



ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

Kishwaukee River Tributary Flood Risk Project Boone, Ogle and Winnebago Counties, Illinois

Project Initiation Community Coordination Meeting

September 4th, 2024



FEMA

Agenda

Rollcall

Introduction

Project Objectives and Goals

National Flood Insurance Program / Hazard Mitigation

Project Scope

Data Development

- Hydrologic Studies Update
 - Proposed Hydraulic Studies
-

Communication

Schedule

Community Participation

Questions/Discussion

Rollcall

Boone County

Boone County*
City of Belvidere*
Village of Caledonia
Village of Capron*
Village of Cherry Valley*
Village of Caledonia*
Village of Timberlane
Village of Poplar Grove*

Ogle County

Ogle County*
Village of Creston
Village of Davis Junction*
Village of Hillcrest*
Village of Monroe Center

Winnebago County

Winnebago County*
Village of Cherry Valley*
City of Rockford*
Village of New Milford*

Other Agencies

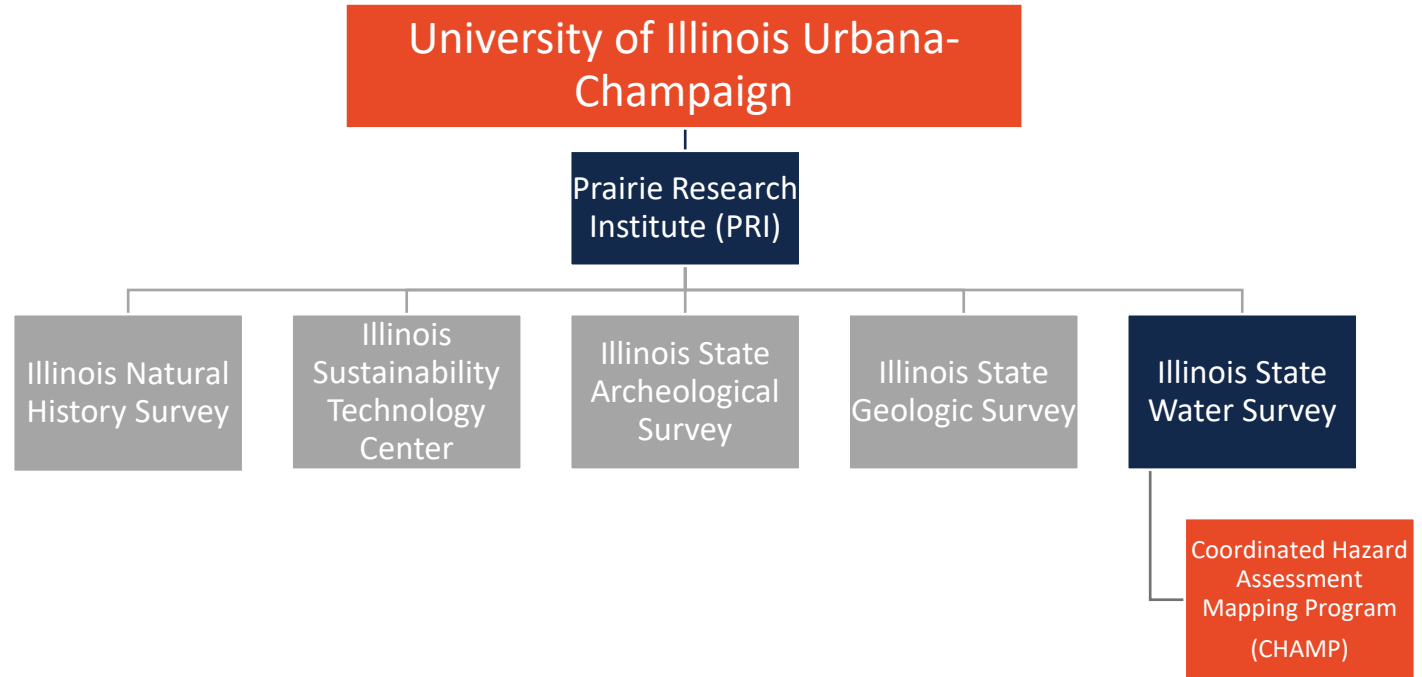
FEMA
IDNR
IEMA
others

* participates in NFIP

Introduction

Introduction

Who We Are



I ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE

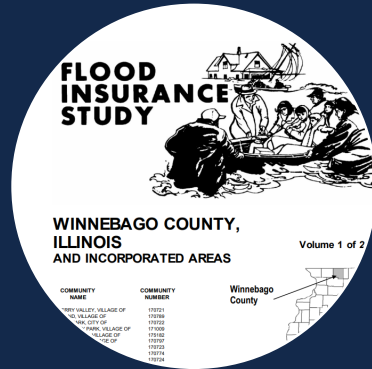
<https://www.illinoisfloodmaps.org/>

<https://www.isws.illinois.edu/champ>

Introduction

What We Do

I ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE



Produce Flood Studies



Generate Floodplain Mapping



Inform Communities of Flood Risk



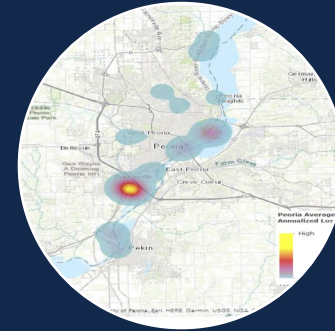
Introduction

What We Do

I ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE



Provide Hazard
Mitigation Plans



Provide Structure
Specific Risk
Assessments



Introduction

Our Partners

FEMA

ISWS is a Cooperating Technical Partner (CTP)
with the
Federal Emergency Management Agency. (FEMA)



IDNR-OWR

ISWS partners with The Illinois Department of Natural Resources-Office of Water Resources (**IDNR-OWR**).
Together we prioritize Illinois floodplain studies
and mapping projects.



Your Community

ISWS provides ongoing engagement with state and local officials and watershed stakeholders to reduce flood risk.



Introduction

How We Are Funded

I ILLINOIS

Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE



FEMA administers the National Flood Insurance Program (NFIP).



The Risk Mapping, Assessment, and Planning (Risk MAP) Program is the FEMA process used to implement NFIP floodplain studies and mapping projects.



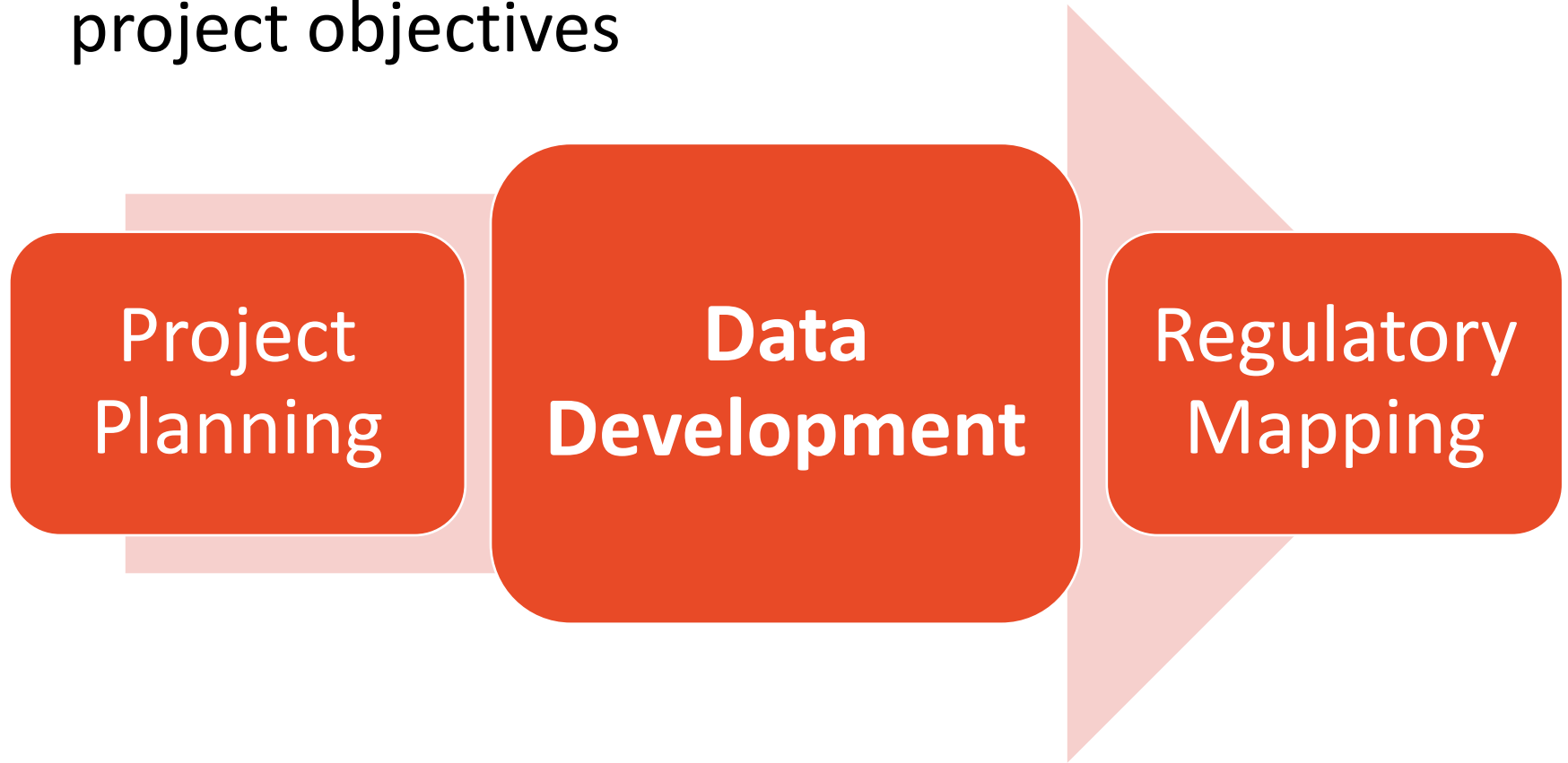
FEMA provides grants to CTP's to complete Risk MAP work.



Project Objectives and Goals

Project Objectives

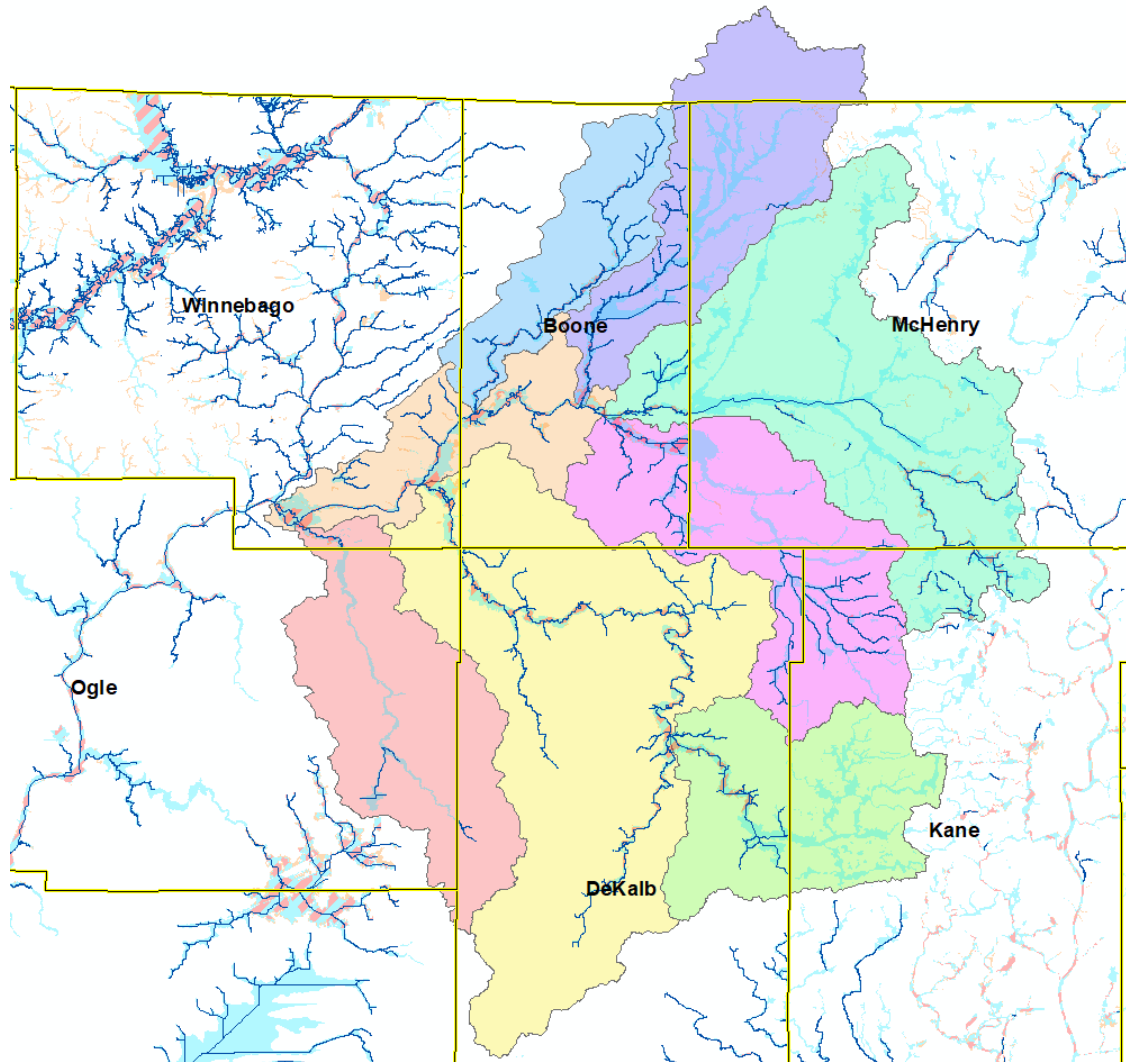
Several project phases comprise the overall project objectives



State Objectives and Goals

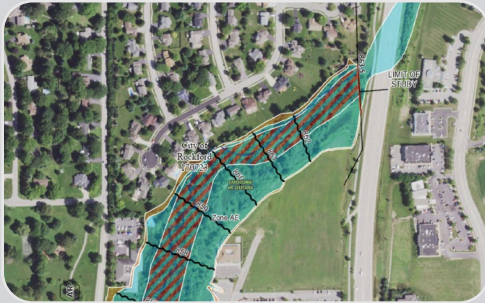
Objective: Update Flood Risk with Hydrologic and Hydraulic Analyses for Select Streams

Goal: Update Digital Floodplain Maps



Update Study Data to Produce New FIRMs

Effective Digital FIRM's Dates Do Not Necessarily Reflect Study Dates



Winnebago County

Eff. FIRM: 9/6/2006
and 2/17/2016

Studies: 1980's to early
2000's



Ogle County

Eff. FIRM: 12/17/2010

Studies: 1980's to
early 2000's



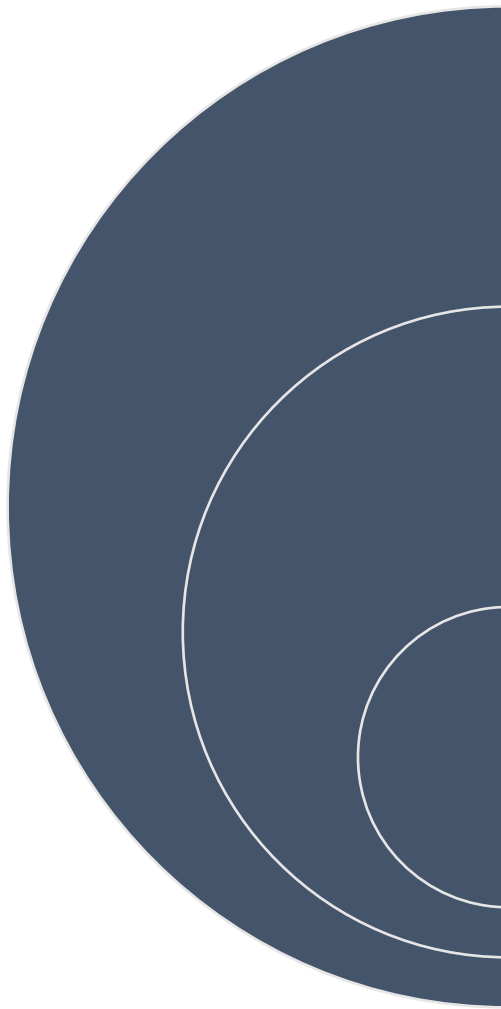
Boone County:

Eff. FIRM: 2/18/2011

Studies: 1980's to
early 2000's

National Flood Insurance Program

National Flood Insurance Program



The NFIP is a voluntary program based on a mutual agreement between the Federal government and a community.

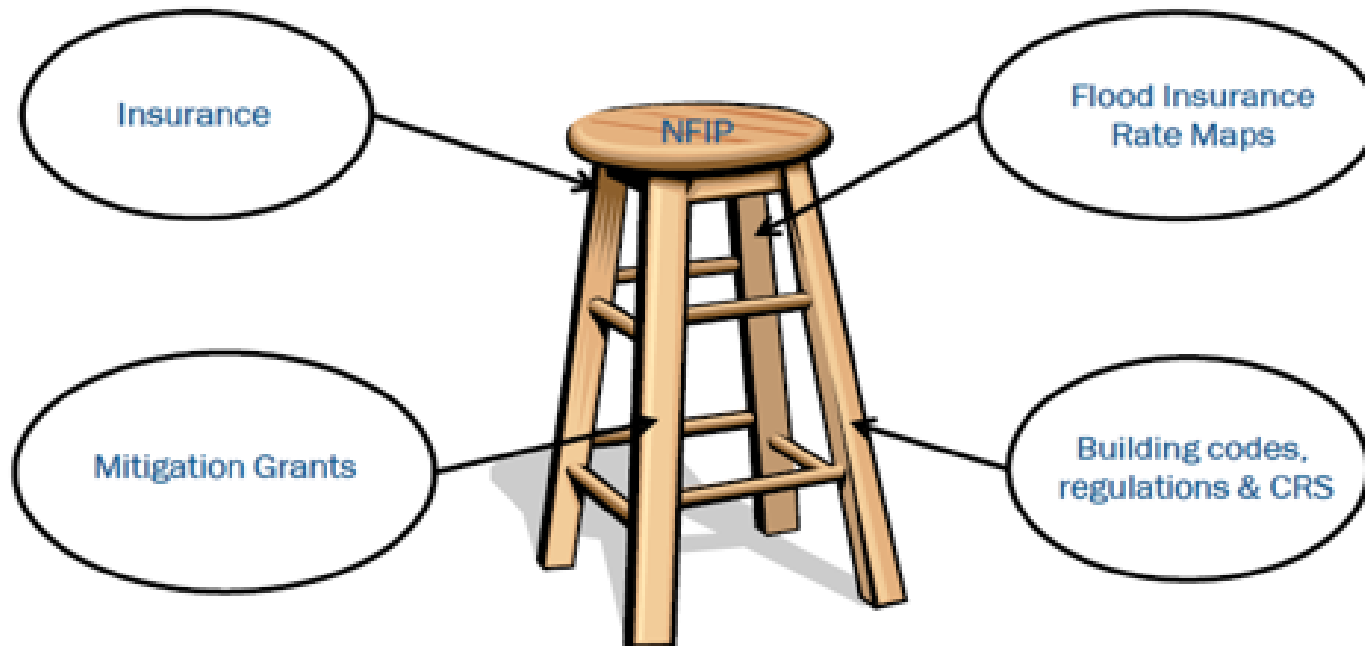
In exchange for adopting and enforcing a floodplain management ordinance, Federally-backed flood insurance is made available to property owners throughout the community.

Erin Conley, NFIP State Coordinator

erin.c.conley@Illinois.gov

National Flood Insurance Program

Three +1 Related Program Areas



NFIP Participating Communities

<https://www.fema.gov/cis/> downloaded 08/14/2024

Community	CRS Status	CAC Date	CAV Date	No. Flood Policies	Total Coverage, \$	Total Claims Since 1978	Total Paid Since 1978, \$	Rep Loss Structures ⁺
Boone County*	-	12/17/1993	4/21/2011	13	\$3,165,00	24	\$211,424	8
Belvidere	-	11/01/1994	08/30/2006	26	\$4,506,000	33	\$160,605	13
Capron	-	-	-	0	0	0	0	0
Caledonia	-	-	-	-	-	-	-	-
Poplar Grove	-	-	-	5	\$1,319,000	0	0	-
Ogle County*	7	-	-	72	\$12,975,000	229	\$2,391,069	104
Davis Junction	-	-	-	2	\$118,000	0	0	0
Hillcrest	-	-	-	1	\$133,000	1	\$6,483	0
Winnebago County*	-	-	8/13/1998	89	\$14,931,000	395	\$3,748,454	127
Cherry Valley ¹	-	09/19/1997	05/10/2016	8	\$2,033,000	7	\$27,573	0
New Milford	-	-	-	2	\$414,400	1	\$3,149	0
Rockford	7	-	04/04/2018	188	\$31,053,000	644	\$10,471,906	313

¹Also in Boone County

*unincorporated

Hazard Mitigation- FEMA Disaster Declarations

2000 to present

<https://www.fema.gov/disaster>

Date of Declaration	Disaster Number	Disaster Description	Type of Assistance	Designated Counties
2001-01-17	EM-3161-IL	ILLINOIS WINTER SNOWSTORMS	PA-B	Boone, Ogle & Winnebago
2005-09-07	EM-3230-IL	HURRICANE KATRINA EVACUATION	PA-B	Boone, Ogle & Winnebago
2006-12-29	EM3269-IL	SNOW	PA-B	Boone, Ogle & Winnebago
2007-08-30	DR-1722-IL	SEVERE STORMS AND FLOODING	IA	Winnebago
2008-03-13	EM-3283-IL	RECORD SNOW AND NEAR RECORD SNOW	PA-B	Boone, Ogle & Winnebago
2008-06-24	DR-1771-IL	SEVERE STORMS AND FLOODING	IA & PA	Winnebago
2010-08-19	DR-1935-IL	SEVERE STORMS AND FLOODING	Winnebago: IA Ogle: IA & PA	Winnebago & Ogle
2011-03-17	DR-1960-IL	SEVERE WINTER STORM AND SNOWSTORM	Winnebago & Ogle: PA & PA-B Boone: PA	Boone, Ogle & Winnebago
2013-05-10	DR-4116-IL	SEVERE STORMS, STRAIGHT-LINE WINDS, AND FLOODING	Winnebago: IA Ogle: PA	Winnebago & Ogle
2020-03-26	DR-4489-IL	COVID-19 PANDEMIC	IA & PA	Boone, Ogle & Winnebago
2020-03-13	EM-3435-IL	COVID-19	PA	Boone & Ogle

Hazard Mitigation

Protects the lives, health, and safety of the people (and animals) in the County from the dangers of natural hazards.

Educates people about natural and man-made hazards in their communities.

Provides **Planning** to protect people, their homes, and businesses from hazards

Designs infrastructure to be **Resilient** to the impacts of natural and man-made hazards.

Hazard Mitigation Plans

Boone County, Illinois Multi-Hazard Mitigation Plan

A 2020 Update of the 2014 Countywide MHMP

Winnebago County, Illinois Multi-Hazard Mitigation Plan 2019

CONDUCTING SERVICES PROVIDED BY: REGION 3 PLANNING COUNCIL
FOR MORE INFORMATION, PLEASE
CALL 815-319-4182 OR EMAIL 840@R3PLANNING.ORG

Ogle County Multi-Jurisdictional All Hazards Mitigation Plan



Participants

Creston, Village of
Davis Junction, Village of
Hillcrest, Village of
Leaf River, Village of
Ogle, County of

Oregon, City of
Polo, City of
Regional Office of Education #47
Rochelle, City of
Stillman Valley, Village of

February 2019

The five year update of this Plan must be completed on or before June 19, 2025.



Winnebago MHMP undergoing update

Definitions

What is a Special Flood Hazard Area?

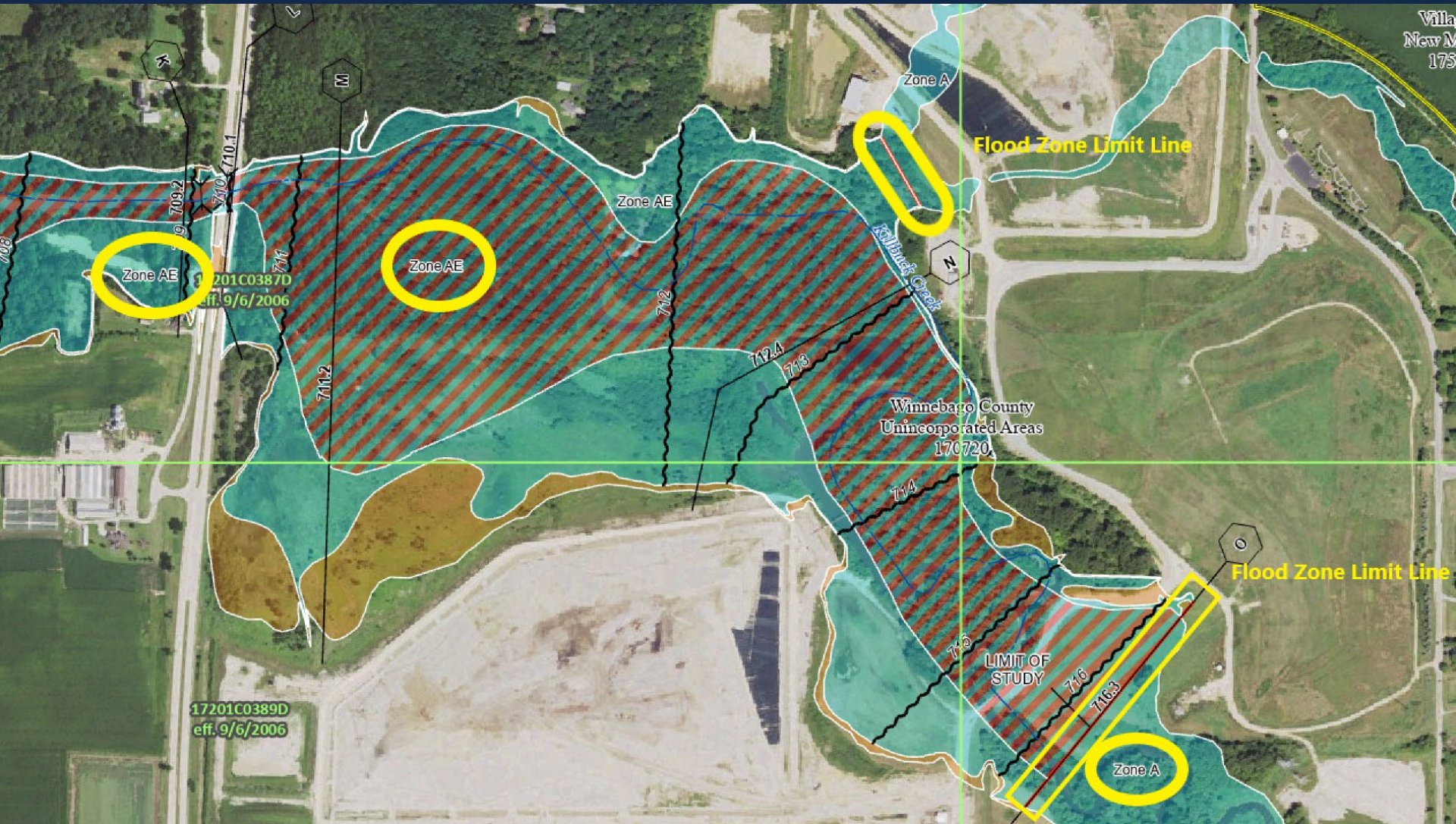
The FEMA Special Flood Hazard Area (SFHA) is the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year.

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.

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.

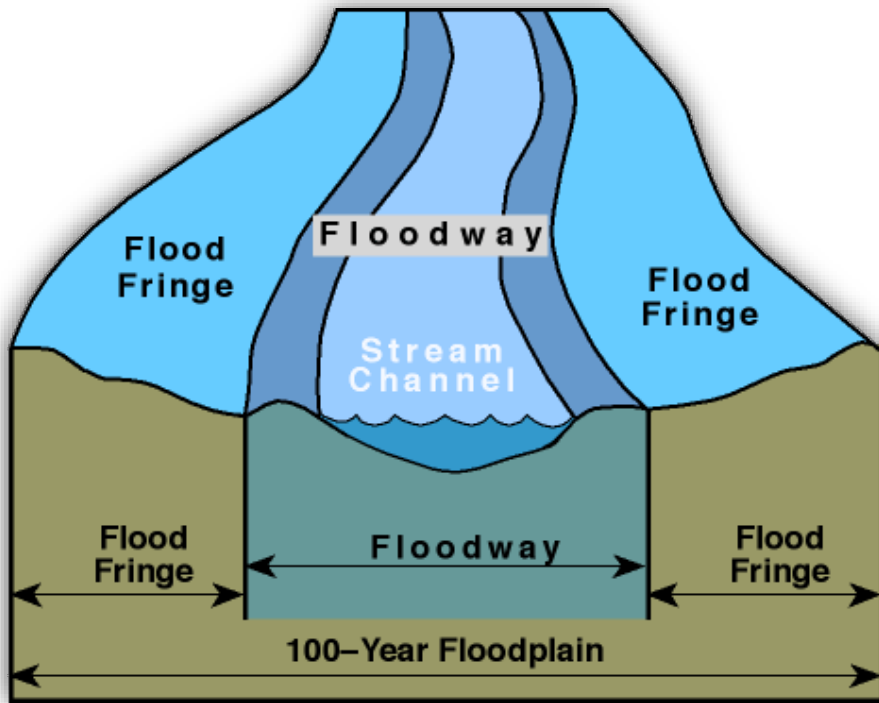
Zone A	Areas subject to inundation by the 1-percent-annual-chance flood event. NO Base Flood Elevations are shown.
Zone AE	Areas subject to inundation by the 1-percent-annual-chance flood event. Base Flood Elevations ARE shown.

What is a Special Flood Hazard Area?



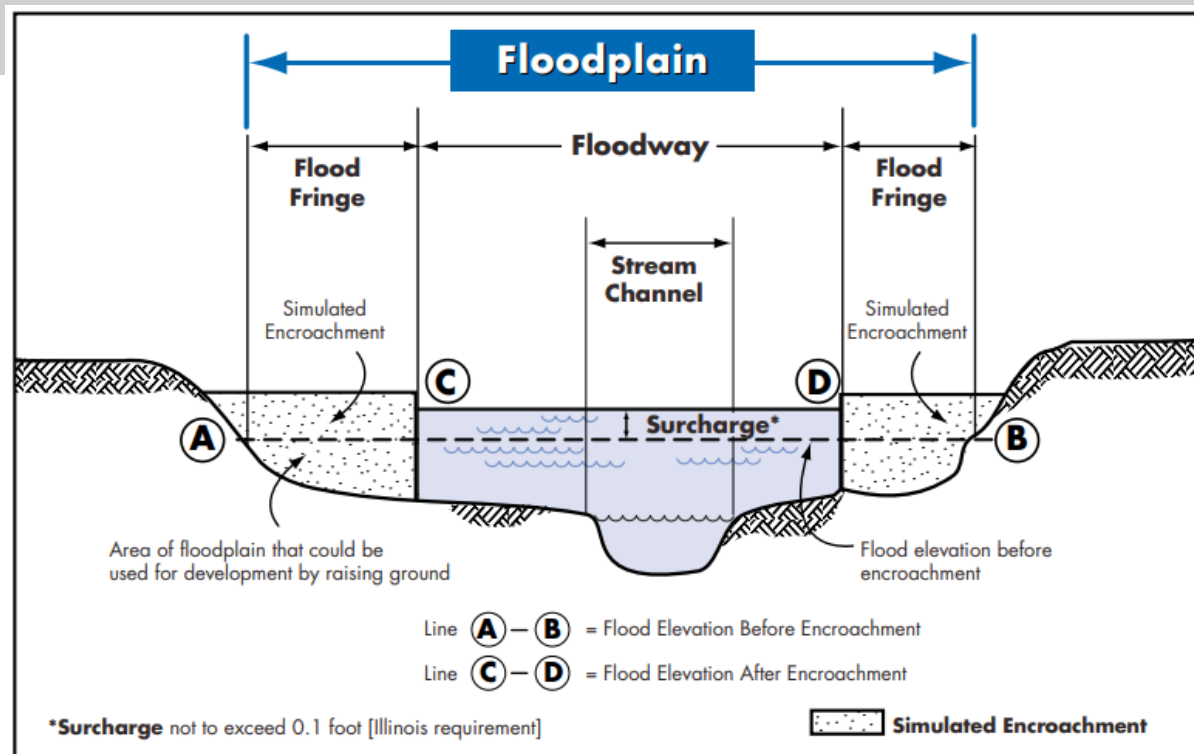
Floodway

The **Floodway** is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.



Illinois Floodway Criteria

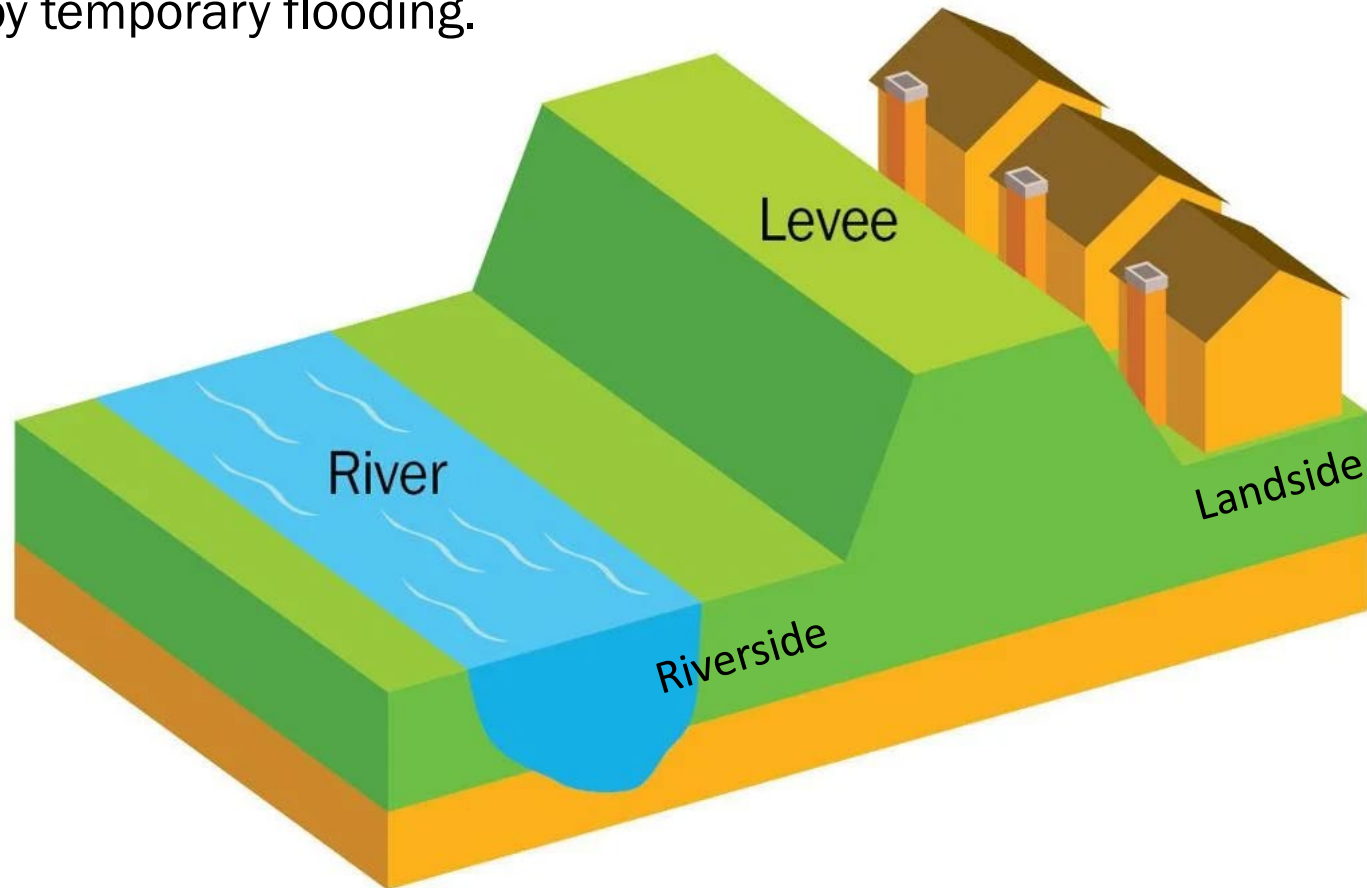
1. 0.1-foot maximum surcharge
2. Max 10% reduction in storage volume
3. Max 10% increase in flow velocity



Credit:
https://www2.illinois.gov/dnr/WaterResources/Documents/R/esman_ILFPMQuickGuide.pdf

Levee - Definition

Per 44 CFR 59.1, a **levee** is a manmade structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water to reduce flood hazards posed by temporary flooding.



Levees - Accreditation

An **Accredited Levee System** is a system that FEMA has determined meets requirements of the NFIP regulations as cited in the Code of Federal Regulations (CFR) at Title 44, Chapter 1, Section 65.10 (44 CFR 65.10) and that FEMA has recognized on a FIRM as reducing the flood hazards posed by a base (1-percent-annual-chance) flood.

This determination is based on the submittal of data and documentation as required by 44 CFR 65.10. The area landward of an accredited levee system is shown as Zone X (shaded) on the FIRM except for areas of residual flooding, such as ponding areas, which are shown as SFHA.



Project Scope

Kishwaukee Watershed Project Location Map

Study areas Funded in 2021 (Phases 1 & 2)

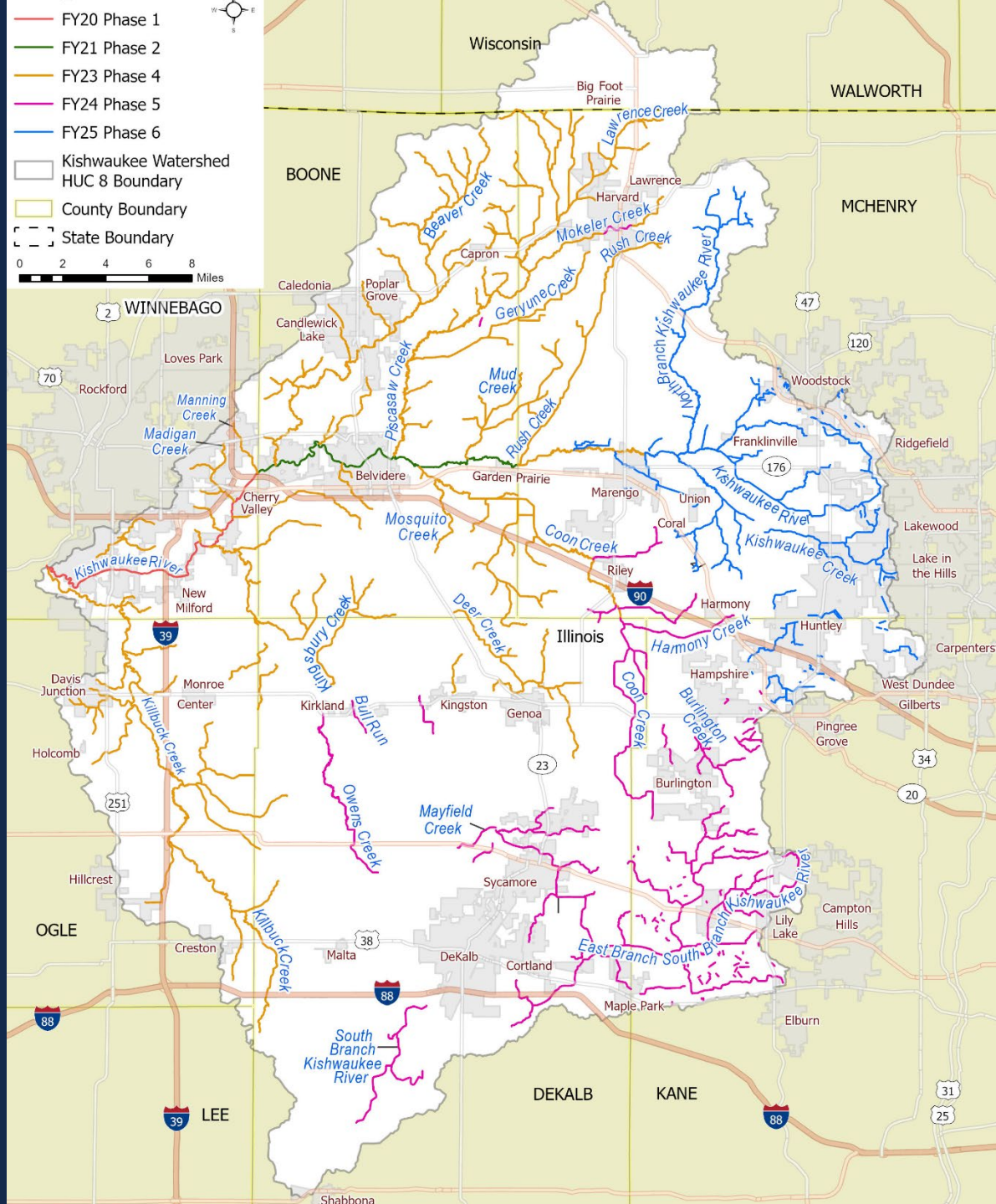
COMPLETED



Kishwaukee Watershed Project Location Map

Study areas Funded In 2023 (Ph 4)-Current 2024 (Ph 5) & 2025 (Ph6)--Proposed

I ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE



Project Scope

Completed To Date – Phase 1 & 2

Hydrologic Studies - HEC-HMS and Gage Analysis throughout the watershed

Hydraulic Studies - 32.4 miles Zone AE with BFE and Floodway along Kishwaukee River Mainstem in Winnebago and Boone Counties

Survey

Upcoming Kishwaukee Tributary Modeling – Phase 4

- Hydraulics throughout Boone, Ogle and Winnebago Counties

Future Engineering Phases – Phases 5 & 6

- Kishwaukee River and various tributaries DeKalb, Kane (2025) and McHenry County (2026)

Develop Draft Floodplain Mapping

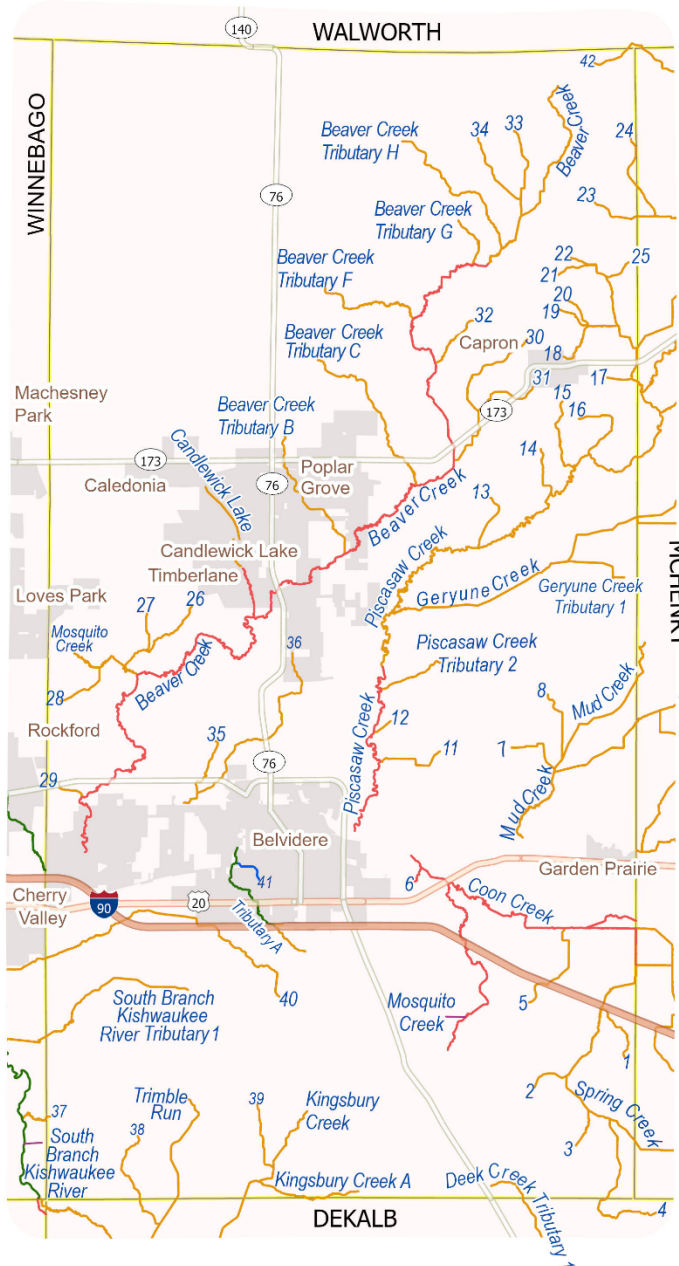
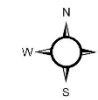
Community Outreach and Engagement / Comment Period

Complete Digital Flood Insurance Rate Maps

Data Development Phase

Boone County Studies Map

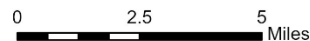
Proposed Stream Studies in Boone County



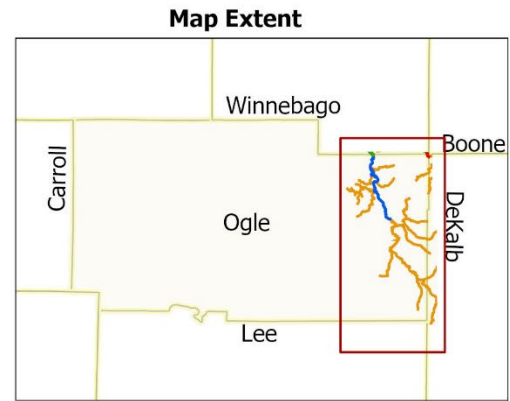
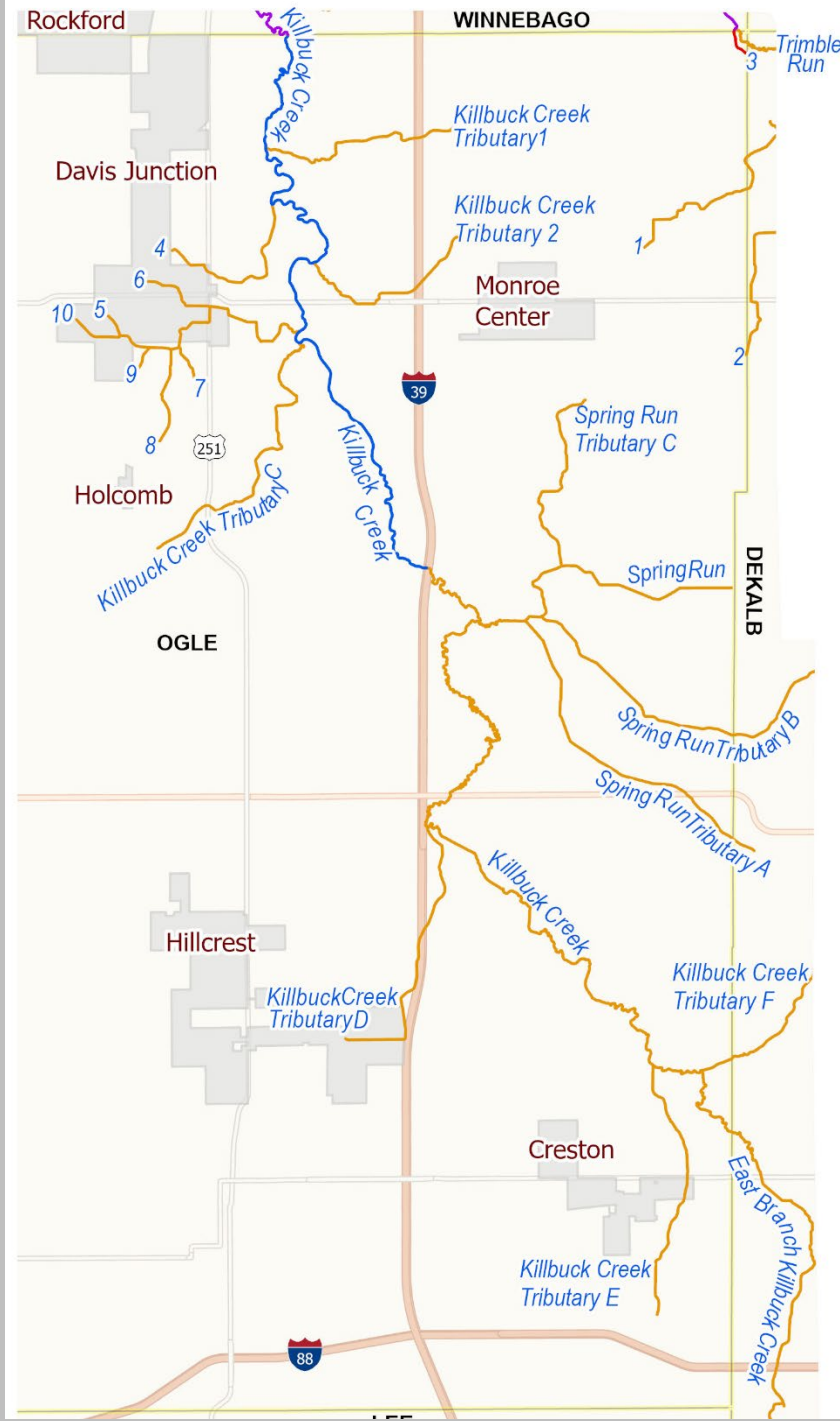
Stream Study Type

- Zone A
- Zone AE
- Zone AE w/FW
- Redelineation
- County Boundary

- 1 Spring Creek Tributary 1
- 2 Spring Creek Tributary 2
- 3 Spring Creek Tributary 3
- 4 Spring Creek Tributary 4
- 5 Coon Creek Tributary 1
- 6 Coon Creek Tributary A
- 7 Mud Creek Tributary A
- 8 Mud Creek Tributary B
- 9 Mud Creek Tributary C1
- 10 Mud Creek Tributary C
- 11 Piskasaw Creek Tributary 1
- 12 Piskasaw Creek Tributary 1A
- 13 Piskasaw Creek Tributary 2A
- 14 Piskasaw Creek Tributary 3
- 15 Piskasaw Creek Tributary 4
- 16 Piskasaw Creek Tributary 5
- 17 Piskasaw Creek Tributary 6A
- 18 Piskasaw Creek Tributary 6C1
- 19 Piskasaw Creek Tributary 6C
- 20 Piskasaw Creek Tributary 6C2
- 21 Piskasaw Creek Tributary 6
- 22 Piskasaw Creek Tributary 6E
- 23 Piskasaw Creek Tributary 6B
- 24 Piskasaw Creek Tributary 6B1
- 25 Piskasaw Creek Tributary 6D
- 26 Mosquito Creek Tributary A
- 27 Mosquito Creek Tributary A1
- 28 Mosquito Creek Tributary B
- 29 Beaver Creek Tributary A
- 30 Beaver Creek Tributary D
- 31 Beaver Creek Tributary D1
- 32 Beaver Creek Tributary E
- 33 Beaver Creek Tributary I
- 34 Beaver Creek Tributary I1
- 35 Kishwaukee River Tributary C
- 36 Kishwaukee River Tributary C1
- 37 South Branch Kishwaukee River Tributary 2
- 38 Trimble Run Tributary A
- 39 Kingsbury Creek B
- 40 Unnamed Tributary Of Kishwaukee River
- 41 Tributary A Stormwater Diversion
- 42 West Branch Piskasaw Creek



Ogle County Studies Map



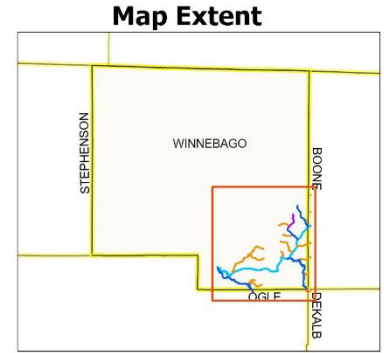
Stream Study Type

- Zone A
- Zone AE
- Zone AE w/FW
- Redelineation
- County Boundary

- 1 South Branch Kishwaukee River Tributary 3
- 2 South Branch Kishwaukee River Tributary 3A
- 3 South Branch Kishwaukee River
- 4 Killbuck Creek Tributary A
- 5 Killbuck Creek Tributary B
- 6 Killbuck Creek Tributary B1
- 7 Killbuck Creek Tributary B2
- 8 Killbuck Creek Tributary B3
- 9 Killbuck Creek Tributary B4
- 10 Killbuck Creek Tributary B5

Winnebago County Studies Map

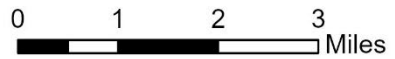
Proposed Stream Studies in Winnebago County



Stream Study Type

- Zone A
- Zone AE
- Zone AE w/FW
- Redelineation
- County Boundary

- 1 South Branch Kishwaukee River Tributary 1
- 2 South Branch Kishwaukee River Tributary 2
- 3 Unnamed Tributary of Kishwaukee River
- 4 Kishwaukee River Tributary A
- 5 Madigan Creek Tributary A
- 6 Unnamed Tributary of Killbuck Creek (North Branch)
- 7 Unnamed Tributary of Killbuck Creek (South Branch)



Hydrologic Studies Update

USGS Bulletin 17C Gage Analysis (Completed)

- **Kishwaukee River** at Belvidere (05438500)
- **Kishwaukee River** near Perryville (05440000)
- **Piscasaw Creek** near Walworth, WI (05438283)
- **Killbuck Creek** near Monroe Center (05440500)
- **Coon Creek** at Riley (05438250)

HYDROLOGIC REPORT

PROVIDED UPON REQUEST

HEC-HMS Rainfall Runoff Modeling (Completed)

Boone

- Kishwaukee River
- Kishwaukee River Tributary A in Belvidere Zone AE
- Kishwaukee River Tributary A Stormwater Diversion Zone AE
- Candlewick Lake Zone A

Ogle

- Killbuck Creek

Winnebago County

- Madigan Creek Zone AE and tributaries
- Manning Creek Zone AE

USGS Stream Stats (Upcoming)

All proposed Zone A Tributaries

Proposed Hydraulic Studies

Boone County

- Spring Creek and Tributaries
- Coon Creek Tributaries
- Mud Creek & Tributaries
- Piscasaw Creek & Tributaries
- Mosquito Creek & Tributaries
- Beaver Creek Tributaries
- Kishwaukee River - Completed**
- Kishwaukee River Tributaries
- SBKR Tributaries
- Trimble Run & Tributaries
- Kingsbury Creek & Tributaries
- Unnamed Tributary of Kishwaukee River
- Tributary A & Stormwater Diversion
- West Branch Piscasaw Creek

Ogle County

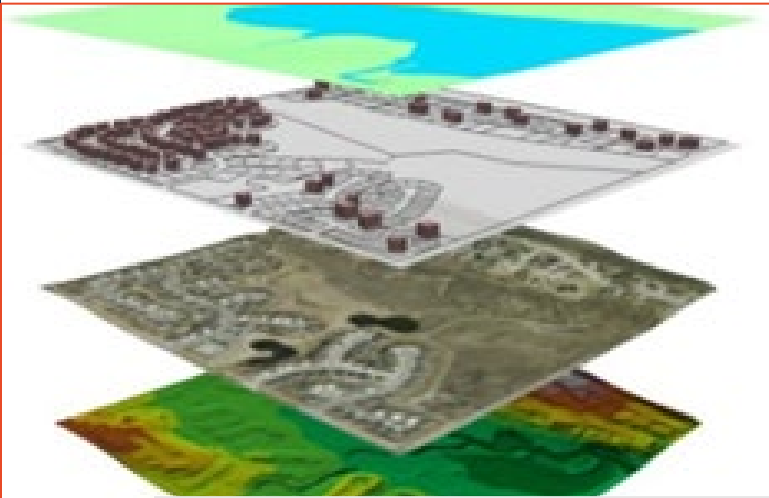
- South Branch Kishwaukee River Tributaries
- Killbuck Creek and Tributaries
- Spring Run & Tributaries

Winnebago County

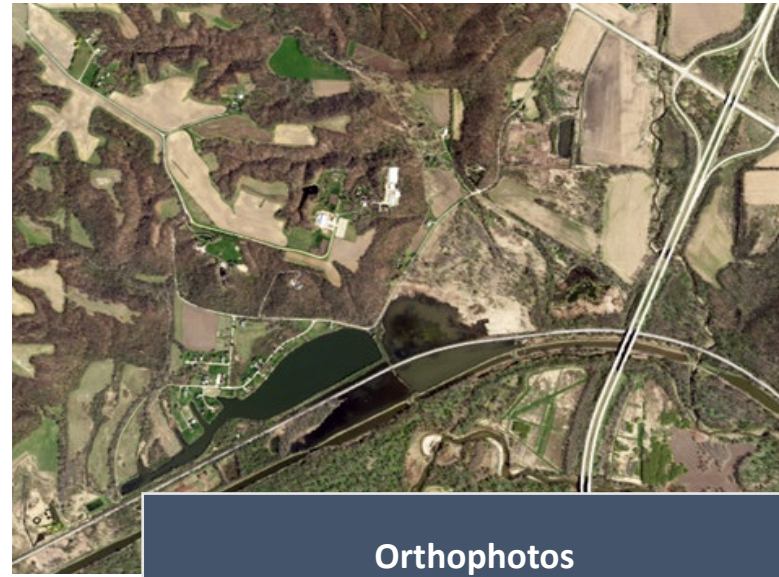
- Killbuck Creek & Tributaries
- Kishwaukee River Mainstem - Completed**
- Kishwaukee River Tributaries
- Madigan Creek & Tributaries
- Manning Creek
- SBKR & Tributaries

USACE HEC-RAS 1D Modeling to be used on all streams to be studied.

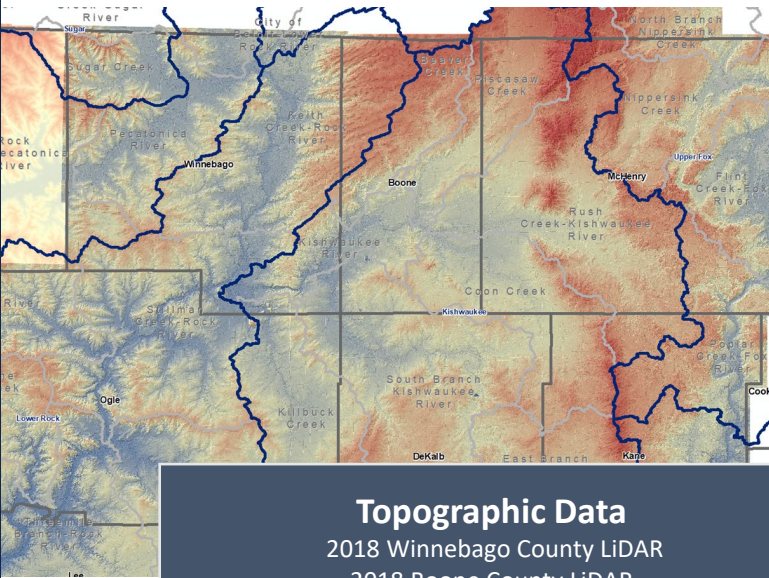
Mapping Data



Mapping Data



Orthophotos



Topographic Data
2018 Winnebago County LiDAR
2018 Boone County LiDAR



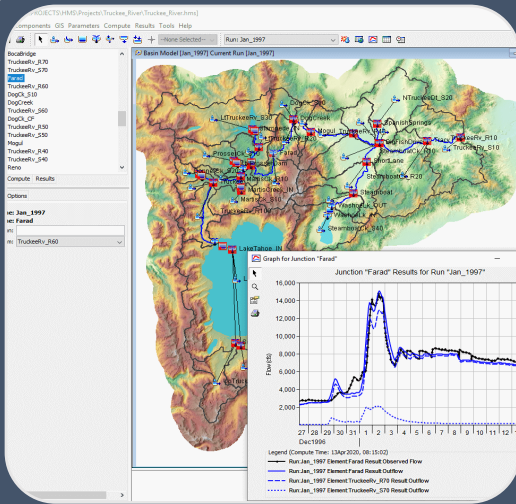
Survey
Survey was collected at bridge crossings throughout Winnebago County and is ongoing through Boone County

Proposed Engineering Methods

Hydrologic Studies

Determine 100-Year stream Flows using:

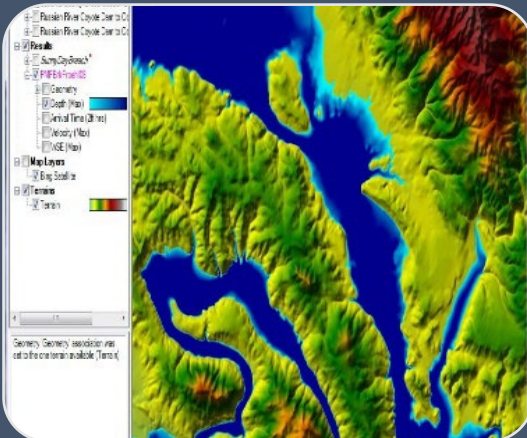
- USGS Bulletin 17C Gage Analysis - **Completed**
- Army Corps of Engineers **HEC-HMS Modeling** – **Completed**
- USGS Regression Equations / Stream Stats - Upcoming



Hydraulic Studies

Determine 100-Year flood **Elevations** using Army Corps of Engineers

- **HEC-RAS 1D River Analysis System Hydraulic Model**



Communication and Outreach

Communication and Outreach

Communication Plan

Project Initiation Community Coordination Meeting (today)

Proposed Engineering Methods Notification Letter

- 30-Day Comment Period

Flood Risk Review Meeting

- 30-Day Comment Period

Data Submission Notification Letter

- 30-Day Comment Period

Please reach out to **Mary Richardson** at mjr@illinois.edu

Communication and Outreach

Proposed Engineering Methods Letter

FEMA Standard ID 620



Communication and Outreach

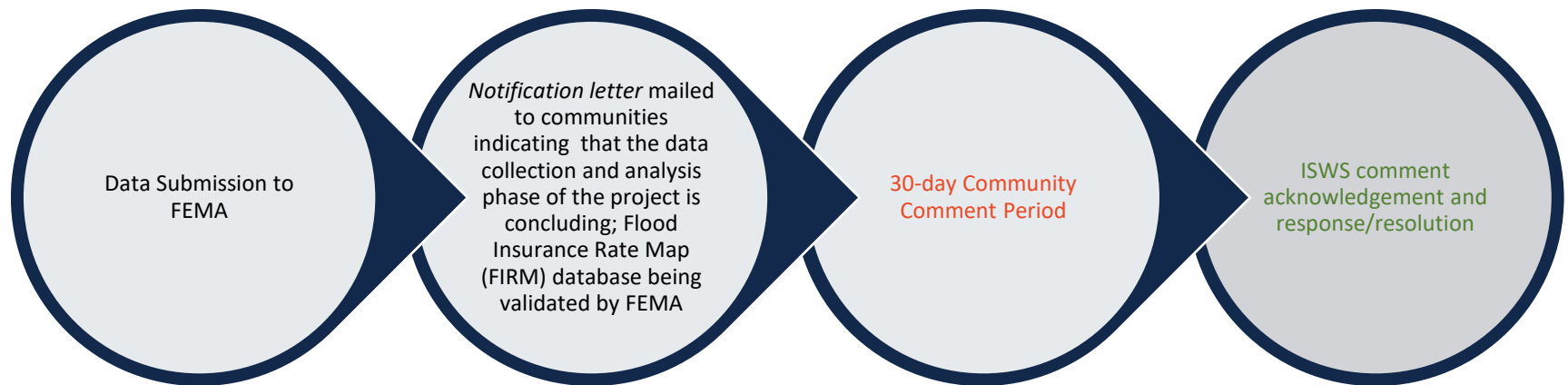
Flood Risk Review Meeting



Communication and Outreach

Data Submission Notification

FEMA Standard ID 621



Project Schedule

Project Schedule (PH 4)

Project Initiation and Community Coordination Meeting

- Today

Engineering Methods Letters to communities

- Fall 2024

Complete Data Development - Hydrologic & Hydraulic Studies

- January 2026

Submit Funded Flood Studies to IDNR for State review

- June 2026

Future Hydrologic and Hydraulic Studies

- Begin Data Development DeKalb & Kane Counties -2025 (PH 5), McHenry County 2026 (PH 6)

Flood Risk Review Meeting – Mainstem Kishwaukee River and all Tributaries in Boone, Ogle & Winnebago Counties

- June 2026

Complete draft FIRM database to conclude data development phase of project

- August 2026

Digital Flood Insurance Rate Map Project to follow pending conclusion of data development

- 2026-2027

Community Participation

Community Participation

Please provide us with the following data or information:

- Flood prone areas
- Flood photos/Drone video
- Historic highwater marks
- Local floodplain studies and survey data
- Any other data or information

Stay engaged in the process...

- Attend meetings
- Ask questions
- Inform others
- Update contact Information

Community Participation

Local Partners are critical to the project

- Best understand their community needs
- Can provide critical information to enhance the studies with local knowledge

Our goal is to make managing and mitigating flood risk easier for our local partners

- Use the latest data to understand flood risk in the Kishwaukee River Watershed
- Utilize the tools and mapping available to assist communities in administering the NFIP locally

Please ask questions and share your concerns

- Communicating early and often ensures the flood risk products capitalize on local knowledge and best address local needs

Questions?

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

Engineering Lead: Chris Hanstad, P.E., CFM
hanstad@illinois.edu

Project Engineer: Dawn Cosentino, P.E., CFM
dawncos@illinois.edu

Outreach: Mary Richardson, CFM
mjr@illinois.edu

Mitigation Planning: Camden Arnold, Planner
carnold3@illinois.edu

www.illinoisfloodmaps.org