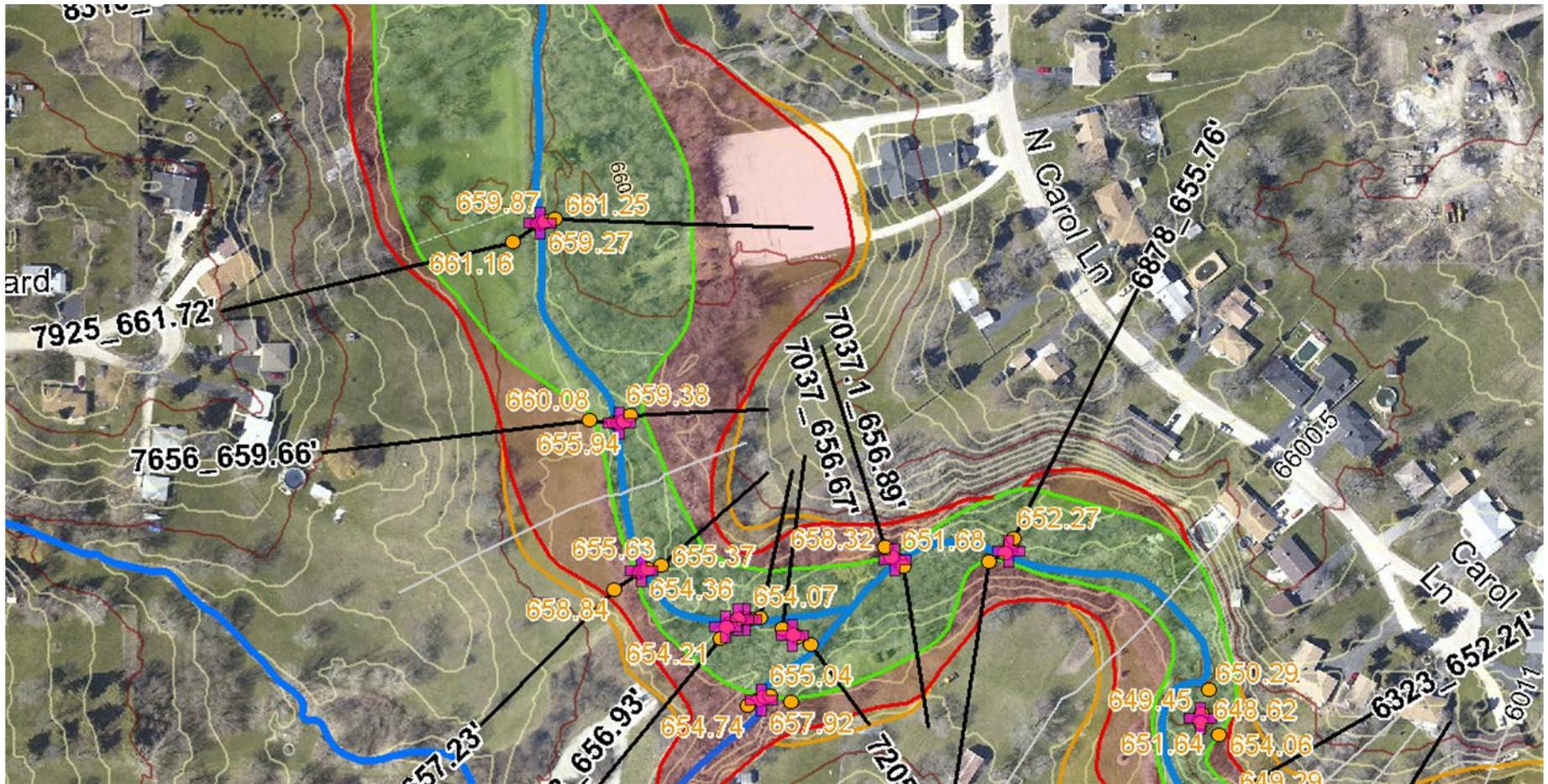
Hydraulics

- HEC-RAS profile



Hydraulics

- HEC-RAS modeling



Review of Draft Work Maps

- **Versions of Maps Available**

- Paper Maps & PDF's

- Effingham County
 - 53 pages
- Clay County
 - 42 pages
- City of Crossville in White County
 - 3 pages

- Internet-based Web-Map

- Shows everything on the printed maps and more
- <http://www.illinoisfloodmaps.org/commentmap/littlewabash.htm>
 - Username: watershed
 - Log in: illinoisfloods!123

Review of Draft Work Maps

- **Clay County (Printed Work Maps)**

- Hydrology Work Map

- 1 Page

- Shows the Hydrologic Modeling System (HMS) layout and watersheds

- Hydraulic Work Maps

- 1 Page Index Map

- Shows Map Panel Numbers, Stream Centerlines, Communities, and Roads

- 36 Pages for Clay County

- Shows new floodplains for Zone A, Enhanced Zone A, and Zone AE stream studies

- Using a Quadrangle Based panel layout.

- Maps are at 3 scales 1:6000 (1"=500'), 1:12000 (1"=1000'), 1:24000 (1"=2000')

- 4 Pages for the Detailed Zone AE Stream Studies in Clay County

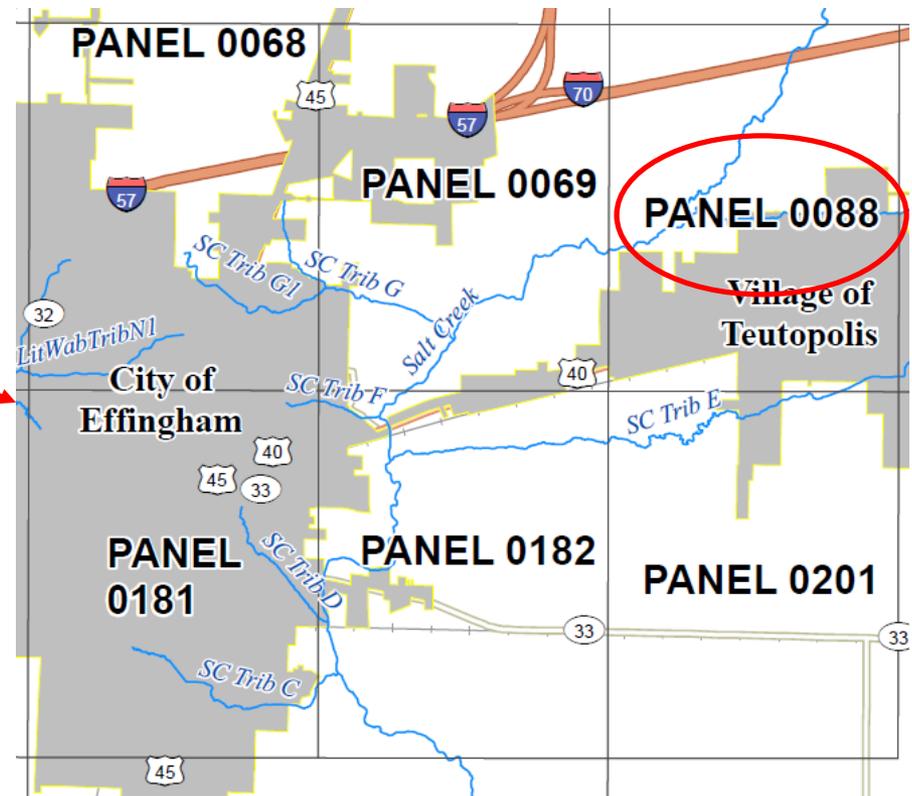
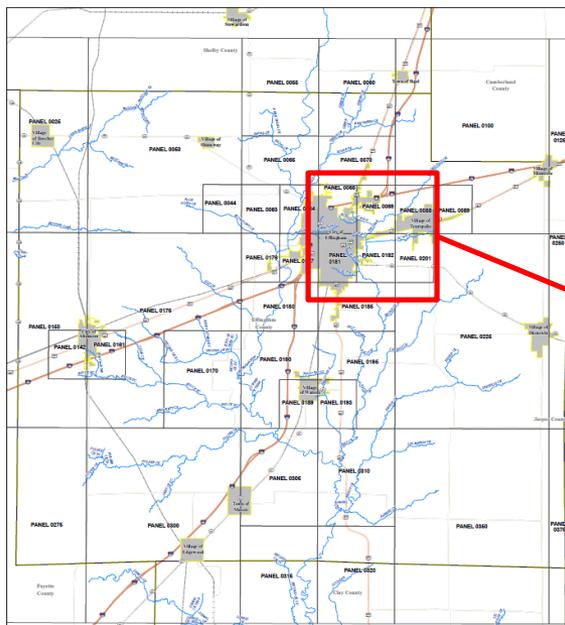
- Using a custom grid for page layout

- Limited to Zone AE stream studies

- Maps are zoomed in closer at 1:3600 (1"=300') & 1:6000 (1"=500')

Review of Draft Work Maps

- Using the Printed Work Maps
 - Use the INDEX Map to locate your Panel



FLOOD HAZARD INFORMATION
THE INFORMATION SHOWN ON THIS MAP IS FOR GENERAL INFORMATION ONLY. IT IS NOT A GUARANTEE OF ACCURACY. FOR MORE INFORMATION, CONTACT THE ILLINOIS STATE WATER SURVEY AT (618) 244-2200.

LEGEND

- Map Panel Boundary
- County Boundary
- City Boundary
- Water Features
- Highways
- Major Roads
- Map Scale

NOTES TO USERS

1. This map was prepared using the best available data at the time of publication.
2. The user assumes all responsibility for the accuracy of the information shown on this map.
3. The user assumes all responsibility for the accuracy of the information shown on this map.
4. The user assumes all responsibility for the accuracy of the information shown on this map.
5. The user assumes all responsibility for the accuracy of the information shown on this map.

SCALE

ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE

DRAFT WORKMAP
Date: 1/12/2010

Review of Draft Work Maps

- Using the Printed Work Maps
 - Understanding the Map Features

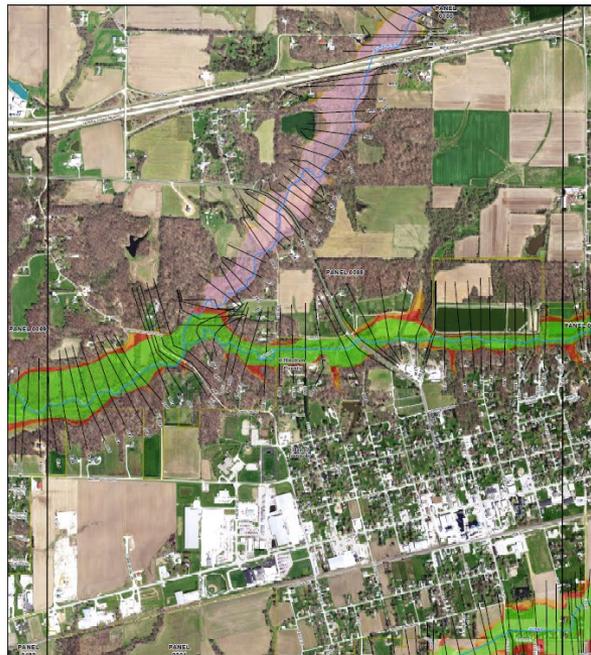
FLOOD HAZARD INFORMATION

THE INFORMATION DEPICTED ON THIS MAP IS ALSO AVAILABLE IN DIGITAL FORMAT AT <http://www.illinoisfloodmaps.org/commentmap/littlewabash.htm>
 Username: watershed
 Log in: illinoisfloods!123

ADDITIONAL INFORMATION IS AVAILABLE AT <http://illinoisfloodmaps.org>

LEGEND

- Stream Centerline *
- Cross Section (Label = 1% WSEL) *
- Jurisdiction Boundary
- Map Panel Boundary
- Floodway *
- Zone AE, (1% Annual Chance Flood Risk) *
- Zone X, (0.2% Annual Chance Flood Risk) *
- Zone A, (1% Annual Chance Flood Risk) *



<p>FLOOD HAZARD INFORMATION</p> <p>THE INFORMATION DEPICTED ON THIS MAP IS ALSO AVAILABLE IN DIGITAL FORMAT AT http://www.illinoisfloodmaps.org/commentmap/littlewabash.htm Username: watershed Log in: illinoisfloods!123</p> <p>ADDITIONAL INFORMATION IS AVAILABLE AT http://illinoisfloodmaps.org</p> <p>LEGEND</p> <ul style="list-style-type: none"> Stream Centerline * Cross Section (Label = 1% WSEL) * Jurisdiction Boundary Map Panel Boundary Floodway * Zone AE, (1% Annual Chance Flood Risk) * Zone X, (0.2% Annual Chance Flood Risk) * Zone A, (1% Annual Chance Flood Risk) * 	<p>NOTES TO USERS</p> <p>The information depicted on this map is the responsibility of the originating agency. The user is responsible for determining the accuracy and reliability of the data. The user is also responsible for determining the appropriate use of the data.</p> <p>ILLINOIS Illinois State Water Survey PRAIRIE RESEARCH INSTITUTE</p>	<p>SCALE</p> <p>1" = 1000'</p> <p>PANEL LOCATOR</p>	<p>FLOOD RISK MAP PROGRAM FLOOD RISK REVIEW MEETING MAP</p> <p>EFFINGHAM COUNTY, ILLINOIS and Incorporated Areas</p> <p>PANEL 0088 OF 0375</p> <p>DRAFT WORKMAP Date: 2/6/2020</p> <p>MAP NUMBER 17049C0088D</p>
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FLOOD RISK MAP PROGRAM
 FLOOD RISK REVIEW MEETING MAP

EFFINGHAM COUNTY, ILLINOIS
 and Incorporated Areas

PANEL 0088 OF 0375

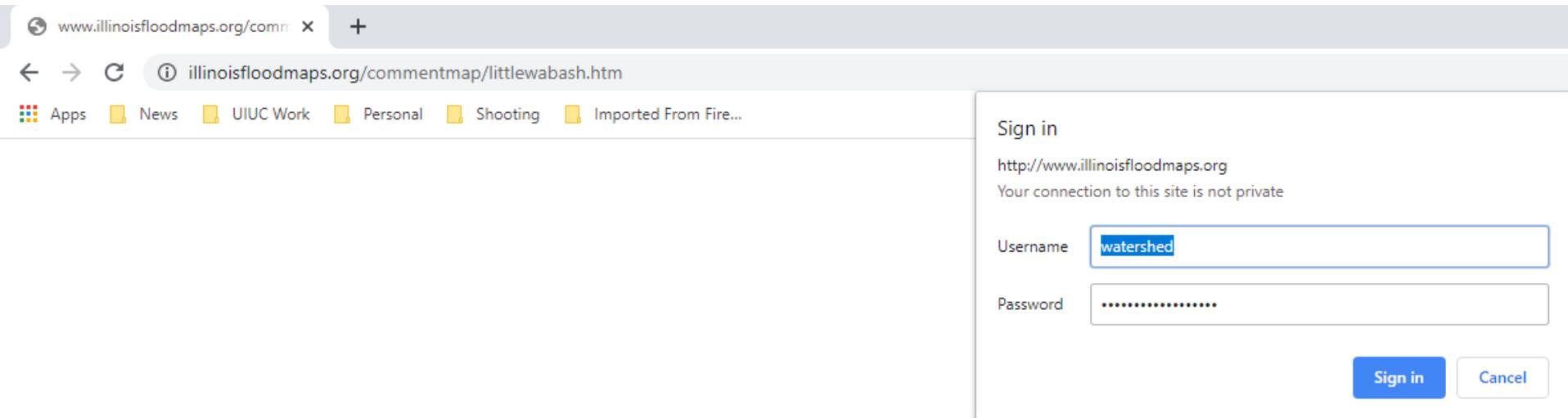
DRAFT WORKMAP
 Date: 2/6/2020

MAP NUMBER
 17049C0088D

Review of Draft Work Maps

- Using the Web-Map

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Review of Draft Work Maps

■ Using the Web-Map

- Click the “I Agree” box
- Enter email address

Little Wabash Comments

This web mapping application is for communication from public officials to the Illinois State Water Survey (ISWS) and FEMA about flooding issues and flood risk. It is not intended for use by the general public.

Starting in February 2020, ISWS is asking communities to review the proposed modeling/data and submit comments using this web map. All comments must be submitted by the **End of March 2020 for consideration.**

This web mapping application is under development and is subject to disruptions for updates and revisions. Capabilities of the site and access to GIS data may be limited during development so please check back periodically for availability.

By using this web mapping application, you acknowledge and accept the limitations presented herein, including the fact that the data will be updated on a periodic basis. Please do not quote or cite data.

I agree

Please enter email address:

Email address is used for commenter identification purposes only, and is not shared outside of this project.

New Comment

- Click Add Comment button (below)
- Click on map to draw polygon
 - Single-click to start/continue
 - Double-click to finish

Or

Edit Comment

- Single-click a Comment to view or edit it.

Review of Draft Work Maps

■ Using the Web-Map

Little Wabash Comments

Layers:

- Comments
- Watershed Boundary
- Water Lines
- Model Cross Sections
Zoom in to view XS
- Detailed Study Floodplains (draft)
- Annual Chance Flood Depth Grids (draft)
 - 10% Depth Grid
 - 4% Depth Grid
 - 2% Depth Grid
 - 1% Depth Grid
 - 0.2% Depth Grid
- Nat'l Flood Hazard Layer
Not available for all counties
Zoom in to view NFHL
- Other FEMA Flood Maps
Where the NFHL doesn't apply
Zoom in to view Maps

New Comment

- Click Add Comment button (below)
- Click on map to draw polygon
 - Single-click to start/continue
 - Double-click to finish

Add Comment Or

Edit Comment

- Single-click a Comment to view or edit it.

Review of Draft Work Maps

■ Using the Web-Map

- Click on **?** to access Frequently Asked Questions (FAQ)
 - From the FAQ page a tutorial video can be accessed
 - The Tutorial Video demonstrates how to add comments

≡ Frequently Asked Questions (FAQ) / Help

[For Tutorial Video click here \(hosted on YouTube\)](#)

▽ General FAQ and How-To:

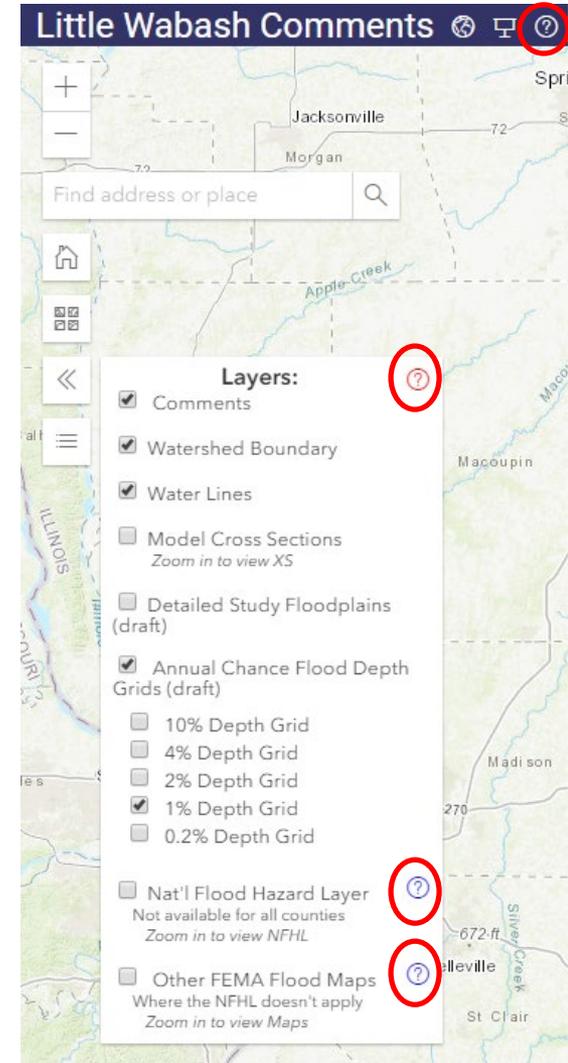
Questions & Answers:

What is the National Flood Hazard Layer (NFHL)?

The NFHL is the Federal Emergency Management Agency (FEMA)'s digital database containing flood hazard mapping data from FEMA's National Flood Insurance Program (NFIP). For more information, see the FEMA NFHL webpage:
<https://www.fema.gov/national-flood-hazard-layer-nfhl>

What are the Comments for?

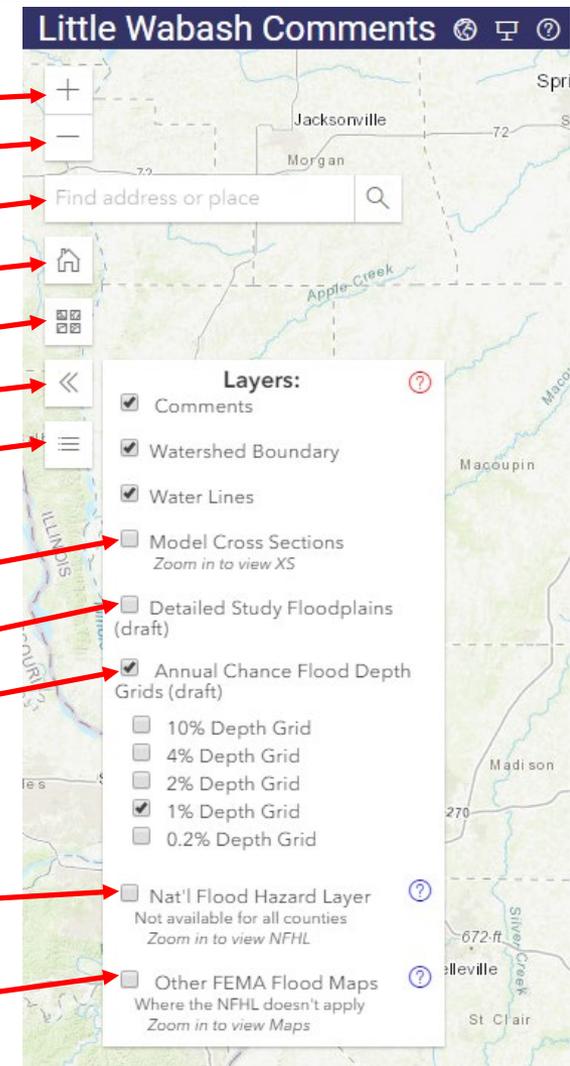
A primary goal of Federal Emergency Management Agency (FEMA)'s Scoping is to learn about flooding issues and flood risk in an area from the community officials who work in that area. To learn how to add or edit comments, click on the "Adding/Editing Comments" section below.



Review of Draft Work Maps

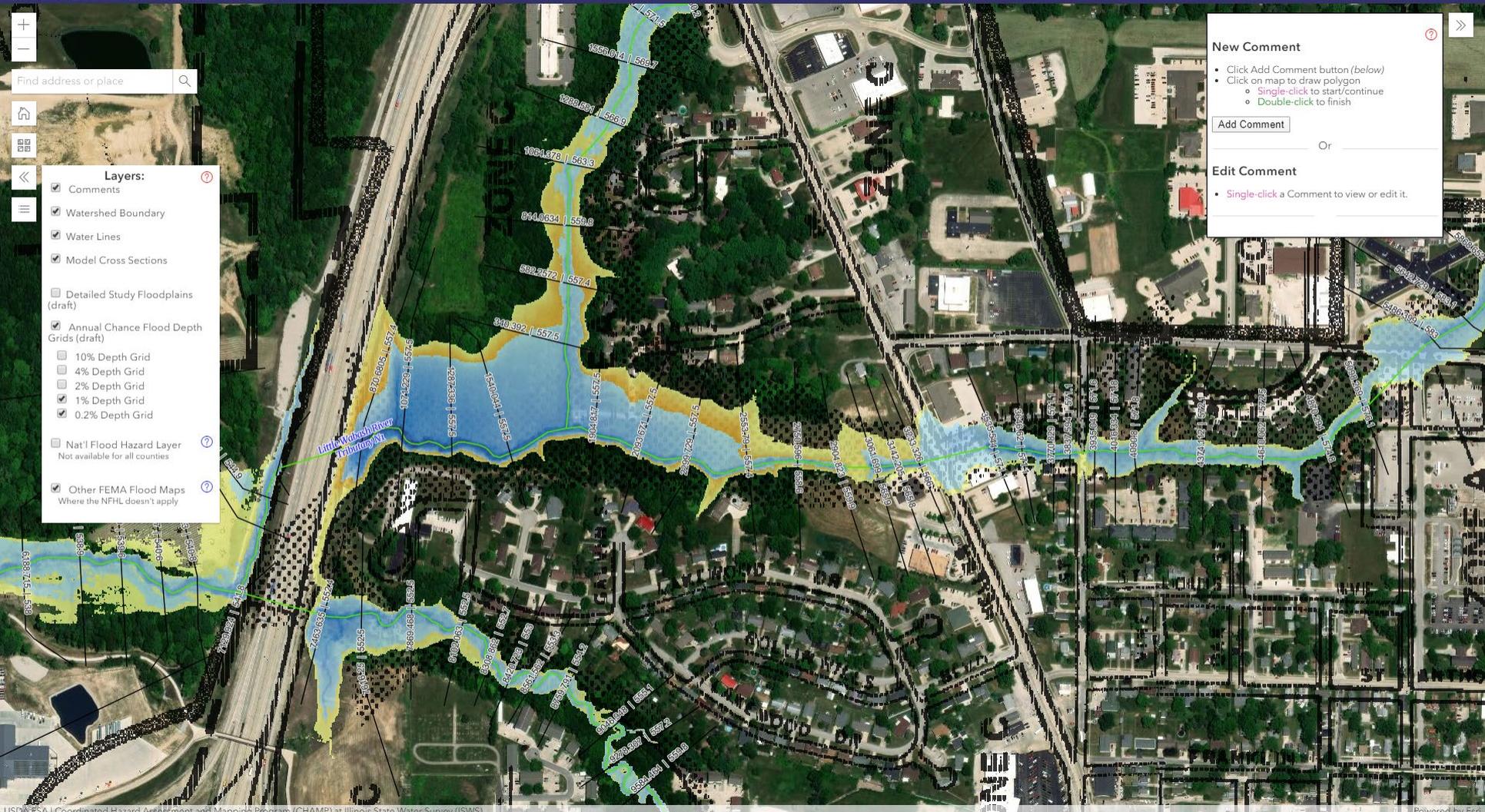
■ Using the Web-Map

- Zoom In
- Zoom Out
- Find address or place
- Default View
- Basemap Gallery
- Layers
- Legend
- Cross Sections
- Zone AE Floodplains
- Depth Grids
- National Flood Hazard Layer (NFHL)
- Georeferenced Flood Insurance Rate Maps (FIRM)



Review of Draft Work Maps

Little Wabash Comments



USDA FSA | Coordinated Hazard Assessment and Mapping Program (CHAMP) at Illinois State Water Survey (ISWS)

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Review of Draft Work Maps

Little Wabash Comments



Find address or place

- Layers:**
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 - Watershed Boundary
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 - 10% Depth Grid
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Where the NFHL doesn't apply

New Comment

- Click Add Comment button (below)
- Click on map to draw polygon
 - Single-click to start/continue
 - Double-click to finish

Add Comment

Or

Edit Comment

- Single-click a Comment to view or edit it.

USDA FSA | Coordinated Hazard Assessment and Mapping Program (CHAMP) at Illinois State Water Survey (ISWS)

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Review of Draft Work Maps

Little Wabash Comments



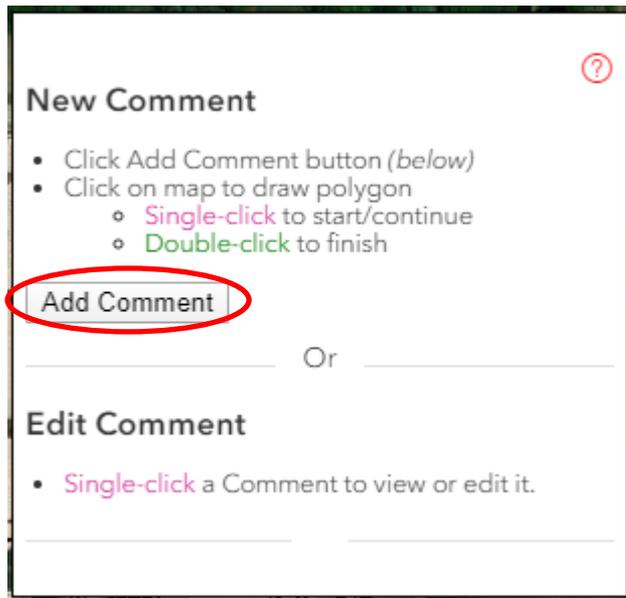
USDA, FSA | Coordinated Hazard Assessment and Mapping Program (CHAMP) at Illinois State Water Survey (ISWS) | Esri, Community Maps Contributors, Building Footprints, USA, Esri, HERE, Garmin, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

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Review of Draft Work Maps

- Adding Comments to the Web-Map



New Comment

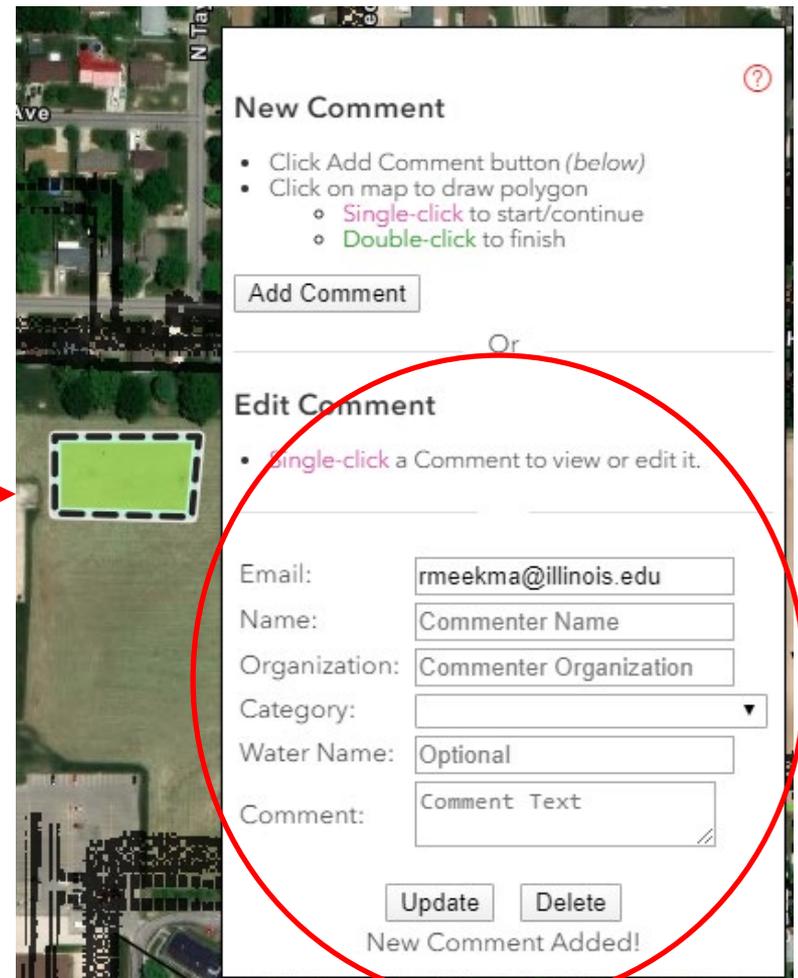
- Click Add Comment button (*below*)
- Click on map to draw polygon
 - Single-click to start/continue
 - Double-click to finish

Add Comment

Or

Edit Comment

- Single-click a Comment to view or edit it.



New Comment

- Click Add Comment button (*below*)
- Click on map to draw polygon
 - Single-click to start/continue
 - Double-click to finish

Add Comment

Or

Edit Comment

- Single-click a Comment to view or edit it.

Email:

Name:

Organization:

Category:

Water Name:

Comment:

Update **Delete**

New Comment Added!

We are asking for your input!

- Review the maps.
- ASK questions!
- Provide technical data and feedback.
- **Fill out the comment sheets.**
- **Mark up the maps.**
- Get our contact information.

Comment Forms

Comment Number

Provide data
in electronic
format when
available!

Map Marked

Macon County Flood Risk Review Meeting
Comment Form #10

Please, provide the following information:

Name:	Title:	Date:
Community/County:		
E-mail:	Phone:	

Explain your comment below and attach any supporting documents/materials. Mark the location of your comment on the map by circling the area and writing the comment form number near the circle. If you have more than one comment, please use multiple forms or add letters (e.g. 1A, 1B, 1C....) for additional comments. Mark the type of map and number.

Check Comment Subject:

<input type="checkbox"/> *Technical Data for Consideration	<input type="checkbox"/> *Planned or Recent Project Area/LOMR
<input type="checkbox"/> *General Comment on DRAFT Results	<input type="checkbox"/> *Historical Flood Information
<input type="checkbox"/> *Mitigation Action In Progress	<input type="checkbox"/> *Status of Mitigation Success
<input type="checkbox"/> *At-Risk Essential Facilities	<input type="checkbox"/> *Interest in Beginning Mitigation Action
<input type="checkbox"/> *Other	

Comment Marked on:

DRAFT Work Map # _____ Other _____

Can you provide the information in electronic format (GIS, AutoCAD, Word, Excel, etc.)? yes or no

Contact information

- Mary Richardson, Illinois State Water Survey
(217) 300-3479
mjr@illinois.edu
- Glenn Heistand, Illinois State Water Survey
heistand@illinois.edu