

RiskMAP
Increasing Resilience Together



Rock River

**Rock River and Tributaries Flood Risk Review Meeting
Henry, Rock Island and Whiteside Counties**

June 10th, 2021



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE



Pre-meeting survey



Introductions



▶ ISWS

- Glenn Heistand
- Mary Richardson
- Brian Chaille
- James Powell
- Diana Davisson
- Ryan Meekma
- Zoe Zaloudek
- Marni Law

▶ FEMA, Region 5

- Ken Hinterlong
- John Wethington
- Ashley Reimann

▶ FEMA, Regional Service Center (RSC)

- Roger Denick
- Stephanie Nurre

▶ IDNR-OWR

- Loren Wobig
- Steve Altman
- Liana Winsauer
- Marilyn Sucoe

▶ USACE

- Kaileigh Scott
- John Burant



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

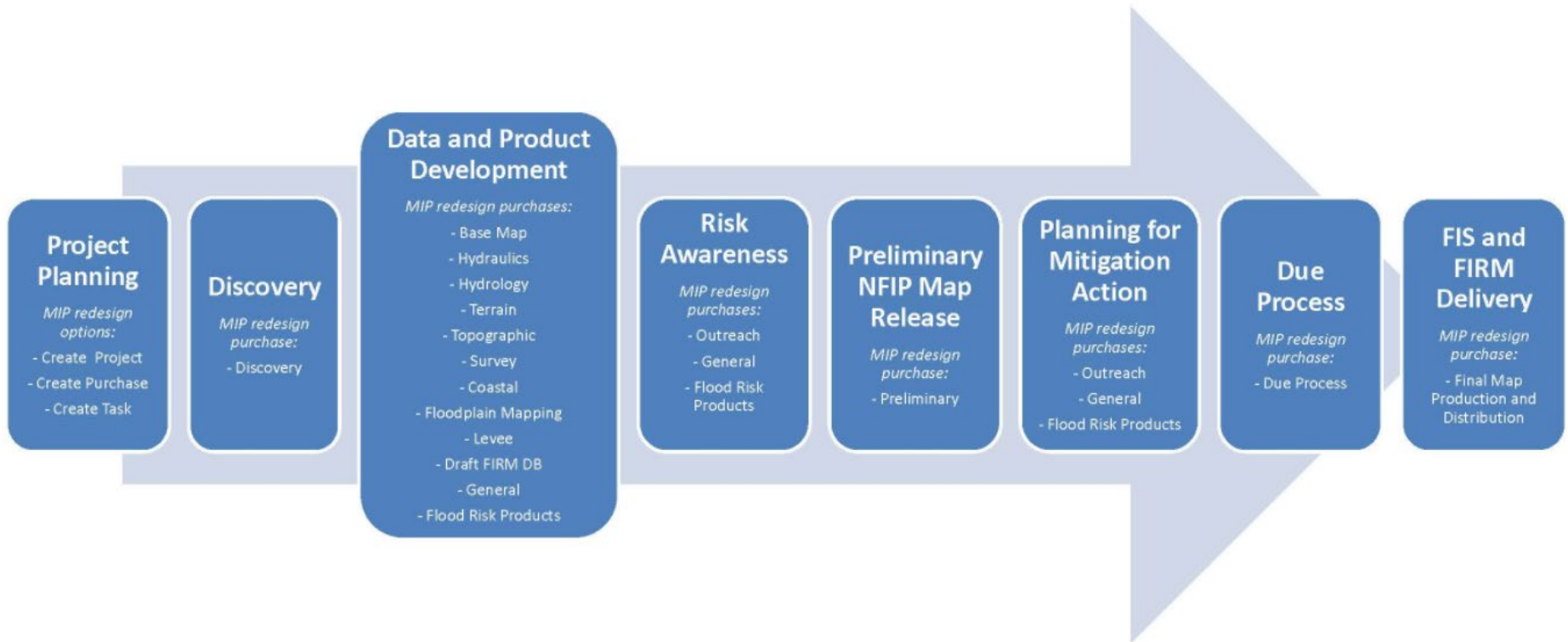
Goals



- ▶ **Collaborate to continue to build resilience and develop secure assets along and including the Rock River. **Please comment on the webmap!****
- ▶ **Review and understand the current and updated flood hazard assessment and floodway analysis**
- ▶ **Dialog with community officials and floodplain managers on their comments and technical data**
- ▶ **Develop a path forward**



FEMA National Objectives





Part 1

Welcome and Introduction
 Motivated
 Project History, Methodology and Results
 Propose a path forward
 Break



Part 2

Breakout in Topical Dialog Groups
 Levee Discussion
 Floodway and Technical Discussion
 Using the Web Map to Make Comments
 Topic of Your Choice?

Motivated



FEMA

I ILLINOIS

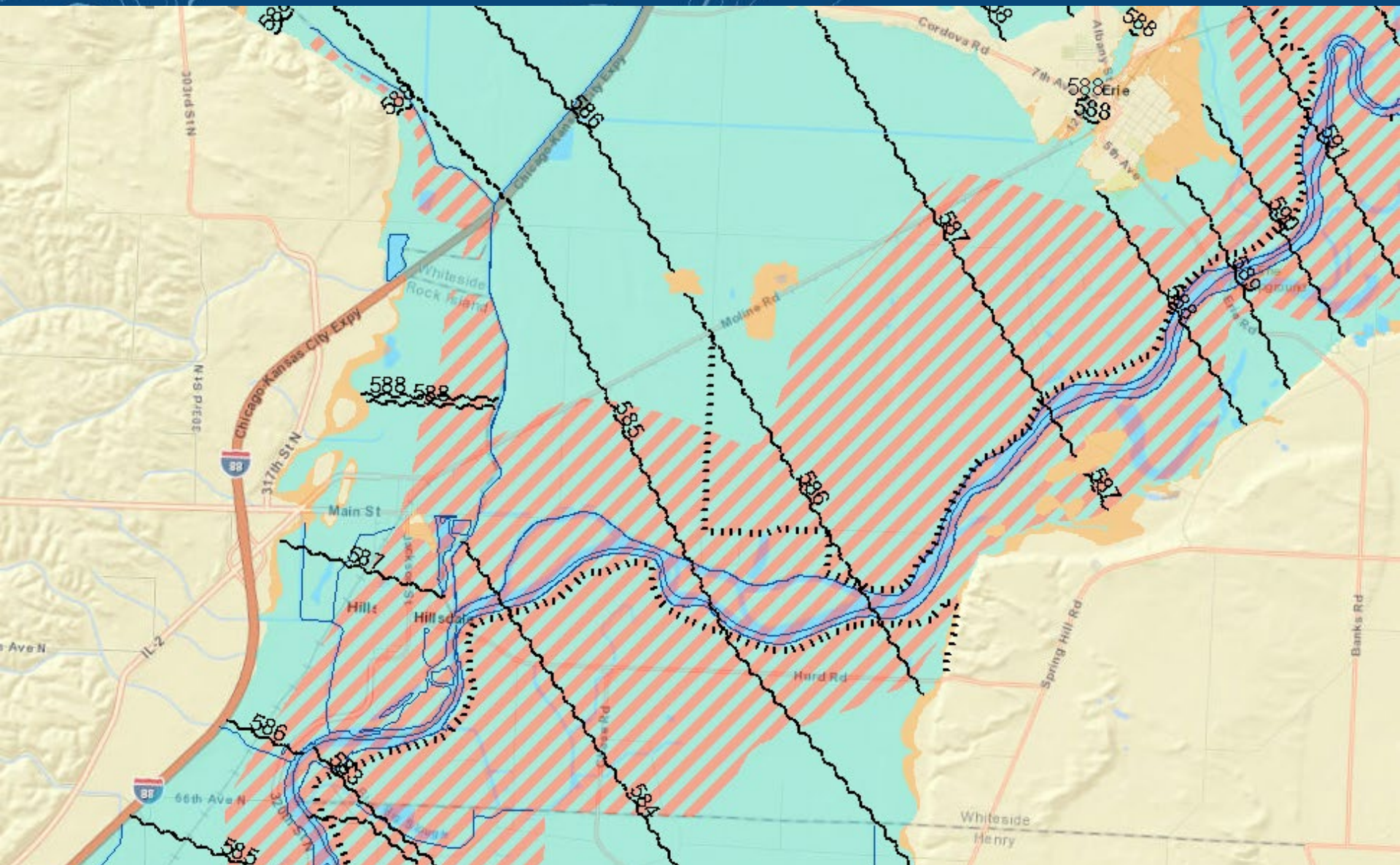
Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together

Erie/Hillsdale Effective FIRM



Special Flood Hazard Area

The FEMA Special Flood Hazard Area (**SFHA**) zone type designation is related to the method and level of hydraulic analysis performed.

Riverine hydraulic analysis typically results in SFHA designation as **Zone A** or **Zone AE**, based on the analysis level deemed appropriate for the study area.

<p>Zone A</p>	<p>Areas subject to inundation by the 1-percent-annual-chance flood event. NO Base Flood Elevations are shown.</p>
<p>Zone AE</p>	<p>Areas subject to inundation by the 1-percent-annual-chance flood event. Base Flood Elevations ARE shown.</p>

The Base Flood Elevation (**BFE**) is the elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year.



Floodway and Storage

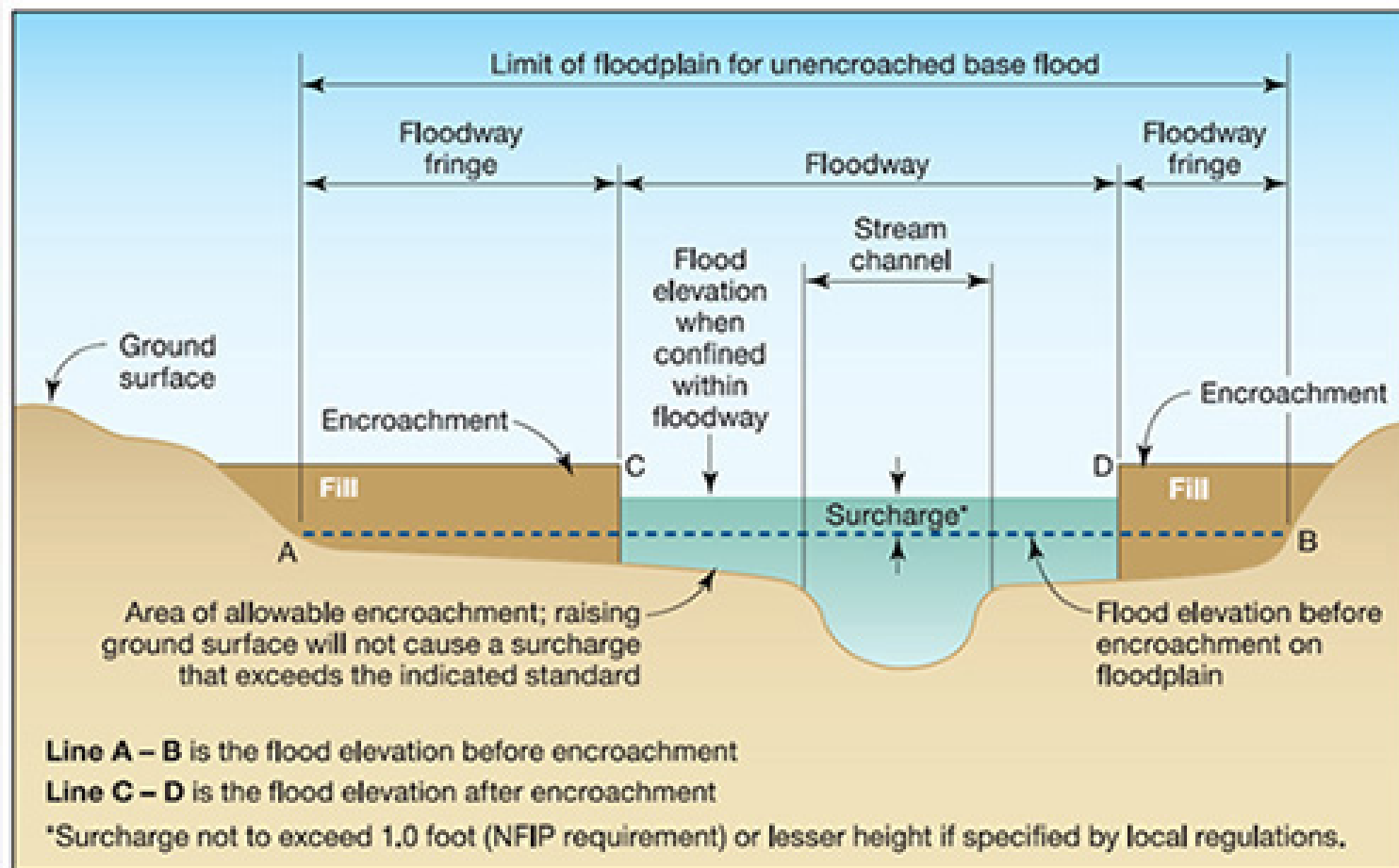


Figure 2-3. Typical riverine floodplain cross section



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together



Photo by Lisa Wall on Unsplash



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together

Project History, Methodology and Results



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together

History - Rock River Floodplain Analysis (Rock Island, Henry and Whiteside County)

COOPERATING
TECHNICAL
PARTNERS

2009
Field Visit



2011
Flood Risk
Review



2012
OWR submittal
with revisions
based on FRR
data



2014
OWR
submittal
with unsteady
state floodway

2014
OWR approval
of hydrology



2018-19
Re-boot: Zone
A Tributaries
OWR submittal
revised with
Added Data



2020
IDNR-OWR
Concurrence
+ Meredosia +
Zone A
Tributaries



2021
Flood Risk
Review



FEMA

I ILLINOIS

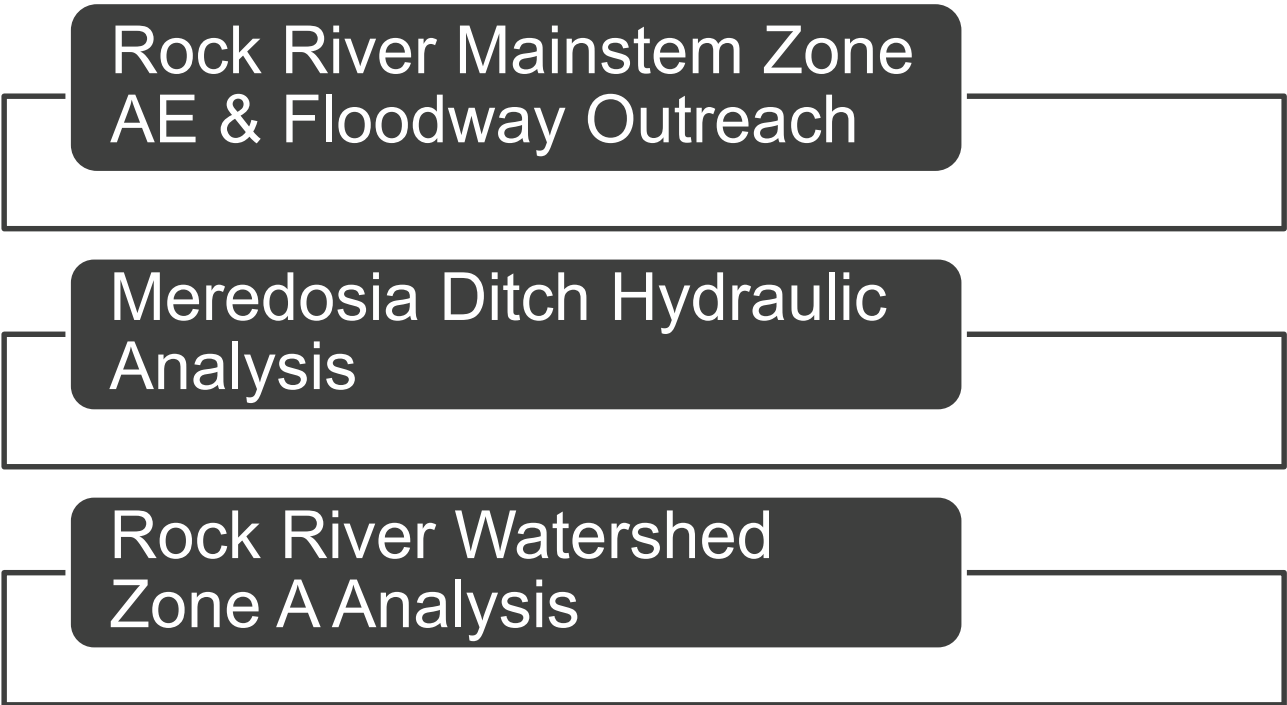
Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together

2021 Flood Risk Review of FFY17 FEMA Rock River Projects



2021 Flood Risk Review of FFY17 FEMA Rock River Projects



**Rock River Mainstem Zone
AE & Floodway Outreach**

Meredosia Ditch Hydraulic
Analysis

Rock River Watershed Zone
A Analysis



Rock River – 2014 & 2019 Analysis



2014

OWR submittal
with unsteady
state floodway

2018-19

Re-boot: Zone
A Tributaries
OWR submittal
revised with
Added Data

- ▶ **Stream gage based hydrologic analysis of observed records of 89 to 55 years, plus HEC-HMS analysis to verify and fill in, ISWS**
- ▶ **Unsteady hydraulic HEC-RAS model, USACE**
- ▶ **Model calibration: very close agreement with the 2002 event**
- ▶ **Two profiles (natural valley and constricted) to represent risk at levees and allow for calibration of historical events**
- ▶ **Unsteady state floodway - including floodway in storage areas based on volume**
- ▶ **Additional data: 50 acres filled at I-80 & I-88 and a BNSF siding built since 2018.**



FEMA

I ILLINOIS

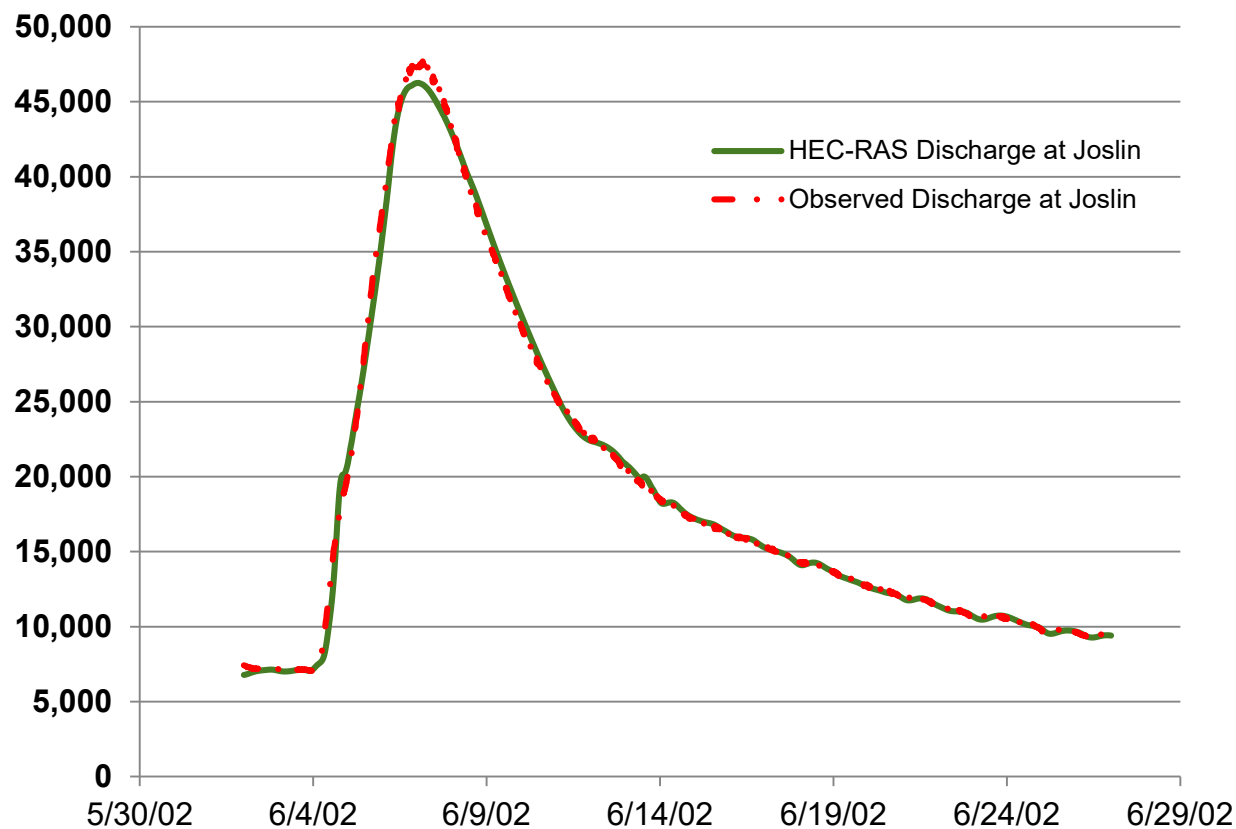
Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

Rock River Hydrology

2002 Calibration Discharge Hydrograph Comparison



FEMA

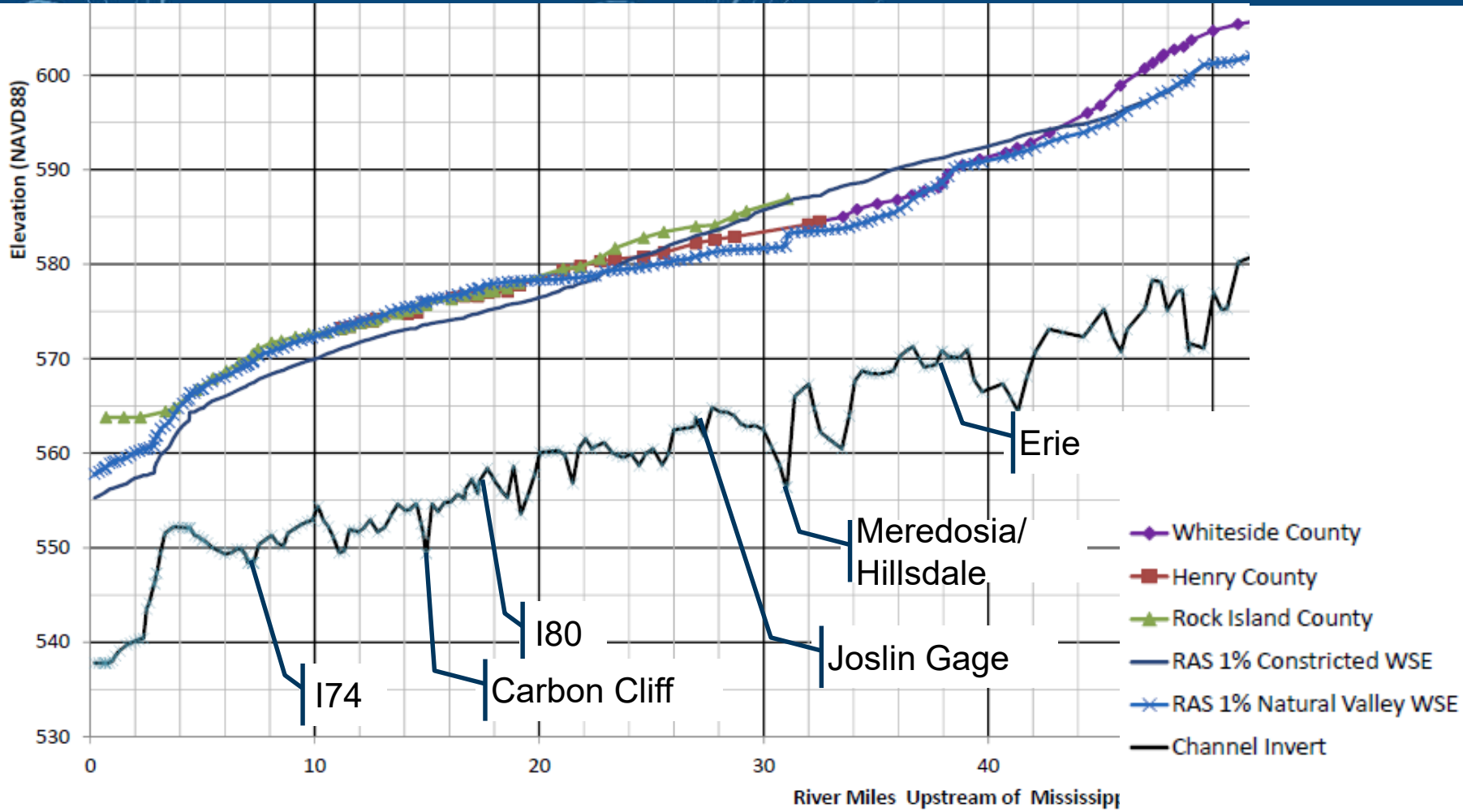
I ILLINOIS

Illinois State Water Survey

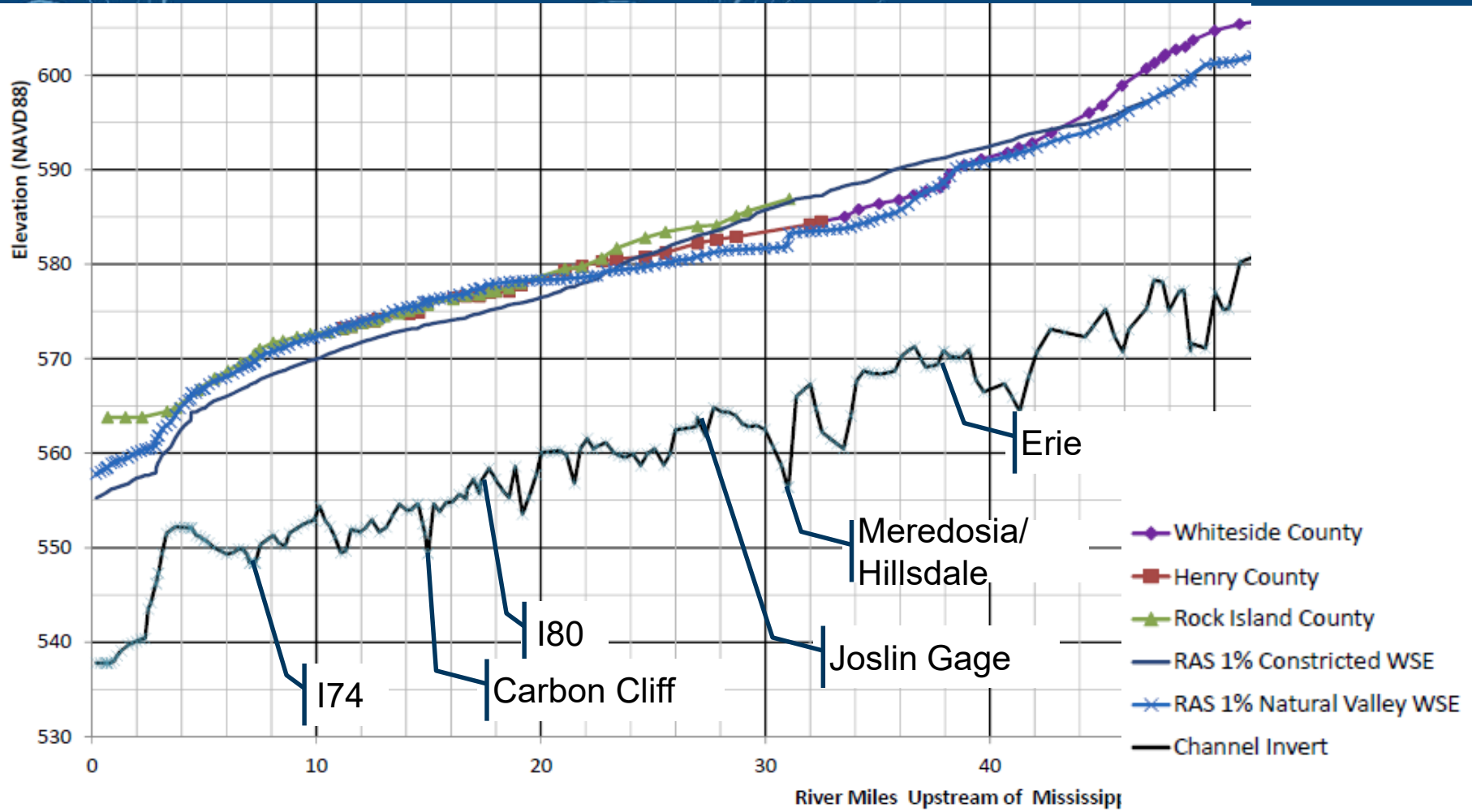
PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

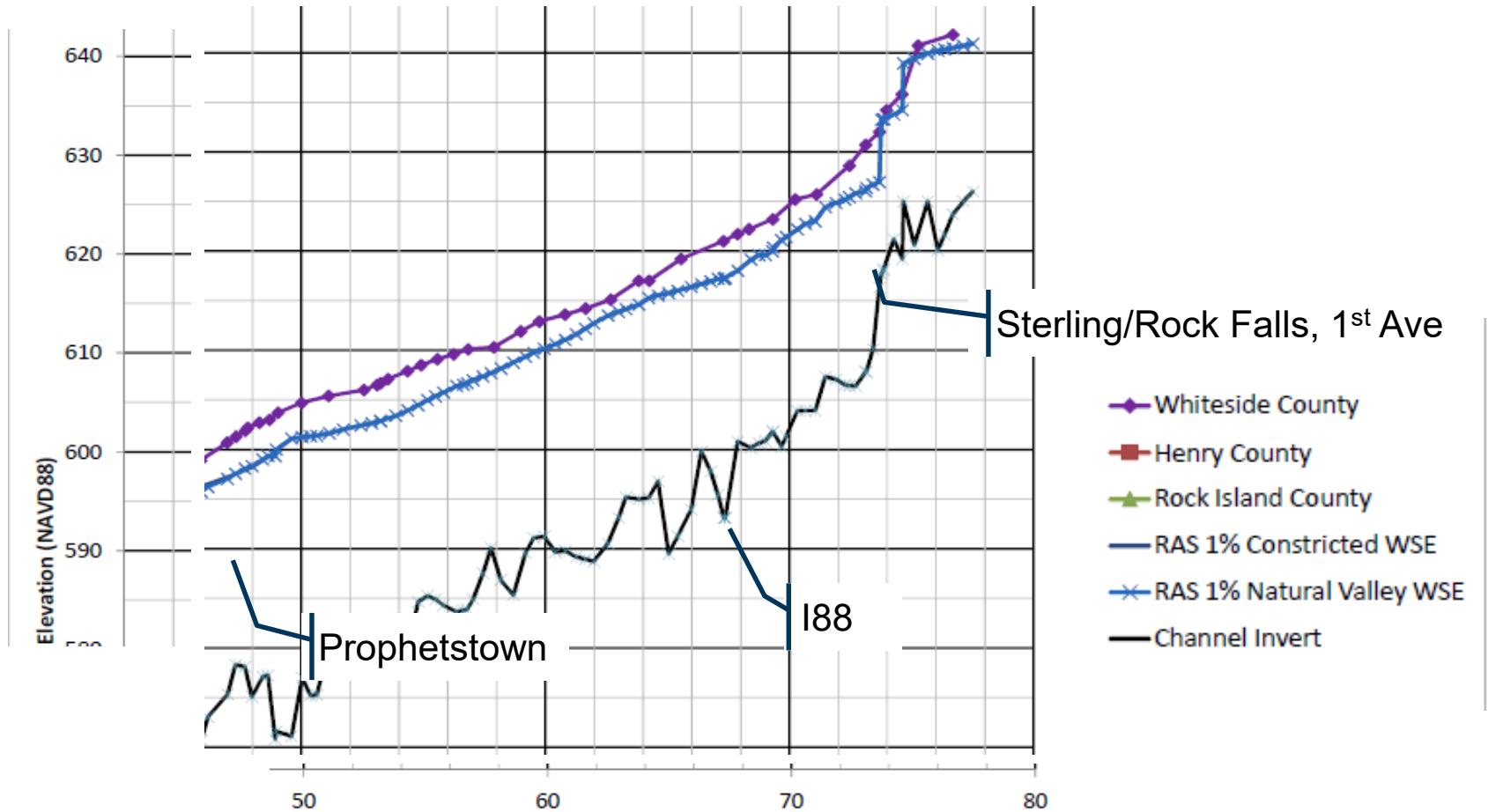
2014 Proposed Floodplain



2014 Proposed Floodplain



2014 Proposed Floodplain



FEMA

I ILLINOIS

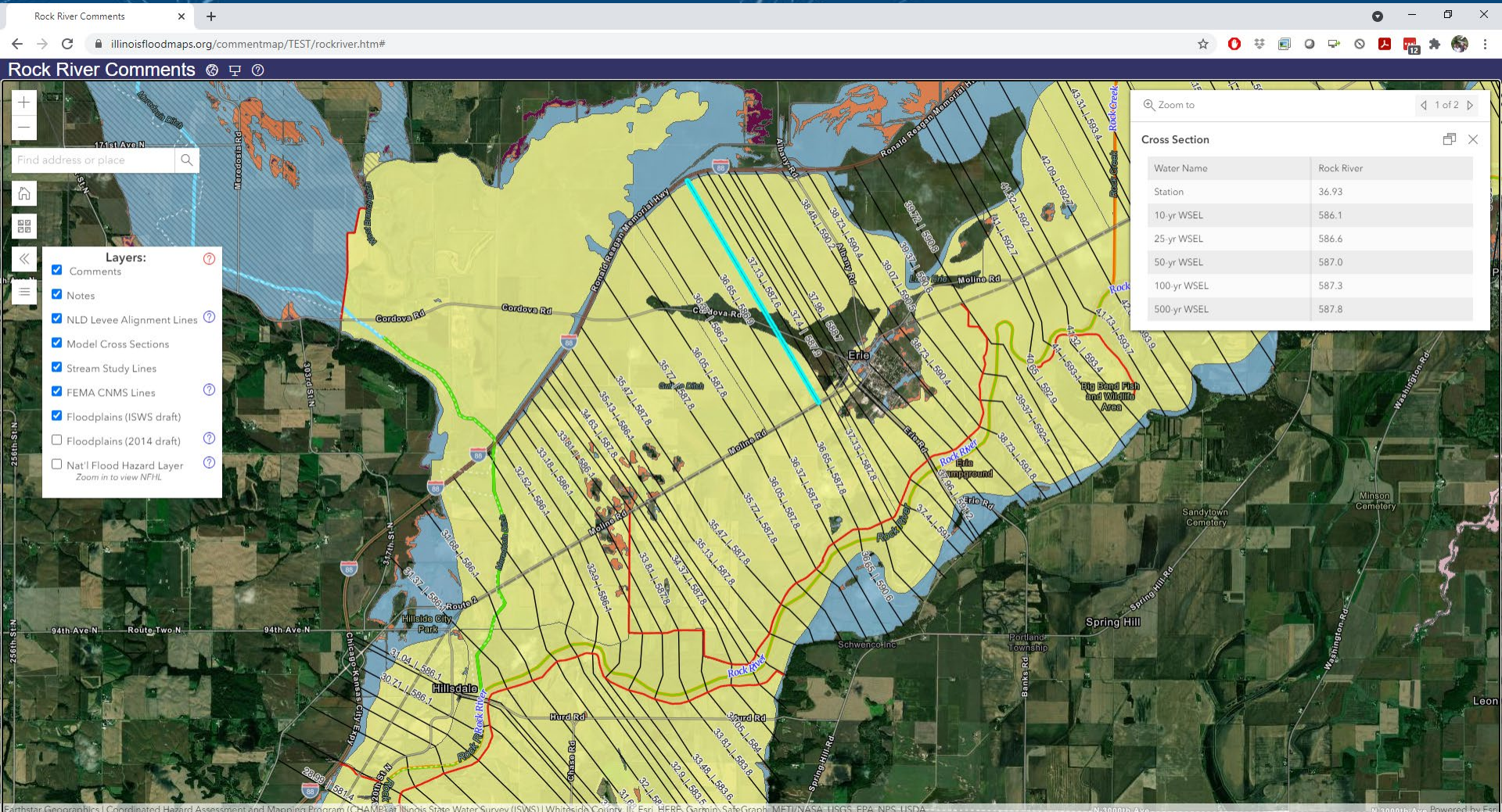
Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together

Natural Valley and Constricted Scenarios: Proposed BFE's



FEMA

ILLINOIS

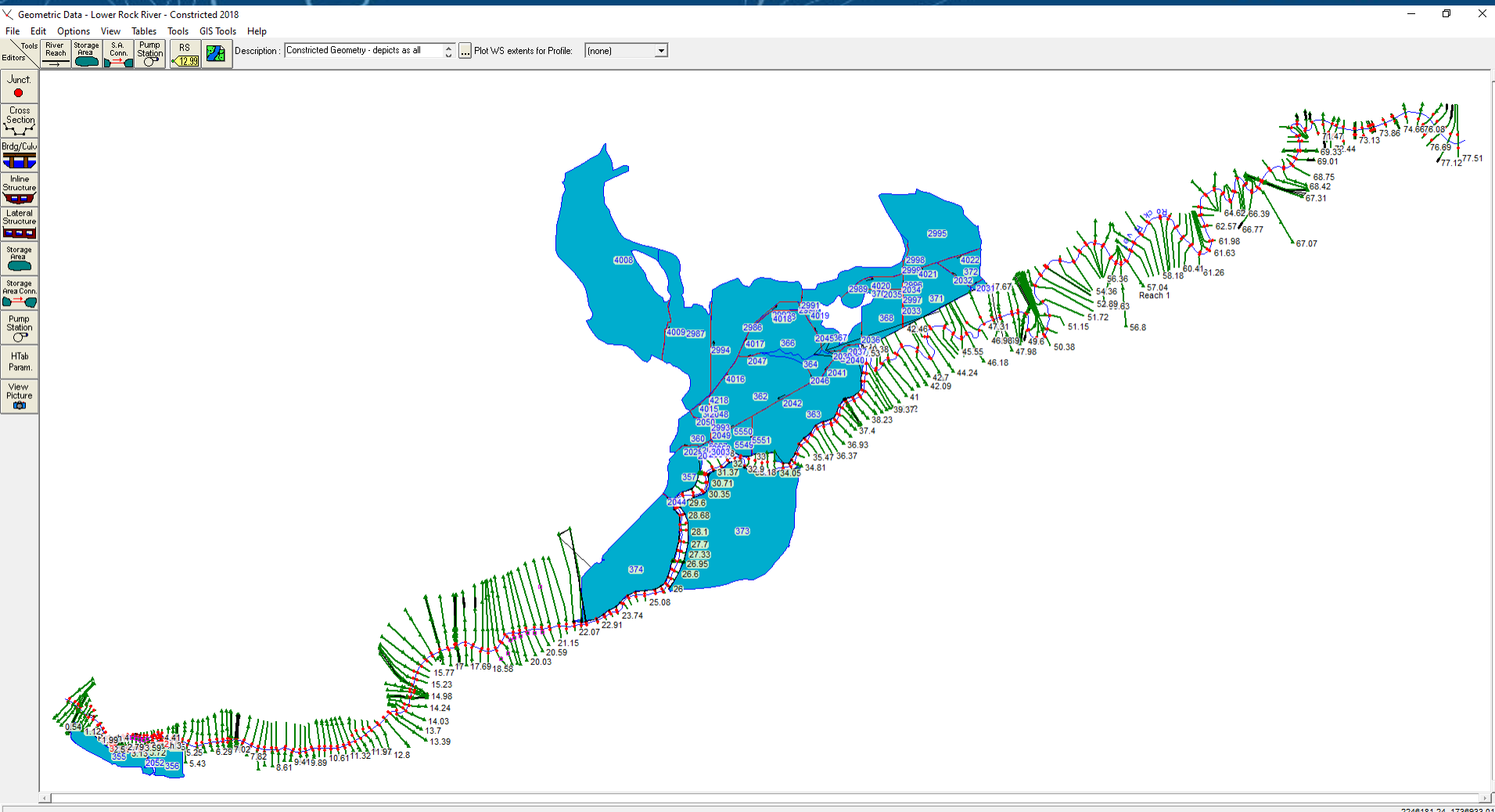
Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together

Natural Valley and Constricted Scenarios: Proposed BFE's



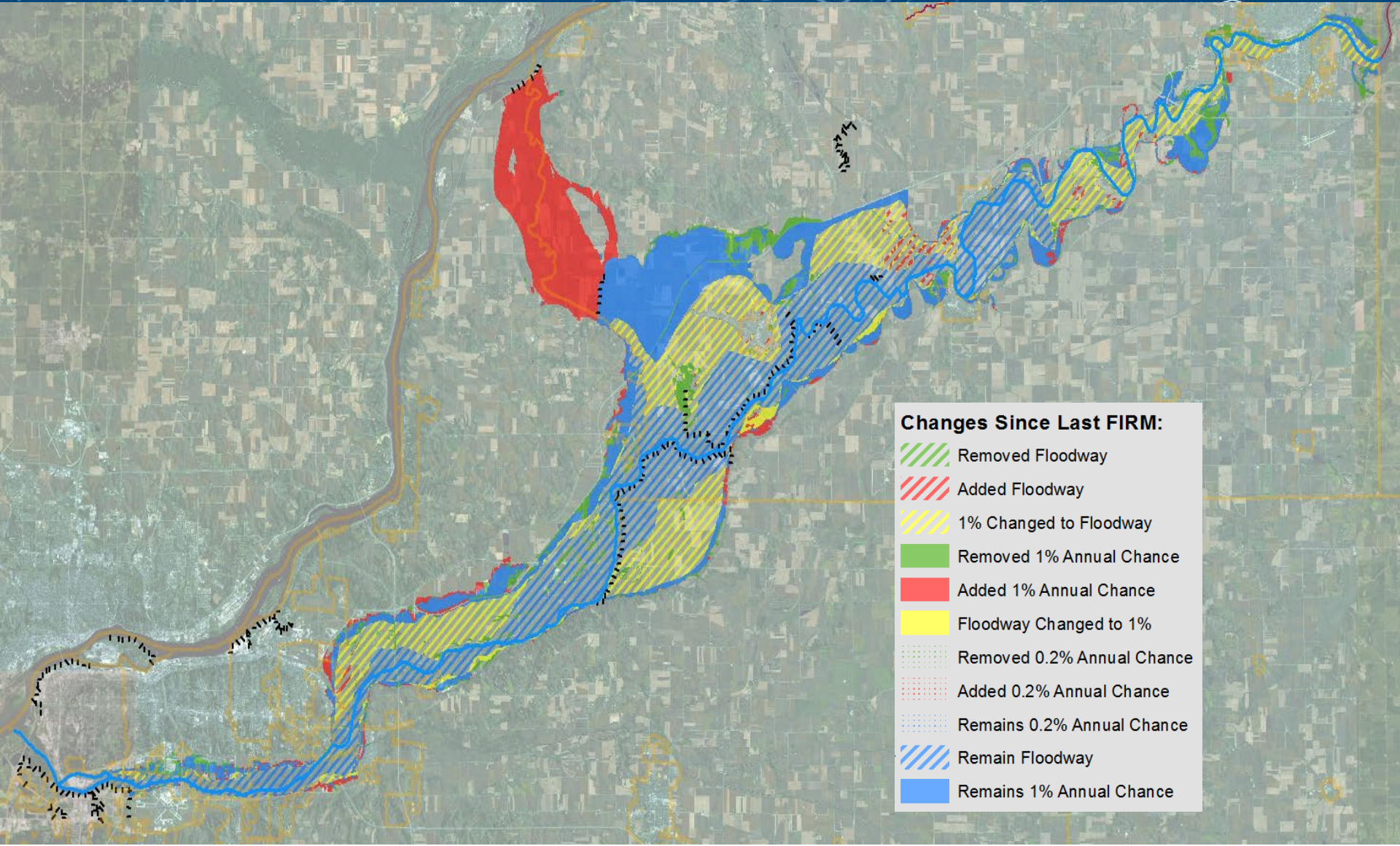
FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

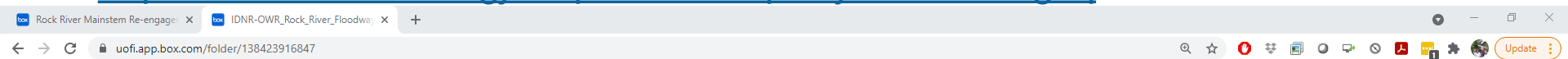
RiskMAP

Increasing Resilience Together

Box Share Site: Rock River Mainstem Re-engagement_Mtg June 2018



<https://uofi.box.com/s/gjle8quzu2evra5piecj9hza2azkkgsq>



box

- All Files
- Recents
- Synced
- Notes
- Relay
- Trash
- My Collections
- Favorites

Search Files and Folders

IDNR-OWR_Rock_River_Floodway_amendment_submittal

Upload New Share

Name	Updated	Size
1a_17-06_Rock_River_E-Molline_Response.docx	Jun 1, 2021 by Brian Stuart Chail...	2 MB
1b_Additional Data Comment Response.docx	Jun 1, 2021 by Brian Stuart Chail...	4.7 MB
2_E_Moline_Data_Submitted.zip	Jun 1, 2021 by Brian Stuart Chail...	22.9 MB
3_Revised_Hydraulics_USACE.zip	Jun 1, 2021 by Brian Stuart Chail...	1.1 GB
4_2014May__RockRiverUnsteadysubmittal.zip	Jun 1, 2021 by Brian Stuart Chail...	1,021.8 MB

Sharing Details

- MR Mary Richardson Owner
- BC Brian Stuart Chaille Editor
- AF Amanda Jill Flegel Editor
- KH Ken Hinterlong Viewer
- LL LWinsauer Editor
- +22 People Externally Shared
- Shared Link Create Link

2021 Flood Risk Review of FFY17 FEMA Rock River Projects



Rock River Mainstem Zone
AE & Floodway Outreach

**Meredosia Ditch
Hydraulic Analysis**

Rock River Watershed
Zone A Analysis



FEMA

I ILLINOIS

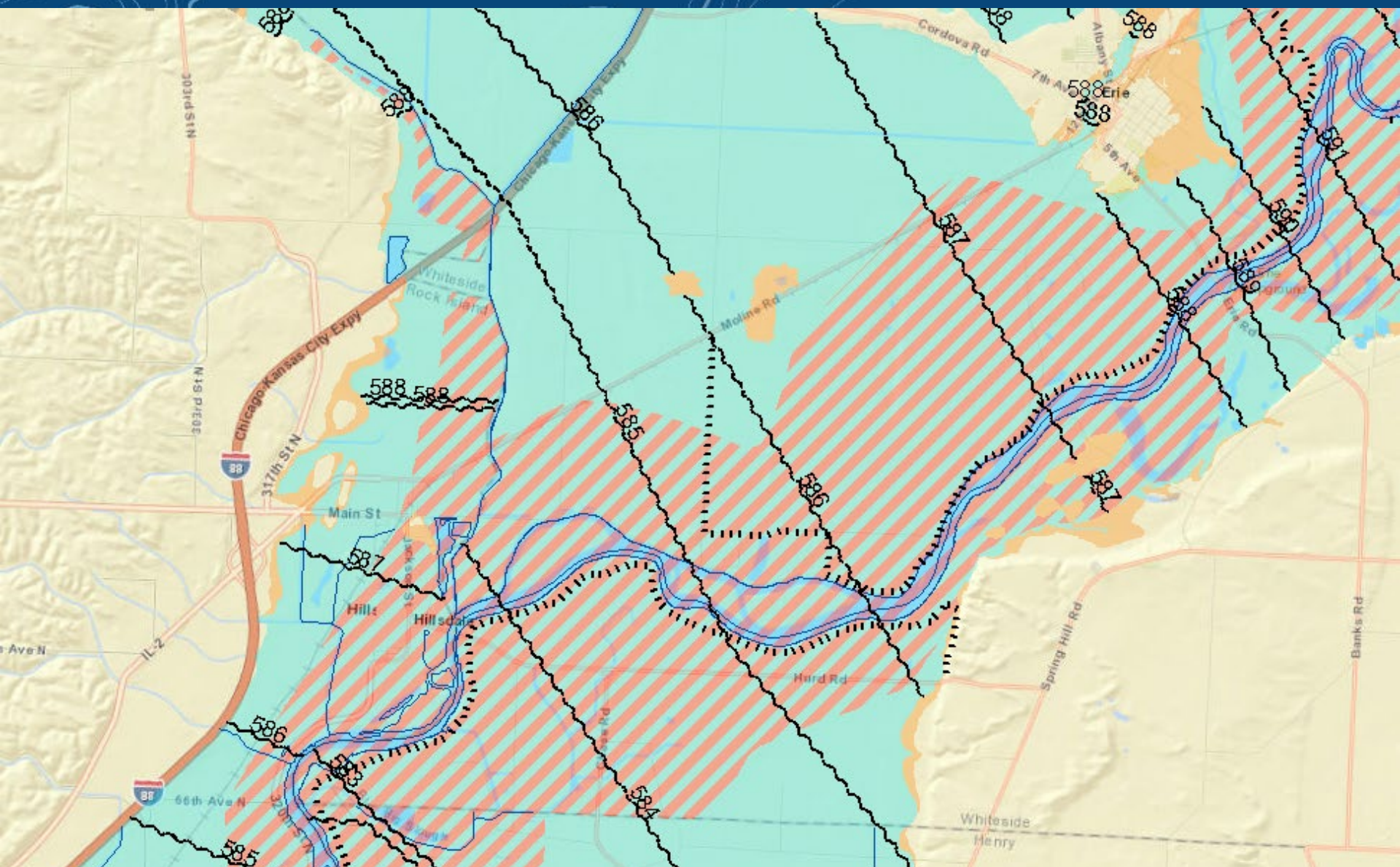
Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together

Meredosia Ditch Analysis



Meredosia Ditch Analysis

► Hydrology

- No stream gage on Meredosia Ditch
- HEC-HMS Version 4.2.1 (Same model that was calibrated to gage data from the Rock River and tributaries)
- Bulletin 70 Rainfall, Huff Distributions
- Significant Storage due to the gated culverts at the Main Street pump station near Hillsdale.
- Result: The proposed peak discharge values based on the HEC-HMS model are lower than the effective peak streamflow values.

► Hydraulics

- HEC-RAS version 5.0.6 (Steady Flow)
- Topographic data same as Rock River
- Surveyed structures, supplemented by as-built plans and channel data interpolated between structures
- Normal Depth for downstream starting elevation
- Result: Meredosia Ditch water surface elevations are **lower** than the proposed analysis of the Rock River
- The Rock River analysis will establish BFE's and floodway limits and resolve the apparent discrepancy.

2021 Flood Risk Review of FFY17 FEMA Rock River Projects



Rock River Mainstem Zone
AE & Floodway Outreach

Meredosia Ditch Hydraulic
Analysis

**Rock River Watershed
Zone A Analysis**



FEMA

I ILLINOIS

Illinois State Water Survey




PRAIRIE RESEARCH INSTITUTE

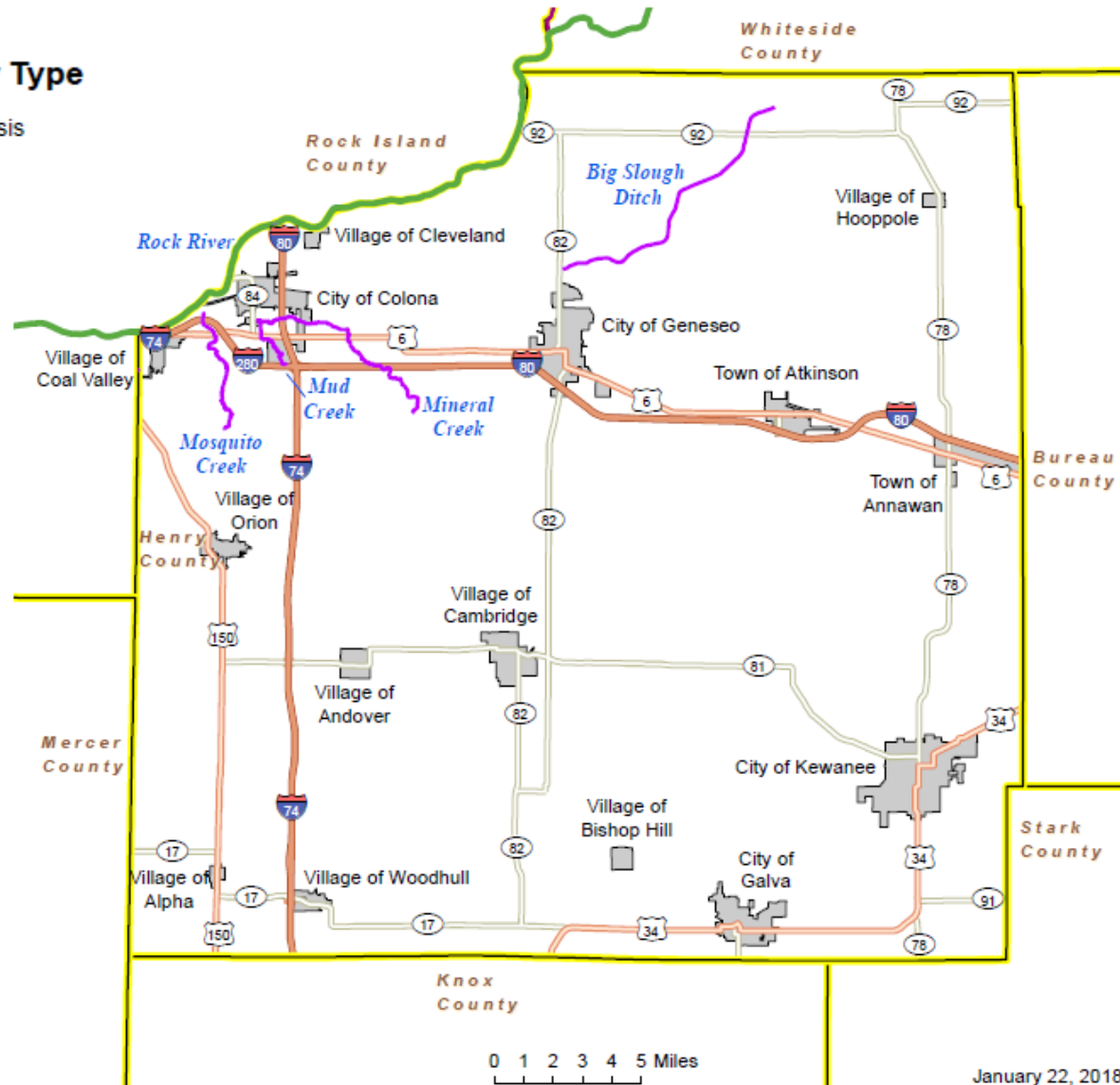
RiskMAP

Increasing Resilience Together

Henry County Zone A Study Extents

Proposed Study Type

-  Floodway Analysis
-  Zone AE
-  Zone A



FEMA

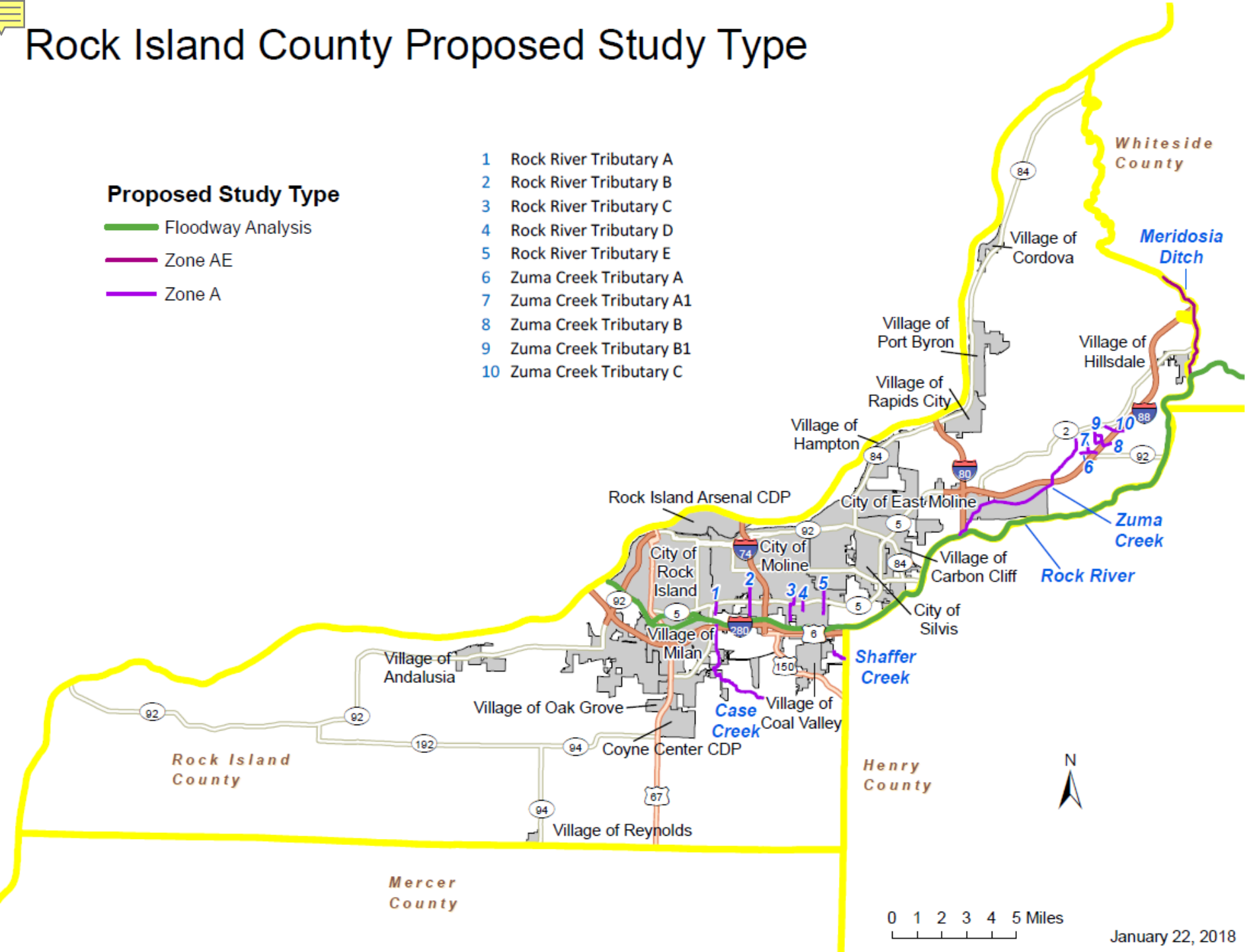
MAP
intelligence Together

Rock Island County Proposed Study Type

Proposed Study Type

- Floodway Analysis
- Zone AE
- Zone A

- 1 Rock River Tributary A
- 2 Rock River Tributary B
- 3 Rock River Tributary C
- 4 Rock River Tributary D
- 5 Rock River Tributary E
- 6 Zuma Creek Tributary A
- 7 Zuma Creek Tributary A1
- 8 Zuma Creek Tributary B
- 9 Zuma Creek Tributary B1
- 10 Zuma Creek Tributary C



Whiteside County

Meridisia Ditch

Village of Hillsdale

Village of Port Byron

Village of Rapids City

Village of Hampton

Rock Island Arsenal CDP

City of East Moline

City of Rock Island

City of Moline

Village of Carbon Cliff

City of Silvis

Village of Andalusia

Village of Oak Grove

Village of Coal Valley

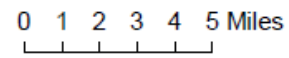
Coyne Center CDP

Village of Reynolds

Henry County

Rock Island County

Mercer County

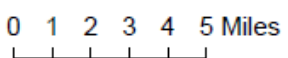
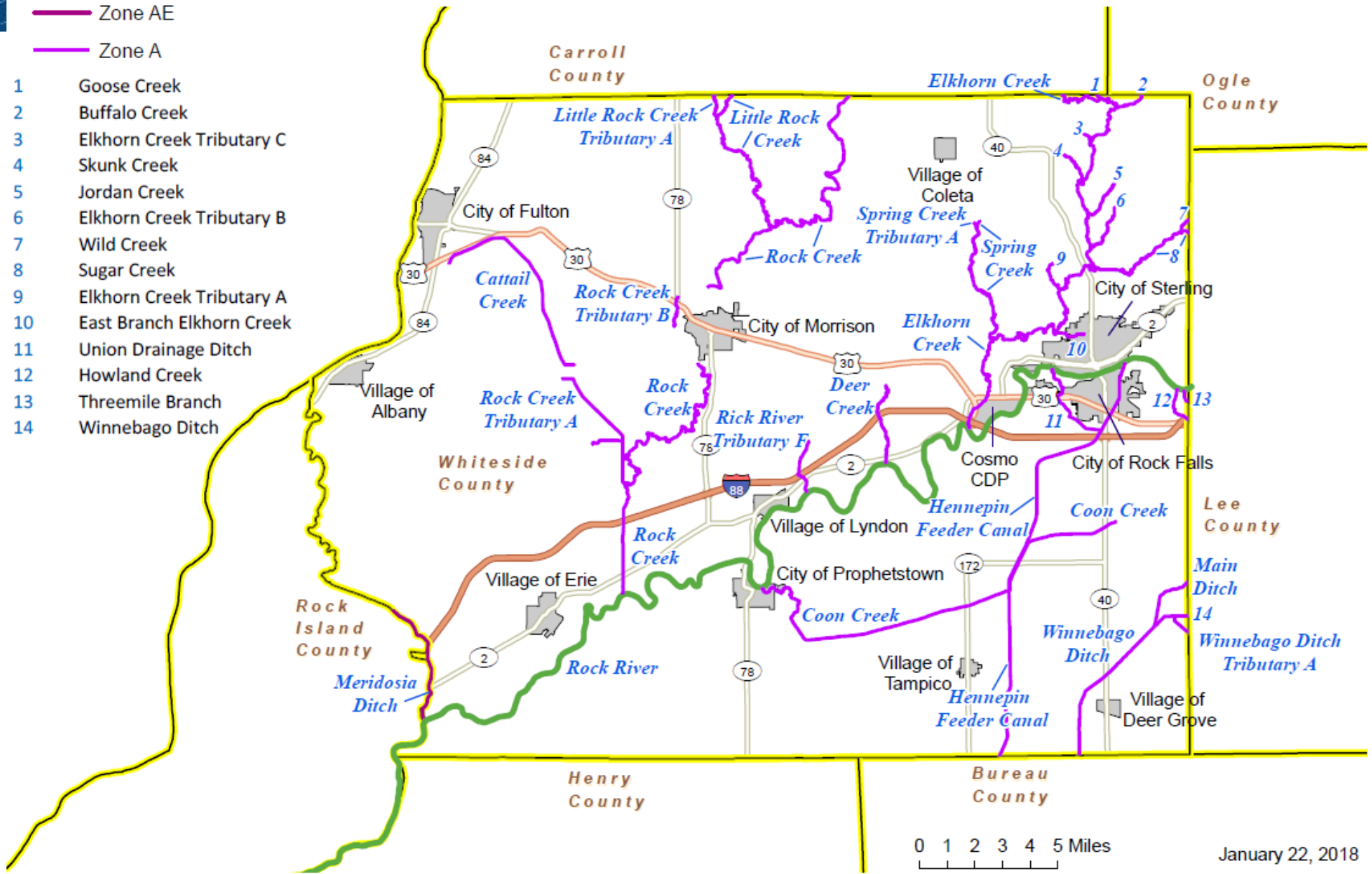


Whiteside County Proposed Study Type

Proposed Study Type

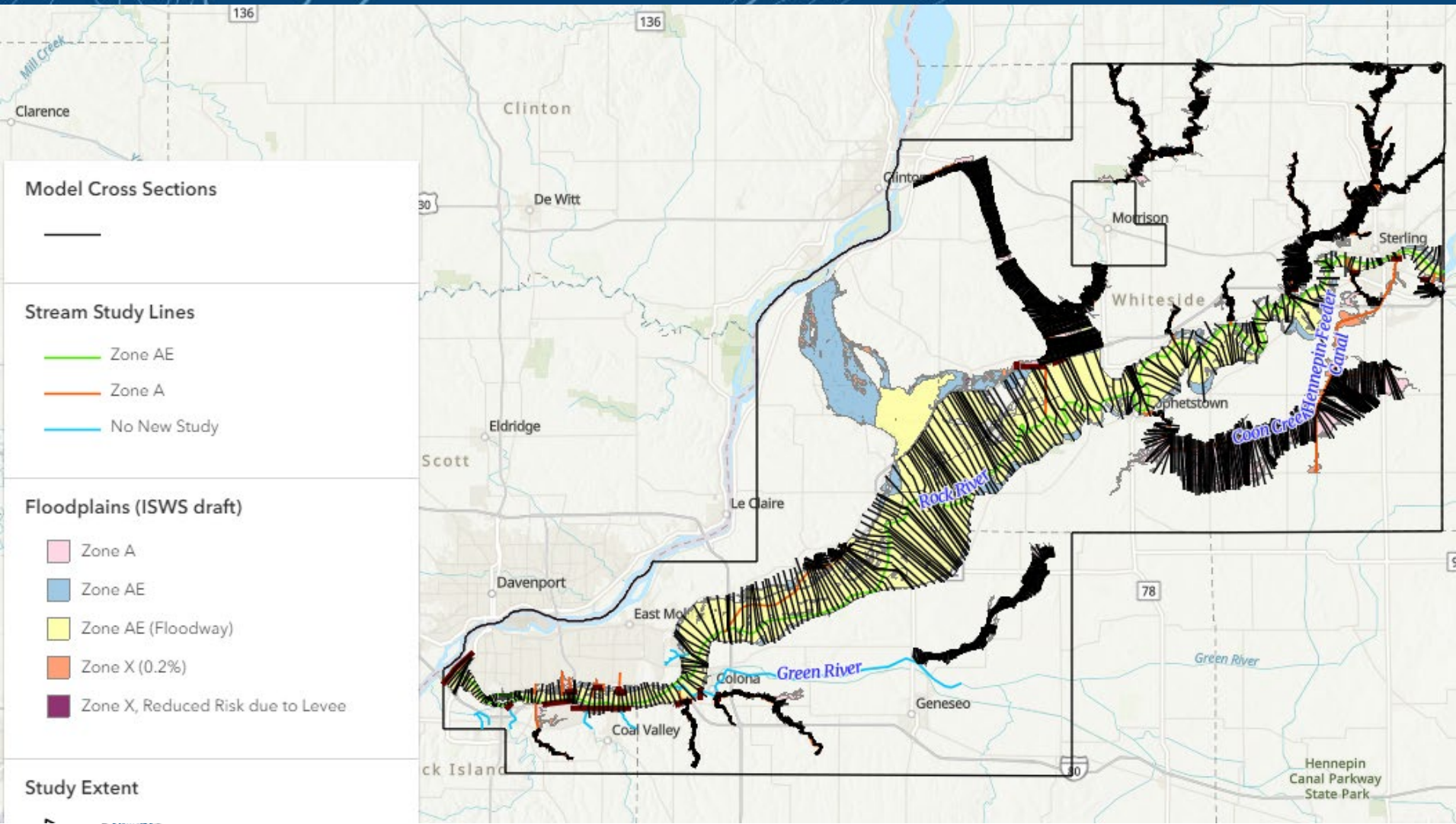
- Floodway Analysis
- Zone AE
- Zone A

- 1 Goose Creek
- 2 Buffalo Creek
- 3 Elkhorn Creek Tributary C
- 4 Skunk Creek
- 5 Jordan Creek
- 6 Elkhorn Creek Tributary B
- 7 Wild Creek
- 8 Sugar Creek
- 9 Elkhorn Creek Tributary A
- 10 East Branch Elkhorn Creek
- 11 Union Drainage Ditch
- 12 Howland Creek
- 13 Threemile Branch
- 14 Winnebago Ditch



January 22, 2018

Zone A Models



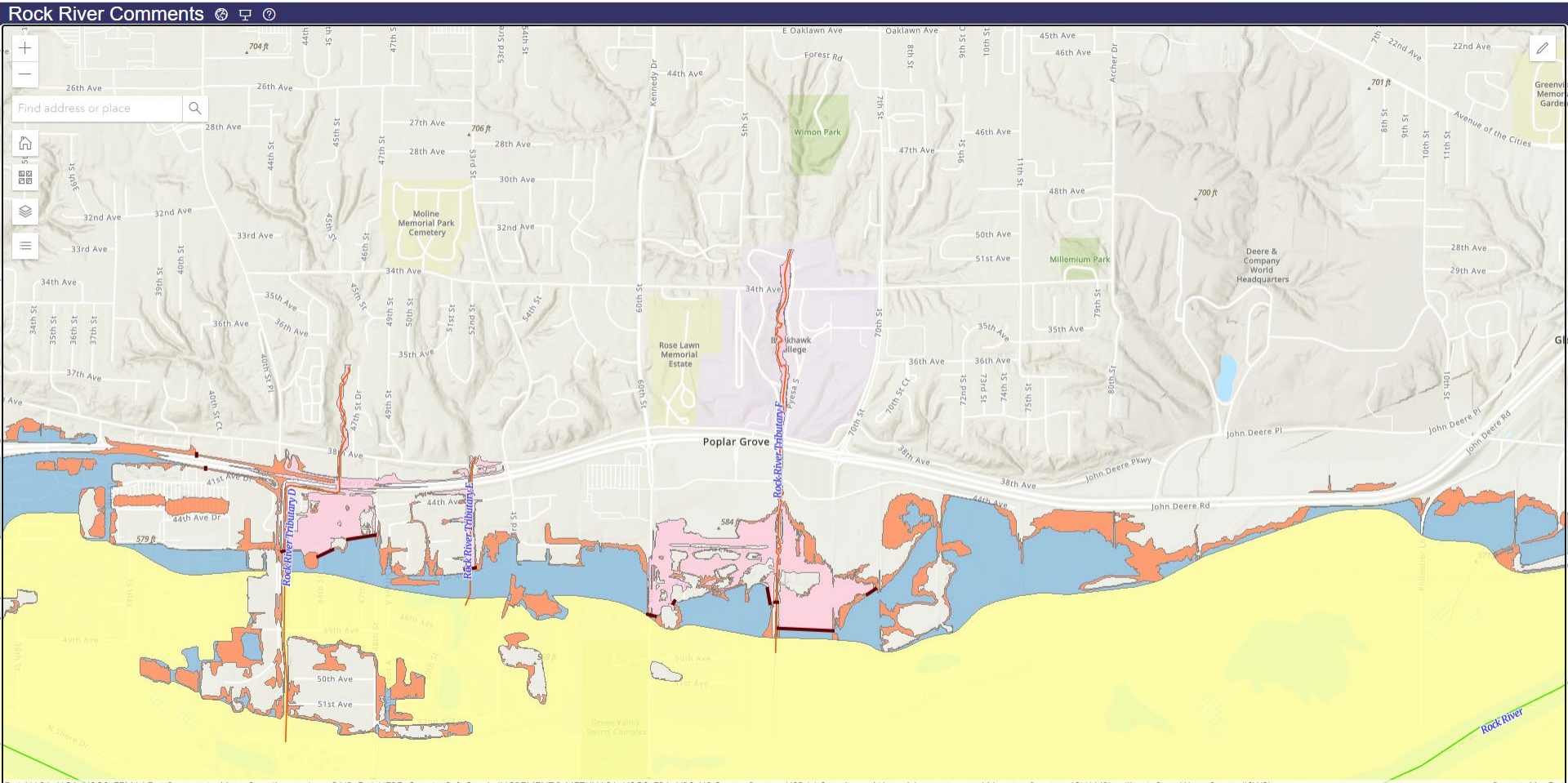
Zone A Model Methodology

- ▶ **Hydrology is based on the current version of Stream Stats**
- ▶ **Hydraulic Models comply with FEMA Guidance on Base Level Engineering (BLE) Analyses and Mapping dated February 2018**

Table 1: Hydraulic Analysis Options – Base Level Engineering

Option	Cross Sections	Flow Paths (Left, Right and Channel)	Manning's "n" Values	Structures	Flood Zone
B	Auto-placed and hand adjusted or auto-placed by "intelligent" methods.	Reach lengths computed by offsetting stream centerline.	Overbanks from Land Use Land Cover (LULC) data, channel value estimated separately.	Not included; but cross sections placed appropriately for structure modeling.	A
C	Each section reviewed by engineers.	Reach lengths adjusted based on draft floodplain.	Overbanks LULC data, channel value estimated separately.	Included; structure data from national, state or other data source. Estimated based on topography and aerial photos for those not available	A

Zone A Models



Esri, NASA, NGA, USGS, FEMA | Esri Community Maps Contributors, Iowa DNR, Esri, HERE, Garmin, SafeGraph, INCREMENT P, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA | Coordinated Hazard Assessment and Mapping Program (CHAMP) at Illinois State Water Survey (ISWS) | Powered by Esri



ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

Community Participation



- ▶ **Now is the time to review the draft floodplain mapping for your community!!!**
 - Who's affected?
 - Is the mapping reasonable and/or consistent with community's experience with flooding?
 - Make comments if something doesn't look right or make sense.
 - Provide data or information if it could support a change to the draft mapping
 - Ask questions!
 - **Only the Comments that you provide through the Web Map count as official comments! Please make your comments through the web map!**



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

Questions?



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

Webmap Results



FEMA

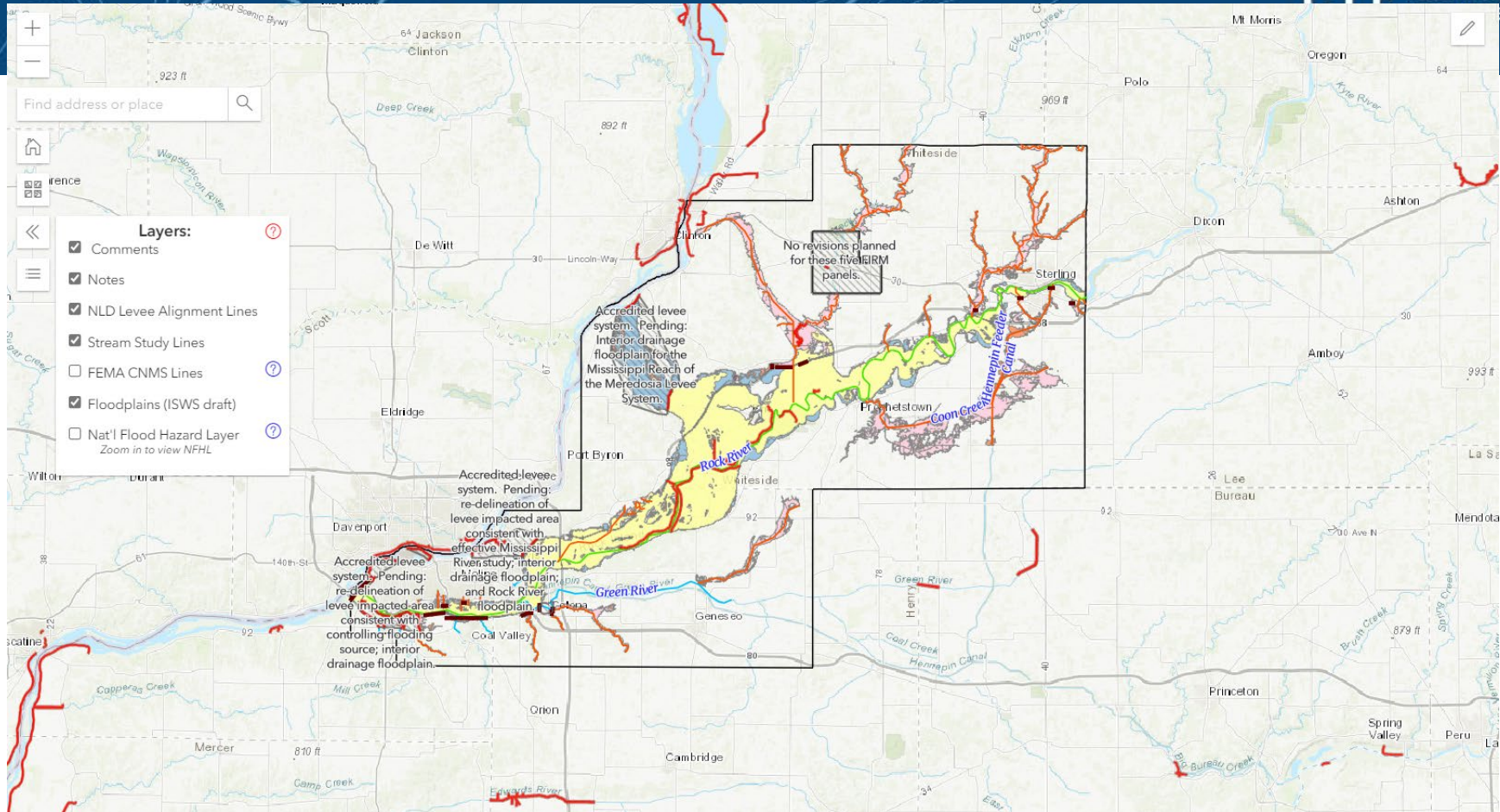
I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

Web Map Demonstration



<https://www.illinoisfloodmaps.org/commentmap/rockriver.htm>

Login: watershed

Password: illinoisfloods!123



FEMA

I ILLINOIS

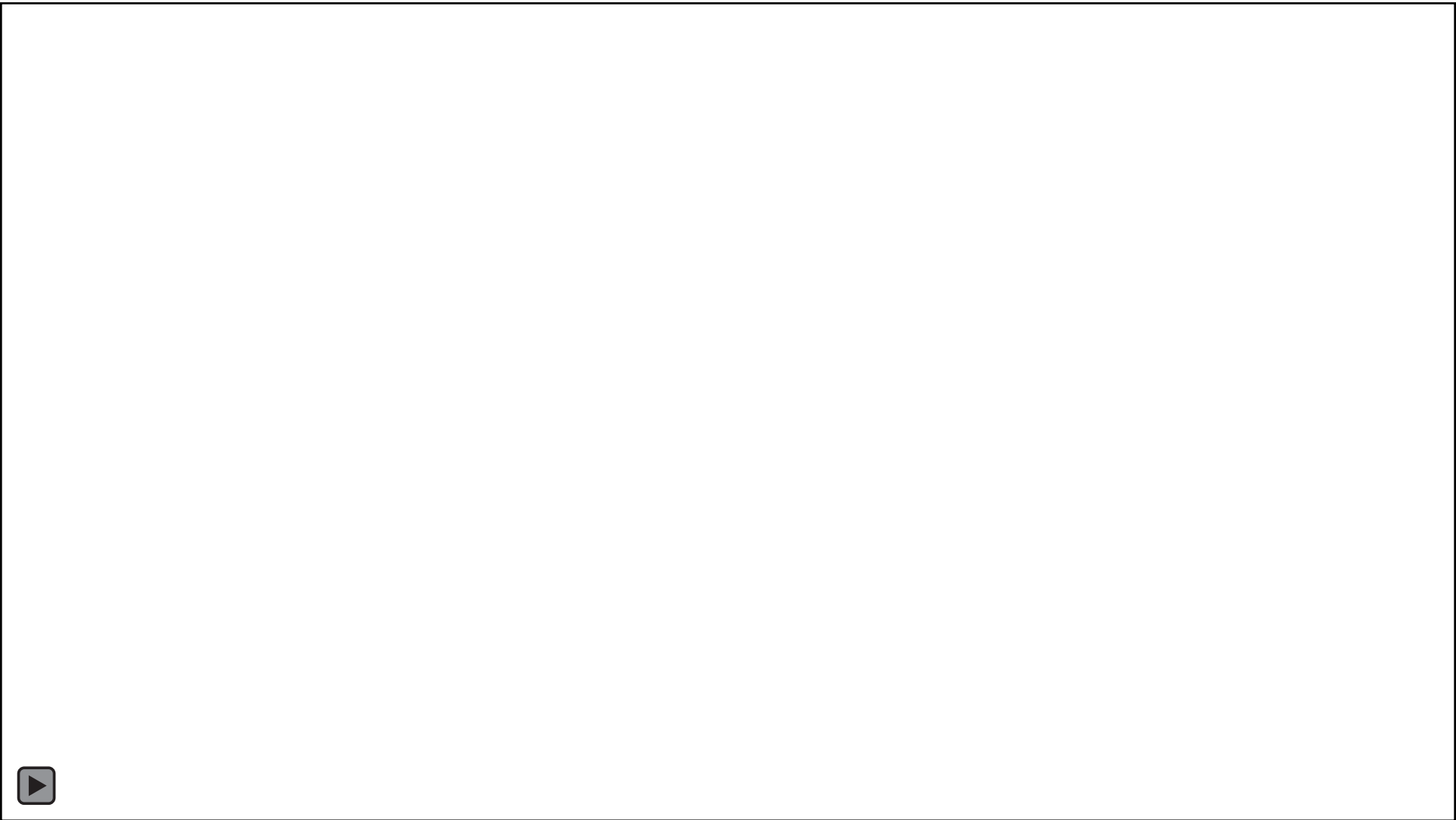
Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together

Web Map Demonstration



Path Forward Discussion



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

Communication Plan for current FEMA project



- ▶ **Proposed Engineering Methods Notification Letters mailed 1/25/2018**
- ▶ **Project Re-engagement Meetings held 6/12/2018 in Rock Island and Sterling; included acceptance and follow-up of comments**
- ▶ **Flood Risk Review Meeting (Today)**
 - **Associated 30-day comment period starts today**
 - **Comment Period Ends COB Monday, 7/12/2021**
- ▶ **Comment resolution and follow-up as necessary**
- ▶ **ISWS & FEMA currently in discussions for the next project phase. Includes but not limited to:**
 - **Delineation of levee interior areas**
 - **Re-delineation of select Zone AE streams**
 - **Additional tributary data development in Rock Island County**



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

Schedule



- ▶ **Flood Risk Review Meeting (today)**
- ▶ **Comment discussion & resolution (Summer & Fall 2021)**
- ▶ **Proposed next phase work including completion of county specific FIRM databases. (To begin in 2022)**
- ▶ **Databases provided to each county for review and comment (TBD)**
- ▶ **We do not anticipate preliminary maps for at least 3 years!**



Community Risk Communication and Mitigation Resources



FEMA Floodsmart.gov: <https://www.floodsmart.gov/>

- An official site of the National Flood Insurance Program (NFIP)
- IDNR Acting NFIP State Coordinator: Marilyn Sucoe, P.E., CFM
Marilyn.Sucoe@Illinois.gov

FEMA Hazard Mitigation Planning:

<https://www.fema.gov/emergency-managers/risk-management/hazard-mitigation-planning>

- Help with identifying disaster risks and vulnerabilities, and developing mitigation plans to break the cycle of disaster damage and reconstruction.

FEMA Mitigation Ideas:

https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf

- A resource for reducing risk to natural hazards.



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

Questions?



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together

Post-meeting survey



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP
Increasing Resilience Together



ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

Brian S. Chaille, P.E., CFM bchaille@Illinois.edu

Mary Richardson, CFM mjr@Illinois.edu

www.illinoisfloodmaps.org



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together

Agenda



Part 1

Welcome and Introduction

Motivated

Project History, Methodology and
Results

Propose a path forward

Break



Part 2

Breakout in Topical Dialog Groups

Levee Discussion

Floodway

Zone A and Technical Discussion

Using the Web Map to Make Comments

Topic of Your Choice?



FEMA

I ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

RiskMAP

Increasing Resilience Together