



FEMA

# Flood Risk Review Meeting

## Spring Creek, Poplar Creek, IL

October 4, 2018  
South Barrington, IL

**RiskMAP**  
Increasing Resilience Together

**I ILLINOIS**  
Illinois State Water Survey  
PRAIRIE RESEARCH INSTITUTE



# Introductions

- **ISWS Staff**

- Mary Richardson – Outreach Lead
- Glenn Heistand – Senior Hydraulic Engineer
- Aaron Thomas– Project Engineer
- Ryan Meekma – GIS Team Lead
- Brad McVay – GIS Specialist



- **FEMA, Region 5**

- Ken Hinterlong - Senior Engineer, Risk Analysis Branch

- **IDNR-OWR**

- Paul Osman- Illinois Department of Natural Resources, NFIP & Floodplain Management Manager

# Agenda

- 1. Introductions (3 min)**
  - Mary Richardson, CFM
- 2. Meeting Goals and Brief Overview of Project (5 min)**
  - Glenn Heistand, P.E., CFM
- 3. Hydrology & Hydraulic Details (15 min)**
  - Aaron Thomas, P.E., CFM
- 4. Review of Draft Work Maps (5 min)**
  - Ryan Meekma, GISP, CFM
- 5. Flood Risk Assessment (12 min)**
  - Brad McVay, GISP, CFM
- 6. Next Steps and Desired Outcomes (5 min)**
  - Glenn Heistand, P.E., CFM
- 7. Comment Forms- Review and Discussion (remaining min)**
  - Meeting attendees

# 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

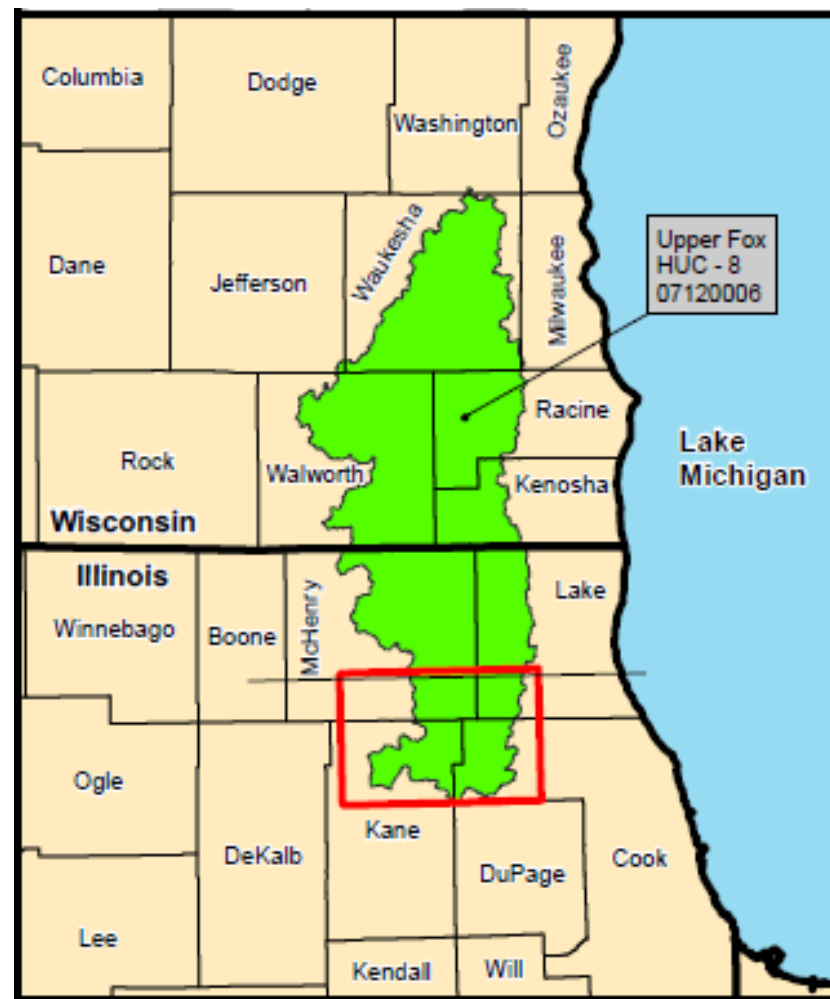
1. Discovery Meeting
2. Data and Product Development
3. **Flood Risk Review Meeting**
4. Resilience Meeting
5. Distribution of Maps and Data
6. CCO (Consultation Coordination Officer) Meeting and Public Open House
7. 90-Day Appeal Period
8. Flood Risk Products
9. Effective FIRM and FIS Report Issuance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



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

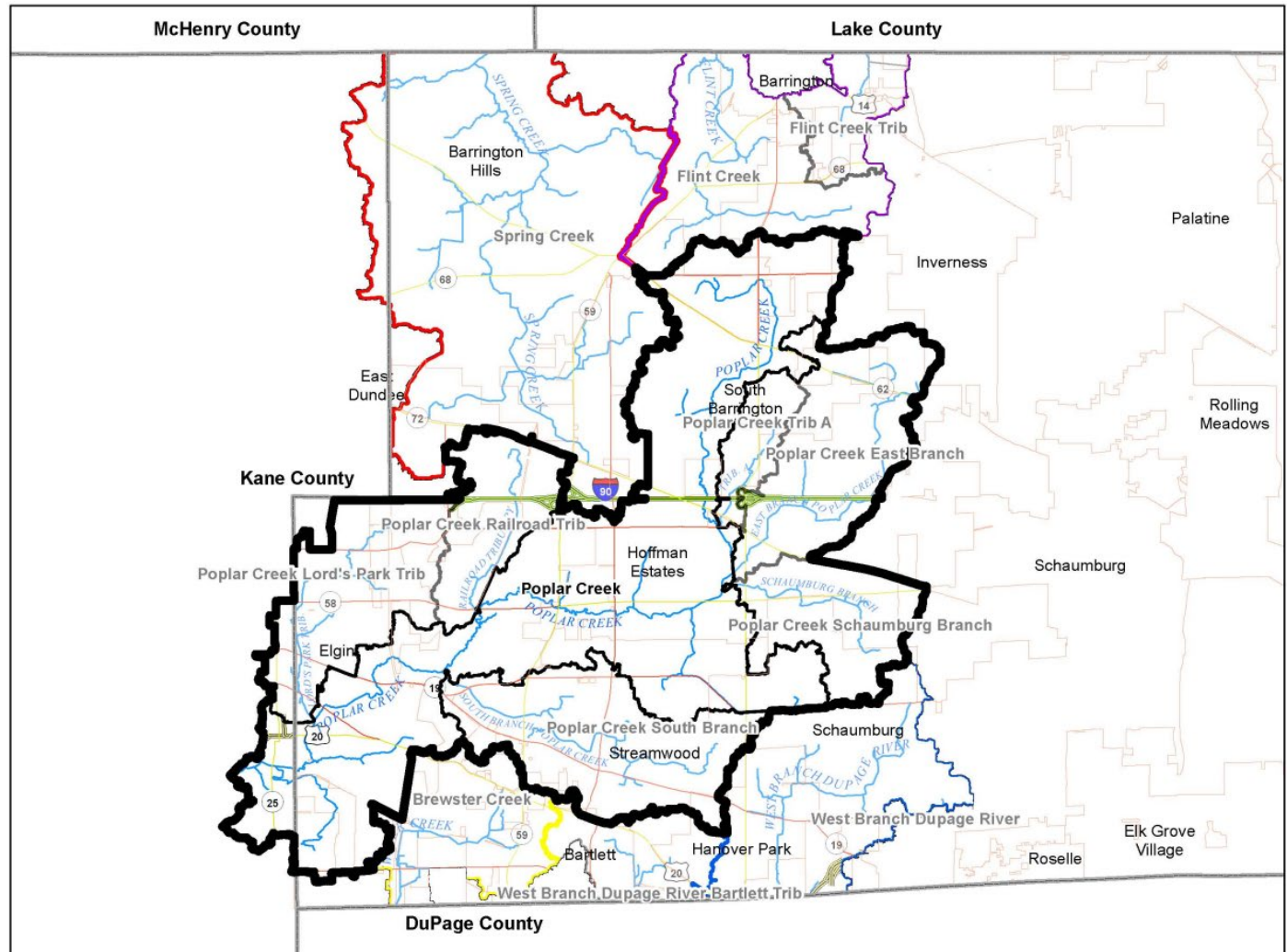
# Project History

- FEMA Flood Insurance Rate Map Effective FIRM – Aug. 19, 2008
- MWRDGC Detailed Watershed Plan – December, 2010
- Upper Fox River Watershed Discovery Meeting – Nov. 29, 2012, McHenry, IL
- Upper Fox River Watershed Action-Discovery Meeting – Oct. 1, 2014, Algonquin, IL
- ISWS Data Development (H&H Modeling) – June, 2018
- Flood Risk Review – Oct. 4, 2018, South Barrington, IL



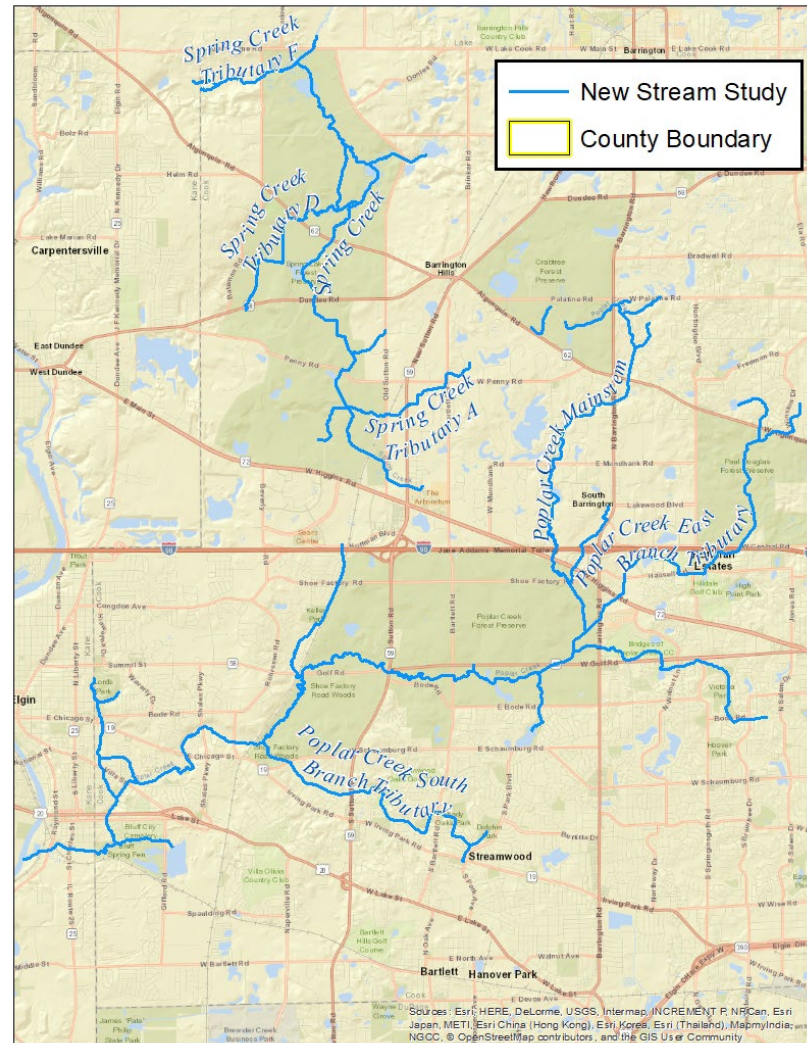
# Project Scope

- Poplar Creek Watershed
- Spring Creek Watershed



# Project Scope

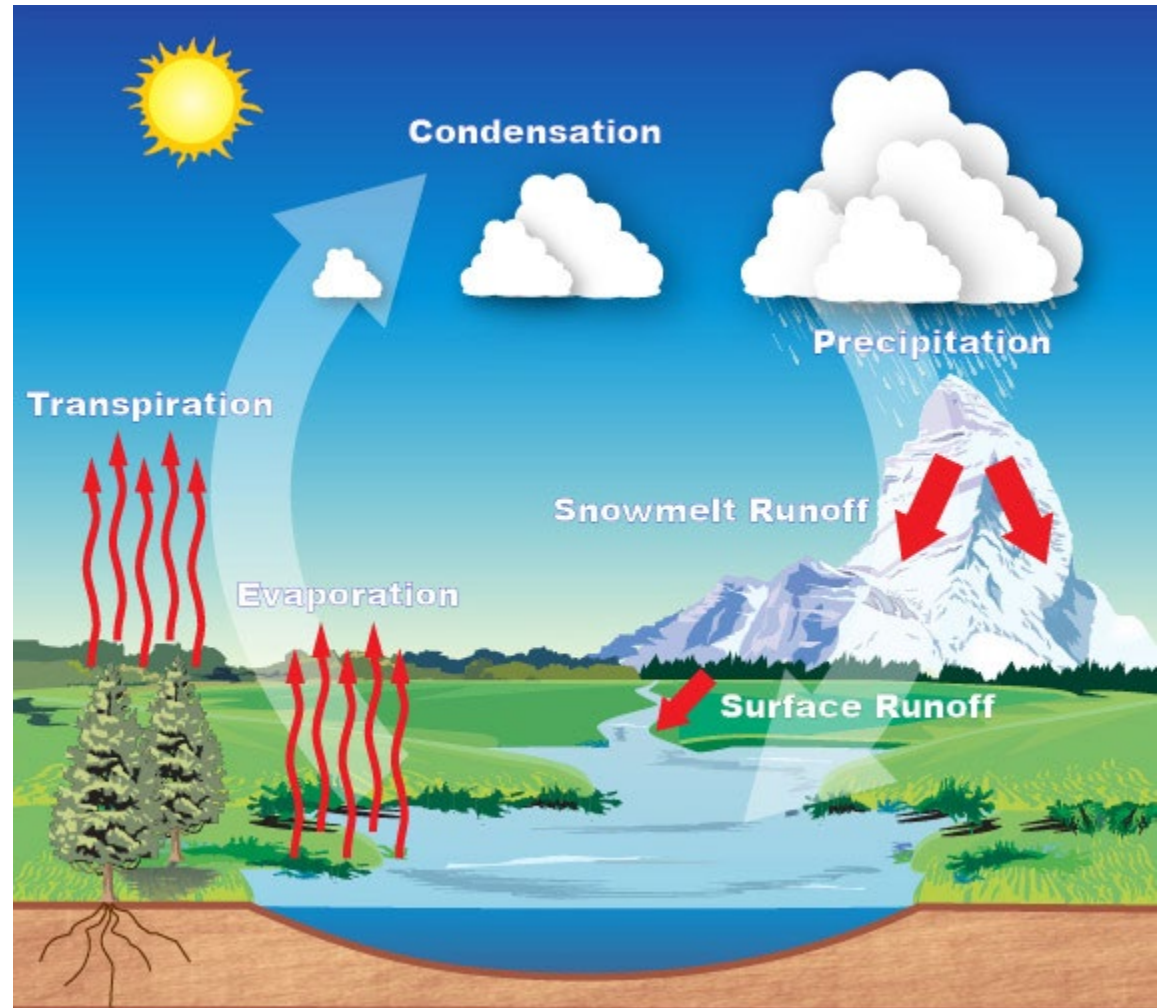
- 18 miles of Zone AE stream studies for Spring Creek Watershed
- 41 miles of Zone AE stream studies for Poplar Creek Watershed





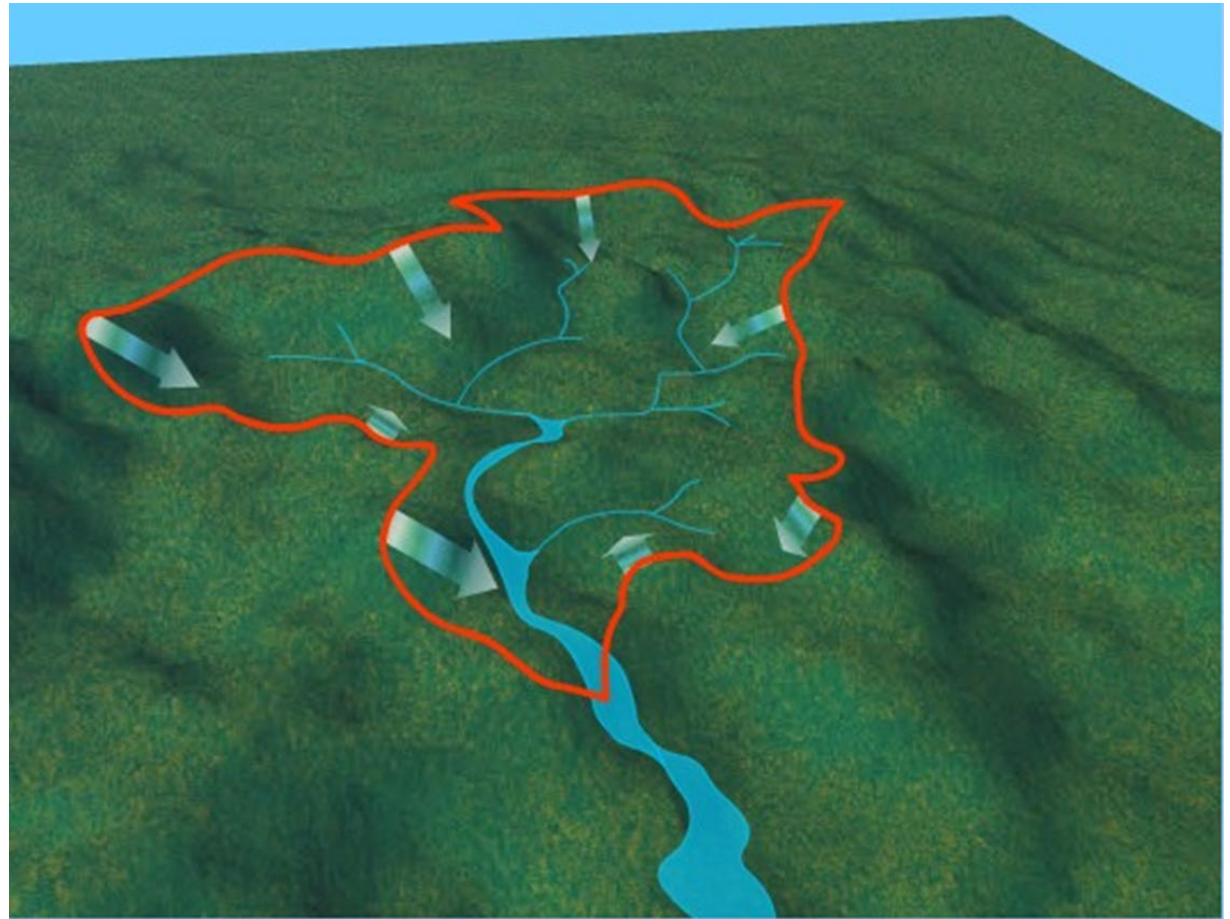
# Hydrology & Hydraulics

- Water Cycle



# 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



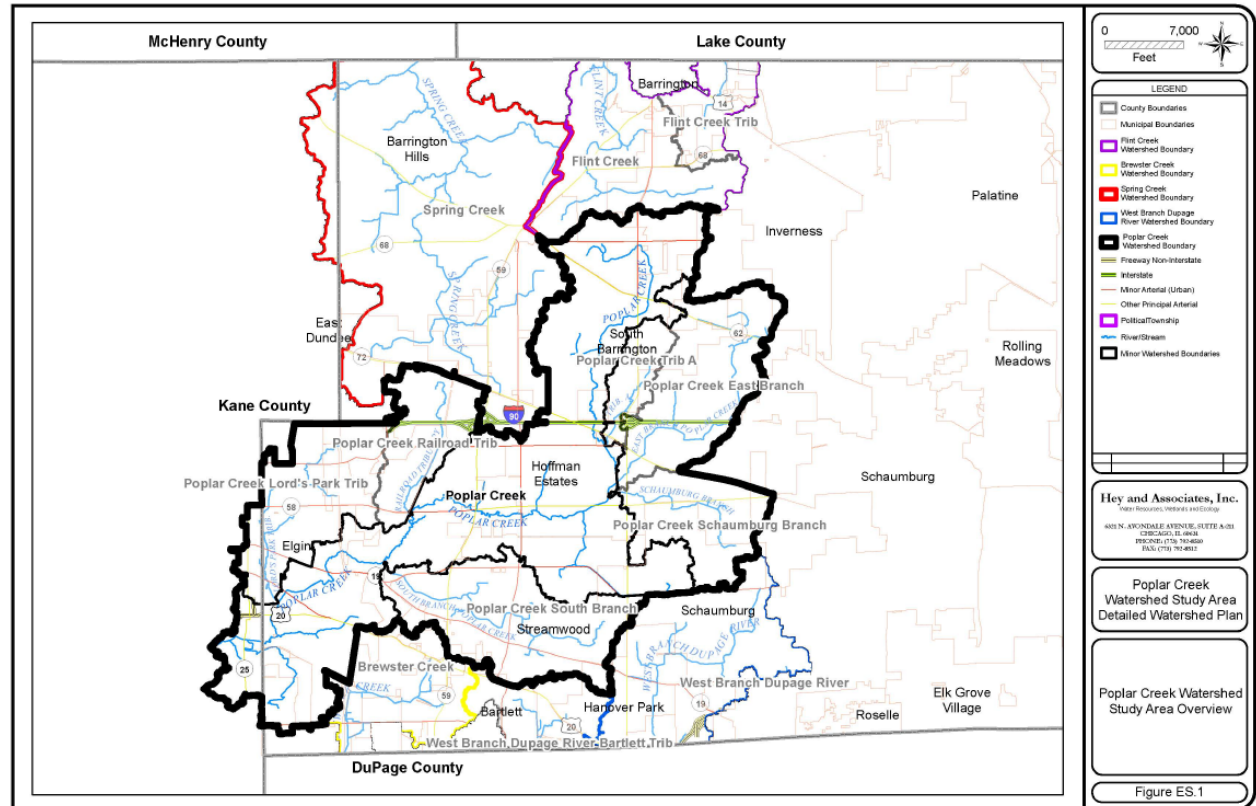
## ■ Upper Fox Watershed Description

- Spring Creek:

- Drainage Area = 19 sq. miles.
- Counties = Cook, Kane, McHenry.
- Tributary to the Fox River

- Poplar Creek:

- Drainage Area = 44 sq. miles.
- Counties = Cook & Kane.
- Tributary to the Fox River.



Hey and Associates, Inc.  
 Water Resources, Wetlands & Ecology  
 403 N. AVONDALE AVENUE, SUITE A-101  
 CHICAGO, IL 60641  
 PHONE: (773) 766-4600  
 FAX: (773) 766-4602

Poplar Creek Watershed Study Area  
 Detailed Watershed Plan

Poplar Creek Watershed  
 Study Area Overview

Figure ES.1

# H&H Model Unsteady & Steady Methodologies

## ■ Modeling Timeline

### 1. 2010 Detailed Watershed Plan “DWP” Models (UNSTEADY-STATE)

- **Unsteady HEC-RAS and HEC-HMS:**
  - Subbasin hydrographs from HMS routed in HEC-RAS model.
  - Storage reservoirs modeled in unsteady HEC-RAS.
  - Peak flows from unsteady HEC-RAS
- Surveyed channel cross sections.
- 2003 Countywide LiDAR:
  - Watershed delineation, cross section overbanks, and floodplain mapping
- All elevations reference NAVD 88.
- Independent engineering review

### 2. 2015 FEMA contracted with ISWS to incorporate models into FEMA FIRMs.

- Model Methodology (STEADY-STATE):
  - a) **ISWS HEC-HMS:**
    - a) Remove storage areas from unsteady HEC-RAS and added to HEC-HMS;
    - b) Add channel routing to HEC-HMS;
    - c) Curve Numbers
    - d) Bulletin 71:
      - a) Used areal reduction factor. Slightly lower rainfall depths compared to 2010 DWP model.
    - e) Peak flows from HEC-HMS
  - b) **ISWS HEC-RAS:**
    - a) Incorporate effective LOMRs:
      - Poplar Creek Schaumburg Branch (geometry, not flows)
    - b) Incorporated new culvert replacement under the I-90 tollway on Poplar Creek Tributary A.
    - c) New cross sections cut on 2008 LiDAR.
    - d) No interpolated cross sections
    - e) All elevations reference NAVD 88.
    - f) Manning’s n-values kept the same as 2010 DWP model as much as possible.
    - g) Ineffective flow: contraction ratio 1:1; expansion ratio 2:1

### 1. Comparison:

1. Differences in flows and water surface elevations between the 2010 DWP models and ISWS models can be attributed to the above.



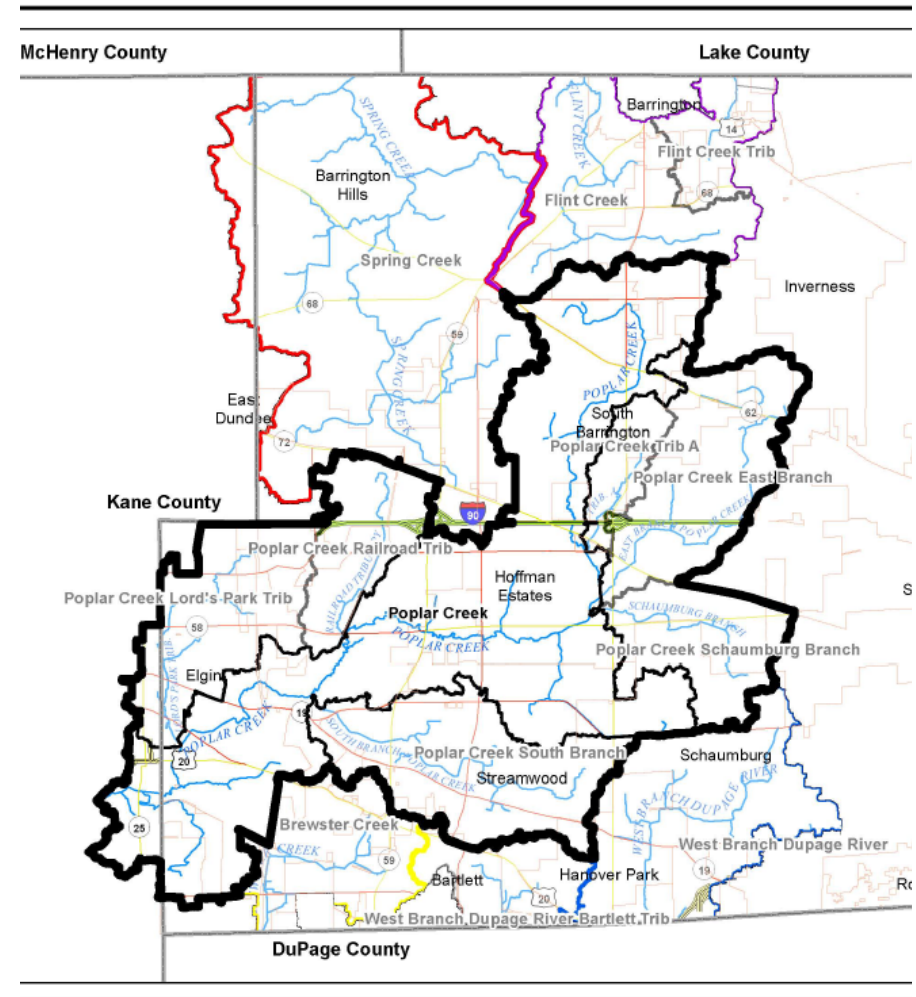
# Hydrology (HEC-HMS Rainfall-Runoff Model Inputs)

## 2010 DWP Analysis

- HEC-HMS version 3.5
- Soil Conservation Service (SCS) curve number (CN) loss method
- Parameters produced through HEC-geoHMS from geographic information systems (GIS) data
- land use: 2001 CMAP land use inventory
- soil data: 2002 U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) Soil Survey (SSURGO).
- Combined to produce Curve Numbers.

## ISWS HEC-HMS Analysis

- Channel Routing:
  - Modified Puls, Muskingum-Cunge, and Lag methods
- Storage reservoirs:
  - Modified Puls
- Design Storms: Bltn 71, Huff distribution
- 24hr & 48 hr Critical Duration Poplar Creek Watershed
- 24hr Critical Duration Spring Creek Watershed



# Hydrology

## Poplar Creek Calibration (2010 DWP)

- **Calibration**
  - USGS gage 05550500 on Poplar mainstem based on August 19, 2007 (estimated < 10%-ACF) and September 12, 2008 (estimated 1%-ACF) events.
- **Curve Numbers calibration variable**
  - ISWS did not revise CN's

U.S. G.S. streamgage number	Name	Drainage area (mi <sup>2</sup> )	Crest-stage gage (CSG)	Period of record	
05550430	EAST BRANCH POPLAR CREEK NEAR PALATINE, IL	2.63	Yes	1961-1977	17
05550450	POPLAR CREEK NEAR ONTARIOVILLE, IL	16.70	Yes	1961-1977	17
05550470	POPLAR CREEK TRIBUTARY NEAR BARTLETT, IL	5.15	Yes	1961-1979	19
05550500	POPLAR CREEK AT ELGIN, IL	35.09	No	1952-2015	64

## Spring Creek Calibration

- **No gages.** Used CN's from Poplar Creek Watershed with some modifications to AMC.
- **ISWS did not revise CN's**

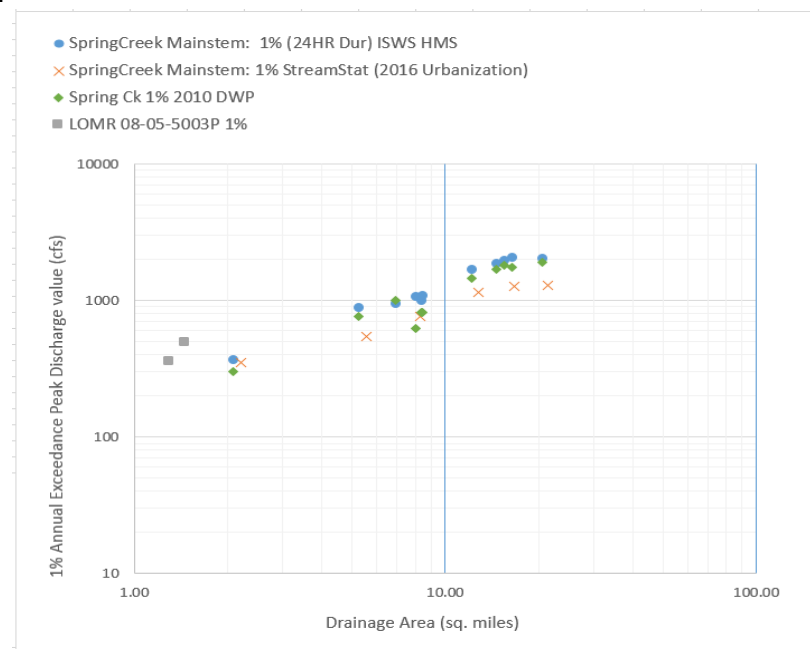
# Hydrology

## Spring Creek: Comparison of HEC-HMS proposed peak discharge values

- The majority of Effective FEMA mapping = Zone A. Discharges unavailable. LOMR 08-05-5003P is the only Zone AE w/dischARGE values.
- ISWS HEC-HMS discharges agree well with 2010 MWRD DWP values.
- ISWS HEC-HMS discharges along main stem are higher than USGS 2016 Streamstats (regression equations) w/urbanization adjustment.

## Spring Creek HEC-HMS proposed Stillwater values

- Reservoirs modeled in HEC-HMS (see hydrologic workmap)



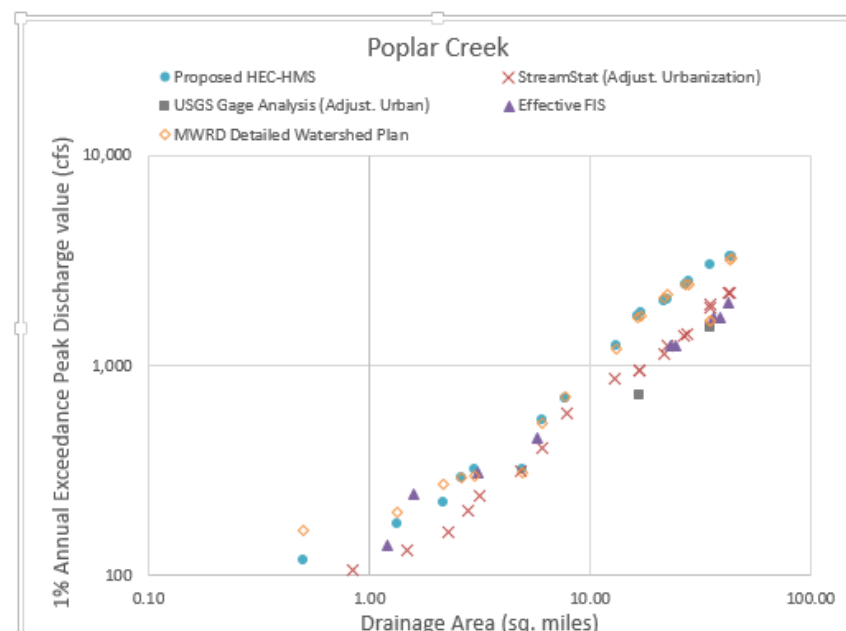
# Hydrology

## Poplar Creek: Comparison of HEC-HMS proposed peak discharge values

- Effective FEMA mapping = Zone A and Zone AE. Discharges available for Zone AE's.
- ISWS HEC-HMS discharges agree well with 2010 MWRD DWP values.
- ISWS HEC-HMS discharges along main stem are higher than USGS 2016 Streamstats (regression equations).
- Proposed discharges at certain locations are significantly higher than effective discharges (40 to 85%).
  - Mainstem, Schaumburg Branch, South Branch

## Poplar Creek HEC-HMS proposed Stillwater values

Reservoirs modeled in HEC-HMS (see hydrologic workmap)



# Hydraulics

- **HEC-RAS VERSION 4.1:**
  - Poplar Creek Watershed: 6 separate models
  - Spring Creek Watershed: 1 model
- Floodplain Plan:
  - Ineffective flow areas:
    - Contraction ratio 1:1
    - Expansion ratio 2:1
  - FEMA Check-RAS
  - Water Surface Profiles:
    - 50%, 20%, 10%, 4%, 2%, 1%, 1%+, 0.2%
- Floodway Plan:
  - State of Illinois Criteria (surcharge, velocity and volume)





# Map Overview

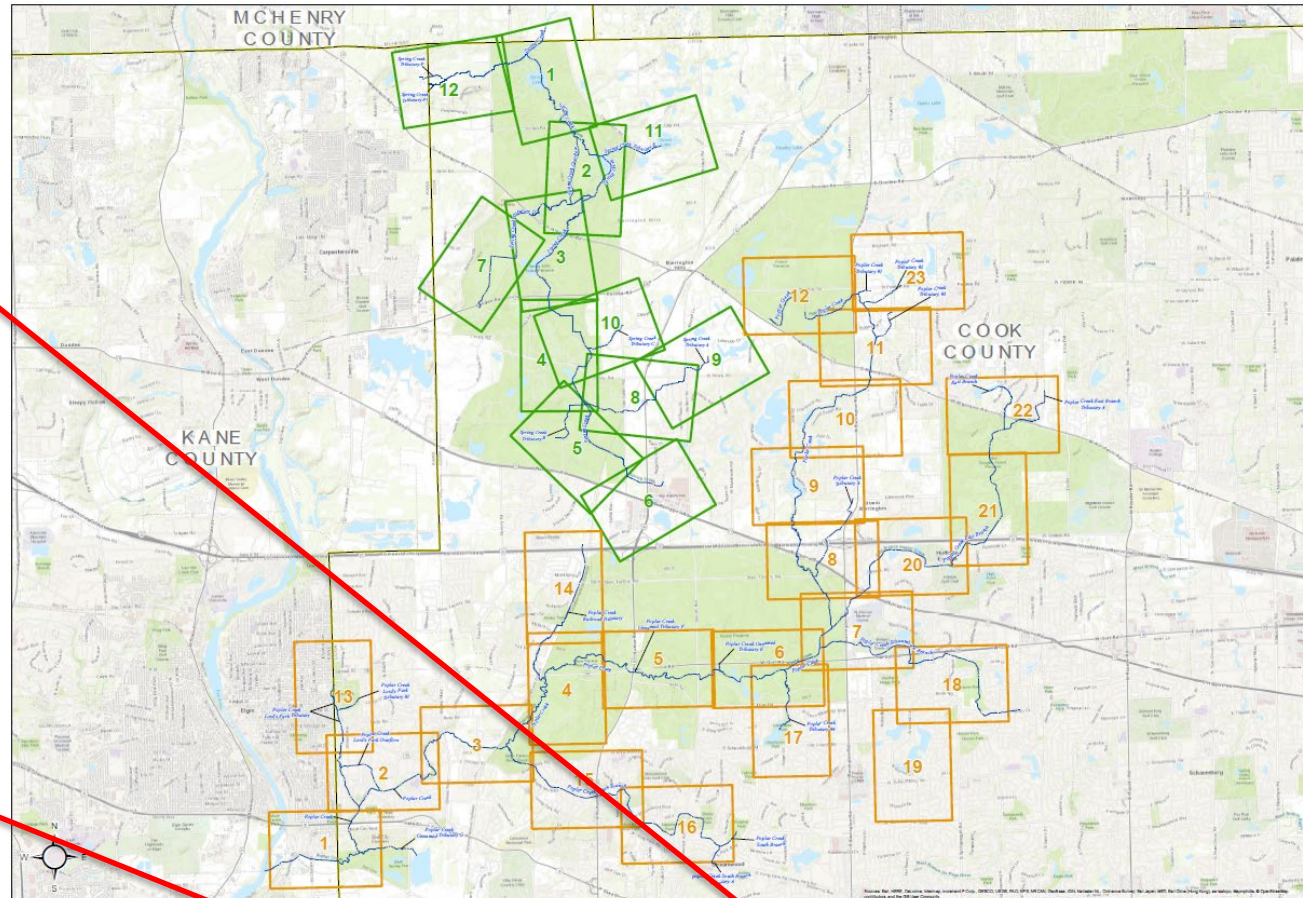
- **Index Map**
- **Hydraulic Workmap**
- **Floodplain Comparison Workmap**
- **Hydrology Workmap**
- **How to access maps:**
  - Printed Maps at Meeting
    - Floodplain Comparison Workmap
    - Hydrology Workmap
    - Index Map
  - U of I BOX
  - ArcGIS Online – Webmap
    - Viewing Data
    - Adding Comments







# Map Overview

## Index Map

-  Profile Baseline
-  Poplar Watershed Workmap Panel
-  Spring Watershed Workmap Panel
-  County Boundary



**ILLINOIS**  
 Illinois State Water Survey  
 PRAIRIE RESEARCH INSTITUTE

-  Profile Baseline
-  Poplar Watershed Workmap Panel
-  Spring Watershed Workmap Panel
-  County Boundary

North Arrow  
 Scale: 1 inch = 2,333 feet  
 Date: 8/24/2018

**Index Workmap**  
 Spring and Poplar Watersheds  
 Cook and Kane County, IL

Date: 8/24/2018

Scale: 1:28,000  
 1 in = 2,333 ft

0 2,300 4,600 9,200 13,800 18,400 Feet

*Draft* *Draft*



# Map Overview

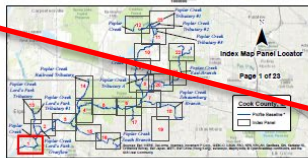
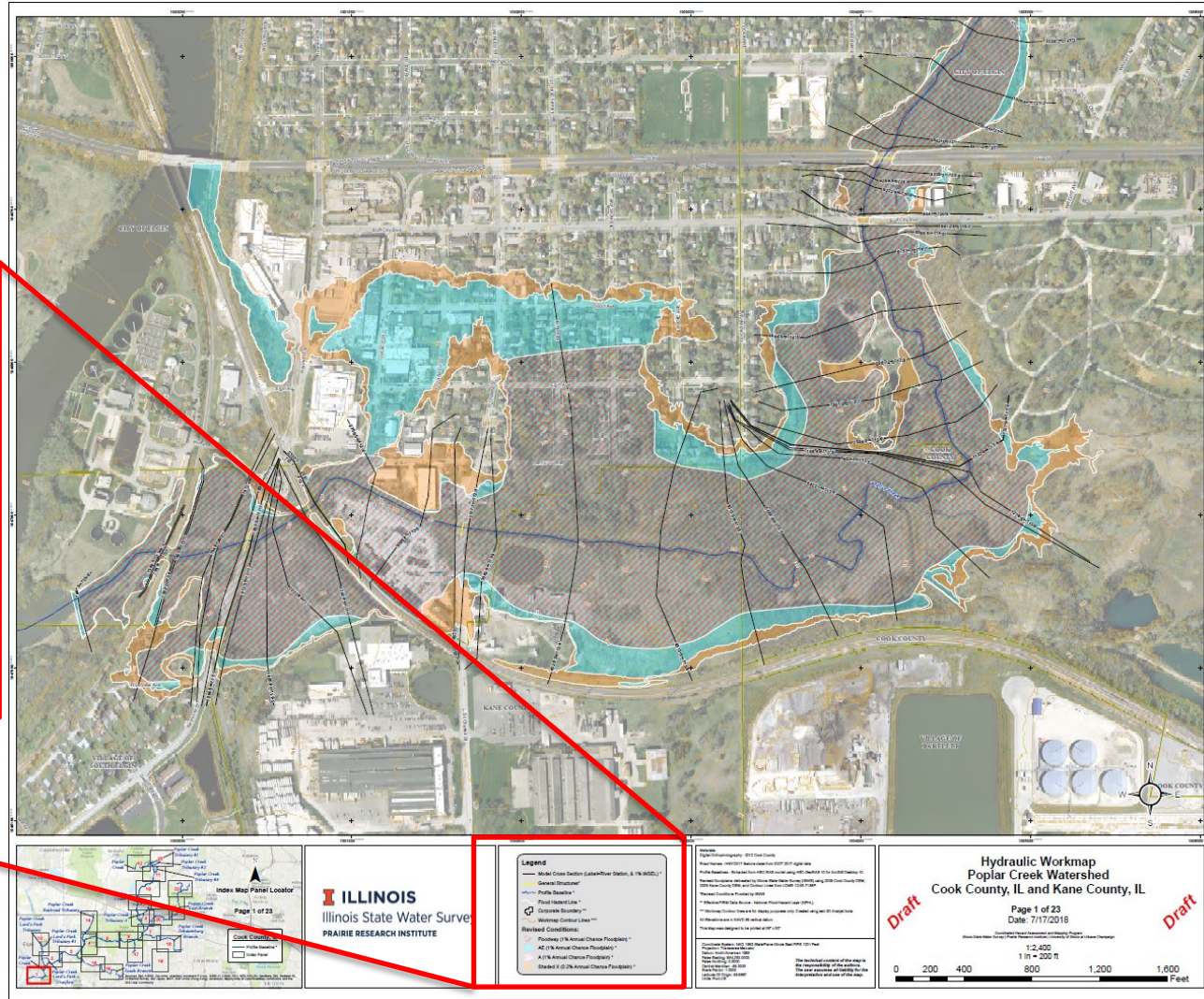
## Hydraulic Workmap

### Legend

- Model Cross Section (Label=River Station, & 1% WSEL) \*
- General Structures\*
- Profile Baseline \*
- Flood Hazard Line \*
- Corporate Boundary \*\*
- Workmap Contour Lines \*\*\*

### Revised Conditions:

- Floodway (1% Annual Chance Floodplain) \*
- AE (1% Annual Chance Floodplain) \*
- A (1% Annual Chance Floodplain) \*
- Shaded X (0.2% Annual Chance Floodplain) \*



**ILLINOIS**  
Illinois State Water Survey  
PRAIRIE RESEARCH INSTITUTE

- ### Legend
- Model Cross Section (Label=River Station, & 1% WSEL) \*
  - General Structures\*
  - Profile Baseline \*
  - Flood Hazard Line \*
  - Corporate Boundary \*\*
  - Workmap Contour Lines \*\*\*
- ### Revised Conditions:
- Floodway (1% Annual Chance Floodplain) \*
  - AE (1% Annual Chance Floodplain) \*
  - A (1% Annual Chance Floodplain) \*
  - Shaded X (0.2% Annual Chance Floodplain) \*

**Metadata**  
Project Name: Hydraulic Workmap  
Map Scale: 1:2,400  
Map Date: 7/17/2018  
Map Author: [Name]  
Map Reviewer: [Name]  
Map Checked: [Name]  
Map Approved: [Name]  
Map Status: [Status]  
Map Version: [Version]  
Map Revision: [Revision]  
Map Description: [Description]  
Map Contact: [Contact]

**Hydraulic Workmap**  
**Poplar Creek Watershed**  
**Cook County, IL and Kane County, IL**

Page 1 of 23  
Date: 7/17/2018

Scale: 1:2,400  
1" = 200'

0 200 400 800 1,200 1,600 Feet

Draft



# Map Overview (zoomed in)

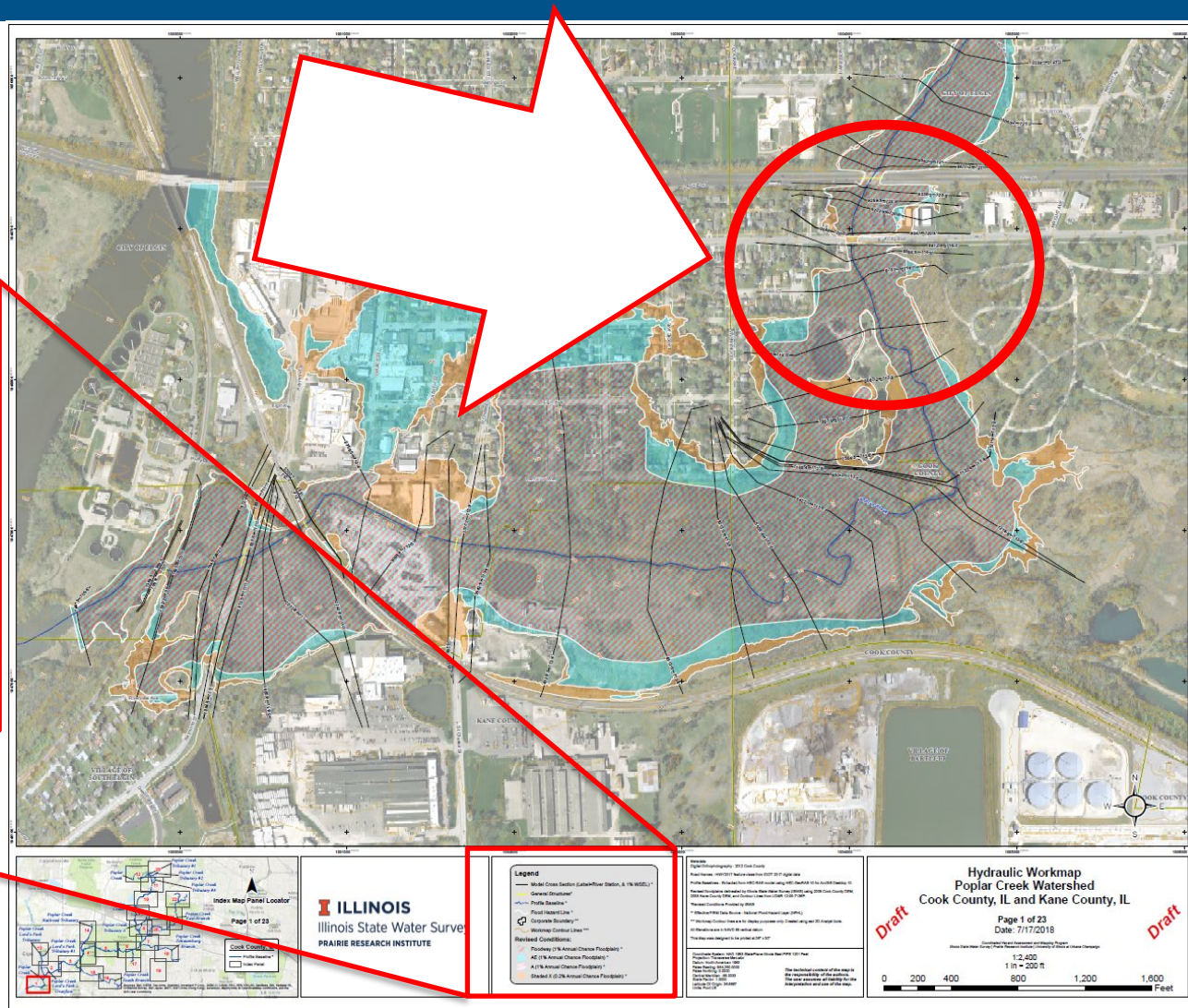
## Hydraulic Workmap

### Legend

- Model Cross Section (Label=River Station, & 1% WSEL) \*
- General Structures\*
- Profile Baseline \*
- Flood Hazard Line \*
- Corporate Boundary \*\*
- Workmap Contour Lines \*\*\*

### Revised Conditions:

- Floodway (1% Annual Chance Floodplain) \*
- AE (1% Annual Chance Floodplain) \*
- A (1% Annual Chance Floodplain) \*
- Shaded X (0.2% Annual Chance Floodplain) \*





# Map Overview (zoomed in)

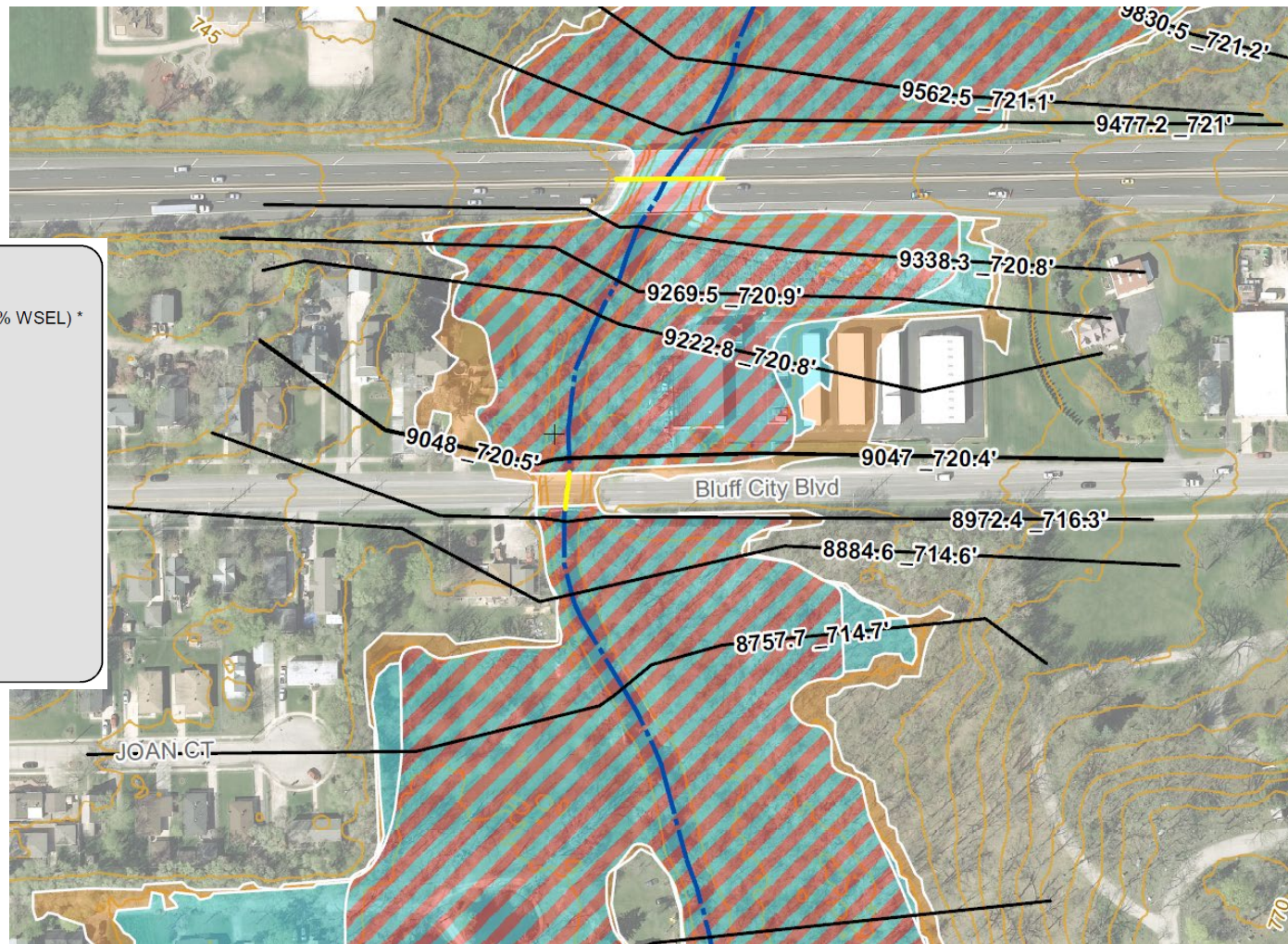
## Hydraulic Workmap

### Legend

- Model Cross Section (Label=River Station, & 1% WSEL) \*
- General Structures\*
- Profile Baseline \*
- Flood Hazard Line \*
- ⊕ Corporate Boundary \*\*
- Workmap Contour Lines \*\*\*

### Revised Conditions:

- Floodway (1% Annual Chance Floodplain) \*
- AE (1% Annual Chance Floodplain) \*
- A (1% Annual Chance Floodplain) \*
- Shaded X (0.2% Annual Chance Floodplain) \*

















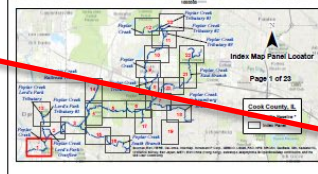
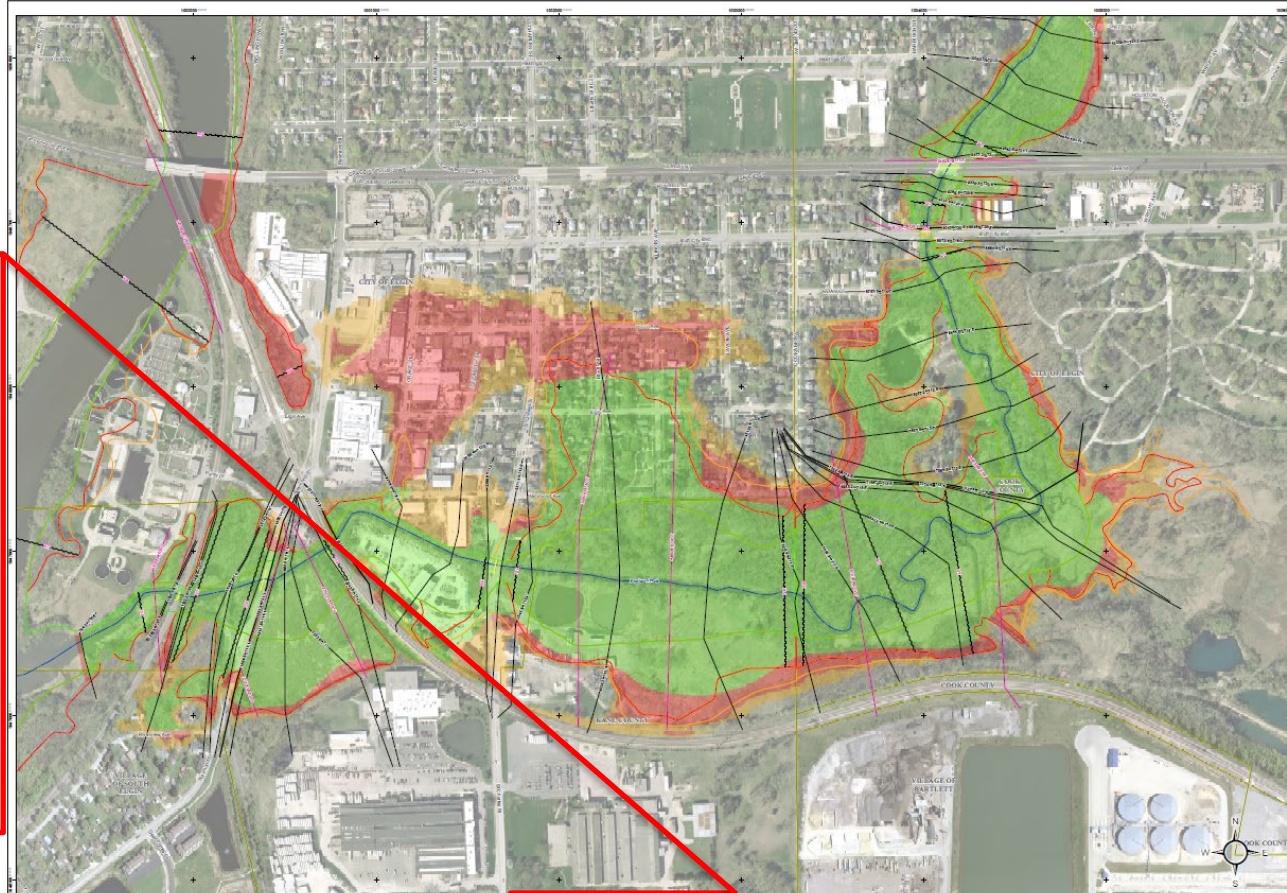


# Map Overview

## Floodplain Comparison Workmap

### Legend

-  Effective Cross Section (Label=River Station, Letter & 1% WSEL) \*\*
-  Effective BFE (Pink Label = 1% WSEL) \*\*
-  Model Cross Section (Label=River Station, & 1% WSEL) \*
-  General Structures\*
-  Profile Baseline \*
-  Corporate Boundary \*\*
- Effective FIRM Zone Type:**
-  Effective Floodway \*\*
-  AE (1% Annual Chance Floodplain) \*\*
-  A (1% Annual Chance Floodplain) \*\*
-  Shaded X (0.2% Annual Chance Floodplain) \*\*
- Revised Conditions:**
-  Floodway (1% Annual Chance Floodplain) \*
-  AE (1% Annual Chance Floodplain) \*
-  A (1% Annual Chance Floodplain) \*
-  Shaded X (0.2% Annual Chance Floodplain) \*



**ILLINOIS**  
 Illinois State Water Survey  
 PRAIRIE RESEARCH INSTITUTE

**Legend**

Effective Cross Section (Label=River Station, Letter & 1% WSEL) \*\*

Effective BFE (Pink Label = 1% WSEL) \*\*

Model Cross Section (Label=River Station, & 1% WSEL) \*

General Structures\*

Profile Baseline \*

Corporate Boundary \*\*

**Effective FIRM Zone Type:**

Effective Floodway \*\*

AE (1% Annual Chance Floodplain) \*\*

A (1% Annual Chance Floodplain) \*\*

Shaded X (0.2% Annual Chance Floodplain) \*\*

**Revised Conditions:**

Floodway (1% Annual Chance Floodplain) \*

AE (1% Annual Chance Floodplain) \*

A (1% Annual Chance Floodplain) \*

Shaded X (0.2% Annual Chance Floodplain) \*

**Metadata**

Map Date: 02/12/2018

Map Scale: 1:2,400

Map Projection: NAD 83 UTM Zone 18N

Map Units: Feet

Map Author: Illinois State Water Survey

Map Contact: 217/244-3100

Map URL: [www.isws.uiowa.edu](http://www.isws.uiowa.edu)

Map Date: 02/12/2018

Map Scale: 1:2,400

Map Projection: NAD 83 UTM Zone 18N

Map Units: Feet

Map Author: Illinois State Water Survey

Map Contact: 217/244-3100

Map URL: [www.isws.uiowa.edu](http://www.isws.uiowa.edu)

**Floodplain Comparison Workmap**  
 Poplar Creek Watershed  
 Cook County, IL and Kane County, IL

**Draft**

Page 1 of 23  
 Date: 02/12/2018

Scale: 1:2,400  
 1 in = 200 ft

0 200 400 800 1,200 1,600 Feet















**Draft**

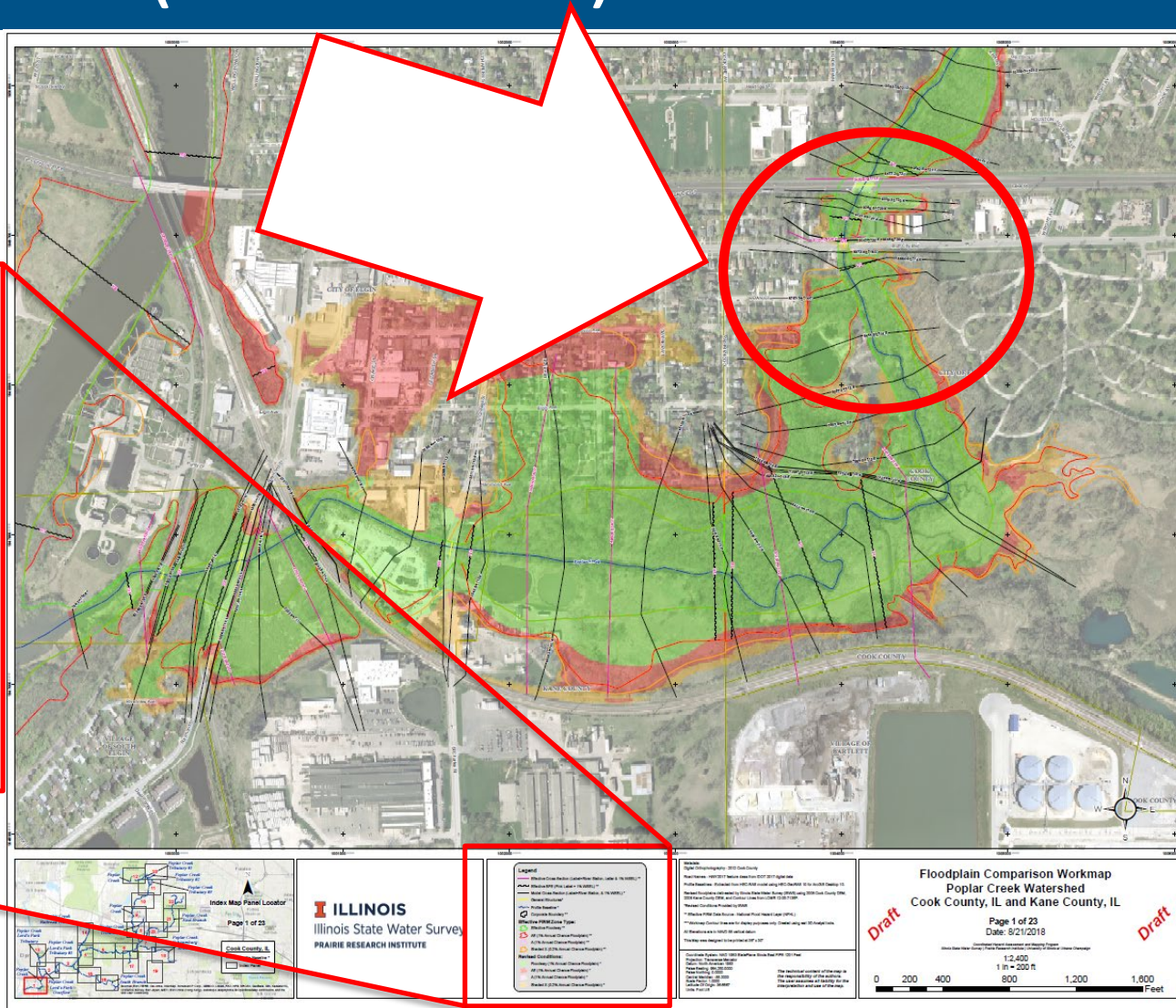


# Map Overview (zoomed in)

## Floodplain Comparison Workmap

### Legend

-  Effective Cross Section (Label=River Station, Letter & 1% WSEL) \*\*
-  Effective BFE (Pink Label = 1% WSEL) \*\*
-  Model Cross Section (Label=River Station, & 1% WSEL) \*
-  General Structures\*
-  Profile Baseline \*
-  Corporate Boundary \*\*
- Effective FIRM Zone Type:**
-  Effective Floodway \*\*
-  AE (1% Annual Chance Floodplain) \*\*
-  A (1% Annual Chance Floodplain) \*\*
-  Shaded X (0.2% Annual Chance Floodplain) \*\*
- Revised Conditions:**
-  Floodway (1% Annual Chance Floodplain) \*
-  AE (1% Annual Chance Floodplain) \*
-  A (1% Annual Chance Floodplain) \*
-  Shaded X (0.2% Annual Chance Floodplain) \*

















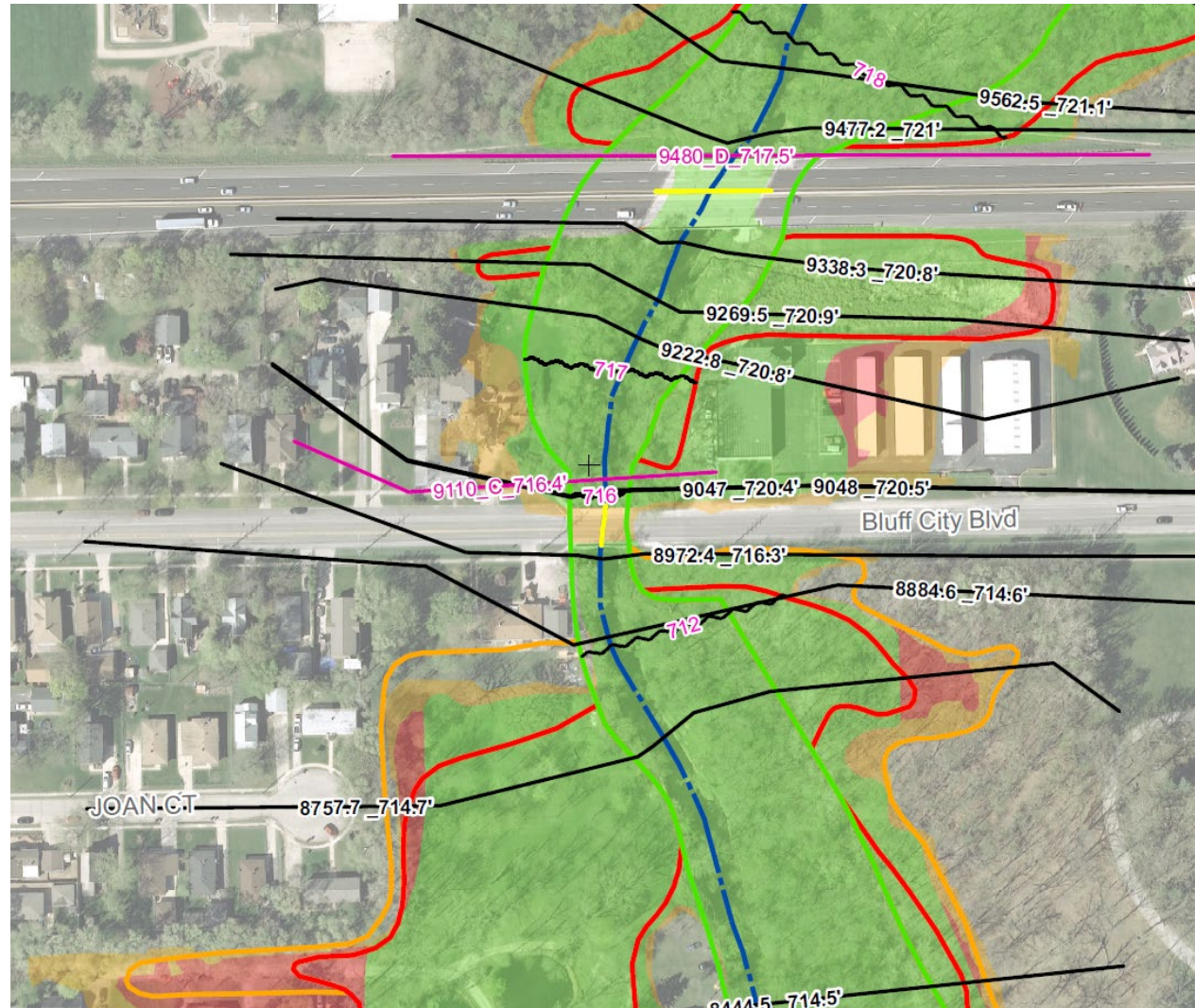


# Map Overview (zoomed in)

## Floodplain Comparison Workmap

### Legend

-  Effective Cross Section (Label=River Station, Letter & 1% WSEL) \*\*
-  Effective BFE (Pink Label = 1% WSEL) \*\*
-  Model Cross Section (Label=River Station, & 1% WSEL) \*
-  General Structures\*
-  Profile Baseline \*
-  Corporate Boundary \*\*
- Effective FIRM Zone Type:**
-  Effective Floodway \*\*
-  AE (1% Annual Chance Floodplain) \*\*
-  A (1% Annual Chance Floodplain) \*\*
-  Shaded X (0.2% Annual Chance Floodplain) \*\*
- Revised Conditions:**
-  Floodway (1% Annual Chance Floodplain) \*
-  AE (1% Annual Chance Floodplain) \*
-  A (1% Annual Chance Floodplain) \*
-  Shaded X (0.2% Annual Chance Floodplain) \*

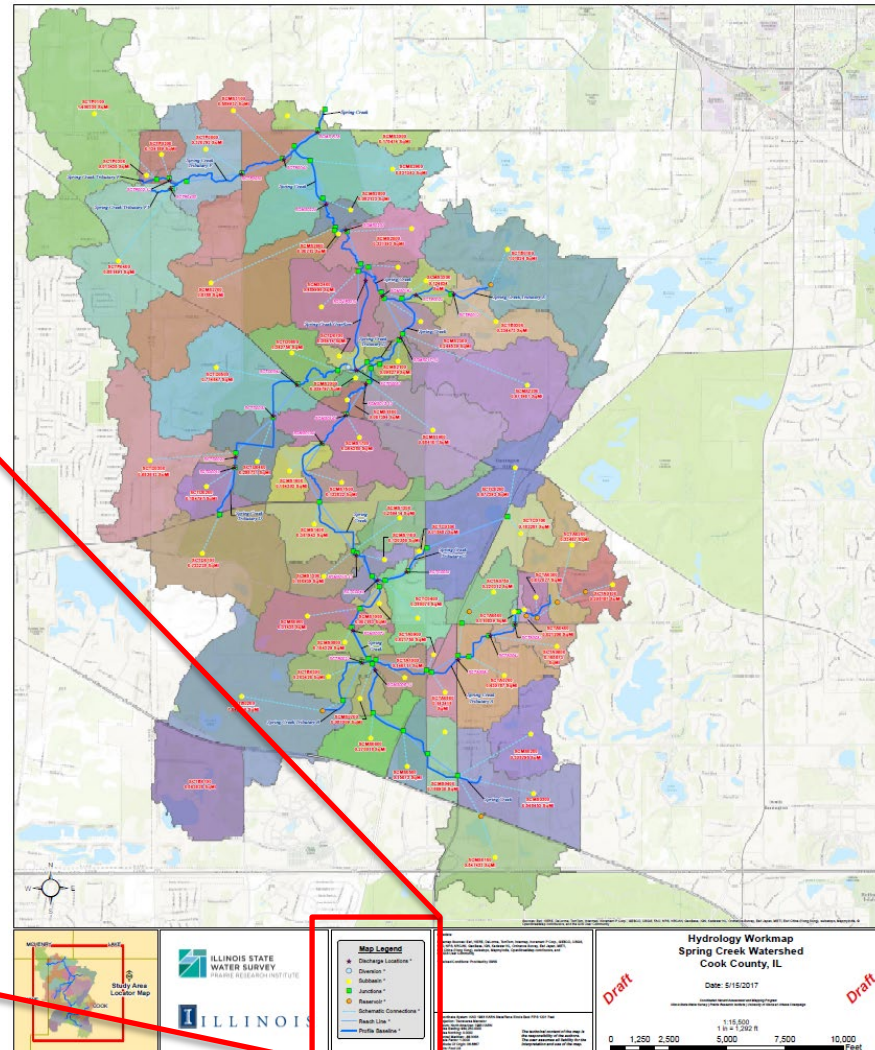


# Map Overview

## Hydrology Workmap

### Map Legend

- ★ Discharge Locations \*
- Diversion \*
- ◆ Subbasin \*
- Junctions \*
- Reservoir \*
- - - Schematic Connections \*
- Reach Line \*
- Profile Baseline \*



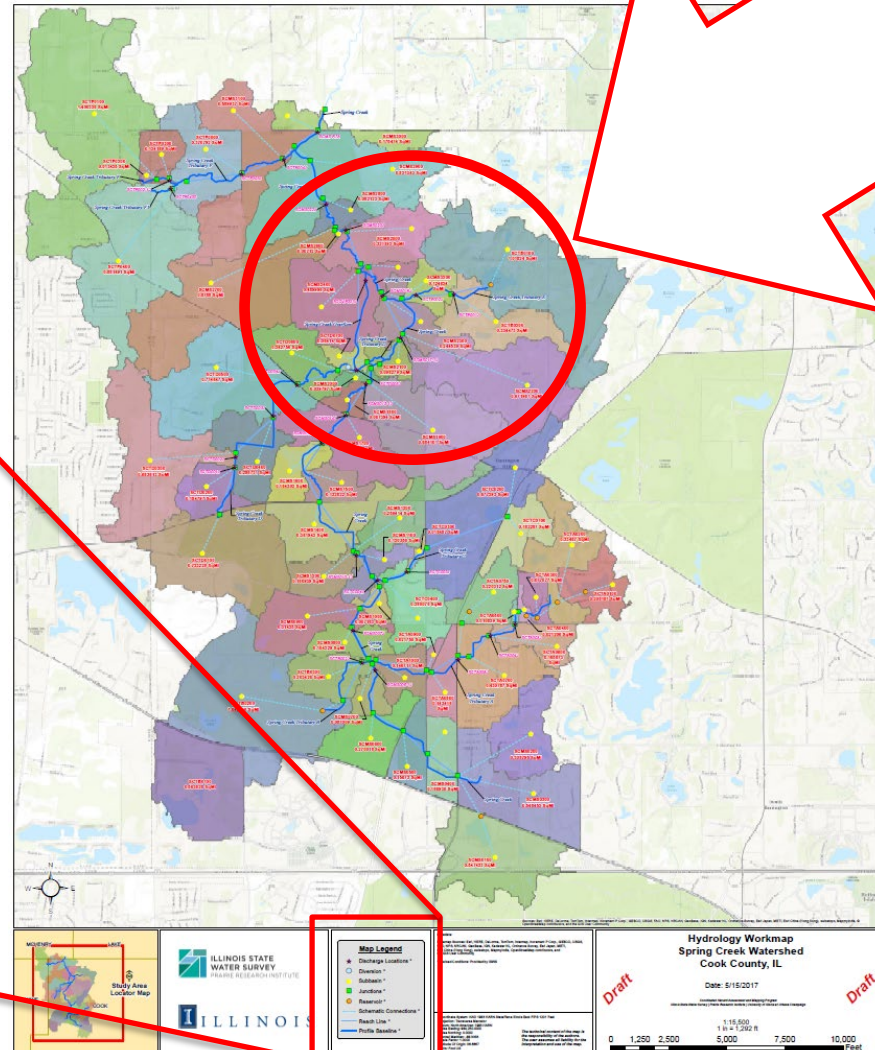


# Map Overview (zoomed in)

## Hydrology Workmap

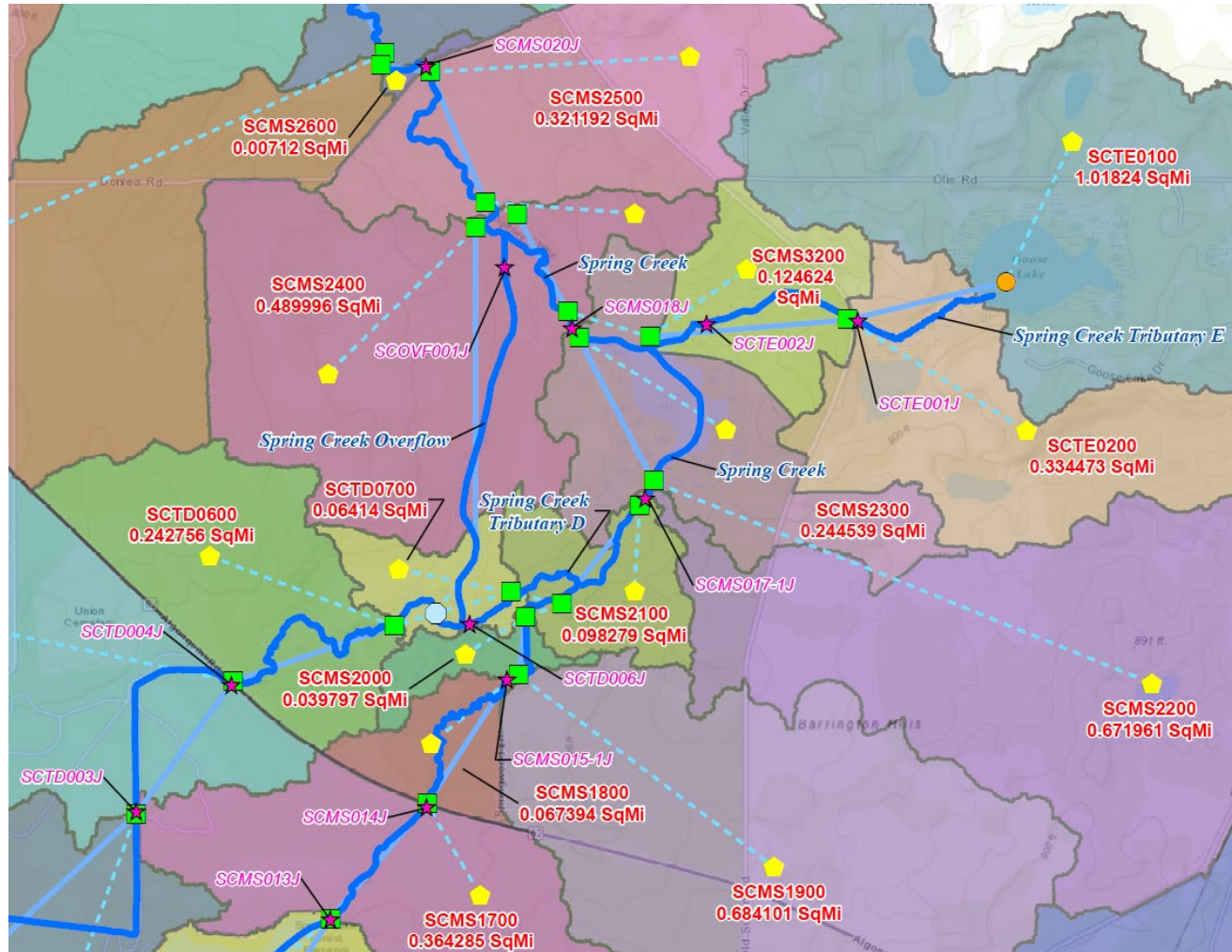
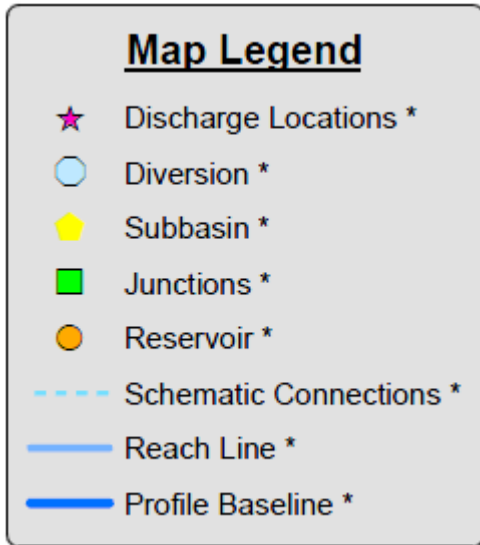
### Map Legend

- ★ Discharge Locations \*
- Diversion \*
- ◆ Subbasin \*
- Junctions \*
- Reservoir \*
- Schematic Connections \*
- Reach Line \*
- Profile Baseline \*



# Map Overview (zoomed in)

## Hydrology Workmap





# Map Overview

- U of I BOX (online file sharing website)
  - Link distributed via email invitations
  - Please request the link from Mary Richardson
- U of I BOX

UNIVERSITY OF ILLINOIS








Log in

Sign up

FRR\_Poplar\_Spring

Download

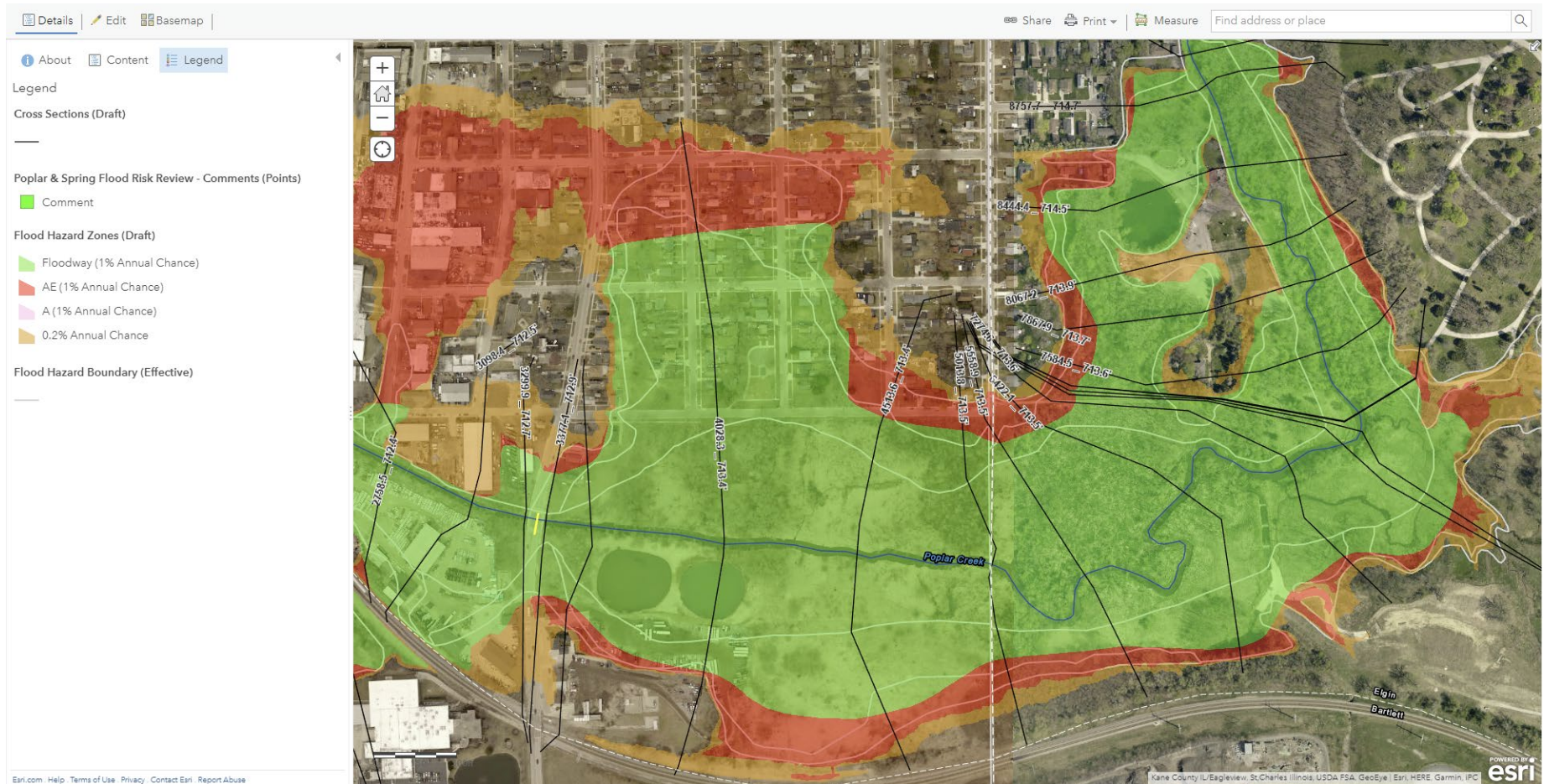
Name	Updated <span>▼</span>	Size	☰ ☰	Details
 Spring_Watershed	Aug 23, 2018 by Ryan Meekma	49 Files		Owner Mary Richardson
 Poplar_Watershed	Aug 23, 2018 by Ryan Meekma	93 Files		Enterprise Owner University of Illinois
 Making_WebMap_Comments.pdf	Sep 25, 2018 by Ryan Meekma	254.2 KB		Created Aug 23, 2018, 7:35 AM
 Map_Instructions_README.pdf	Aug 24, 2018 by Ryan Meekma	256.8 KB		Modified Sep 25, 2018, 8:21 AM
 Index_Map.pdf	Aug 24, 2018 by Ryan Meekma	2.5 MB		Size 1.9 GB

# Map Overview

■ Web-Map [go.illinois.edu/springcreek](http://go.illinois.edu/springcreek)

ArcGIS ▾ Poplar and Spring Creeks Flood Risk Review Meeting Comments

Modify Map Sign In





# Map Overview

## Adding Comments to the ArcGIS Online Web-Map

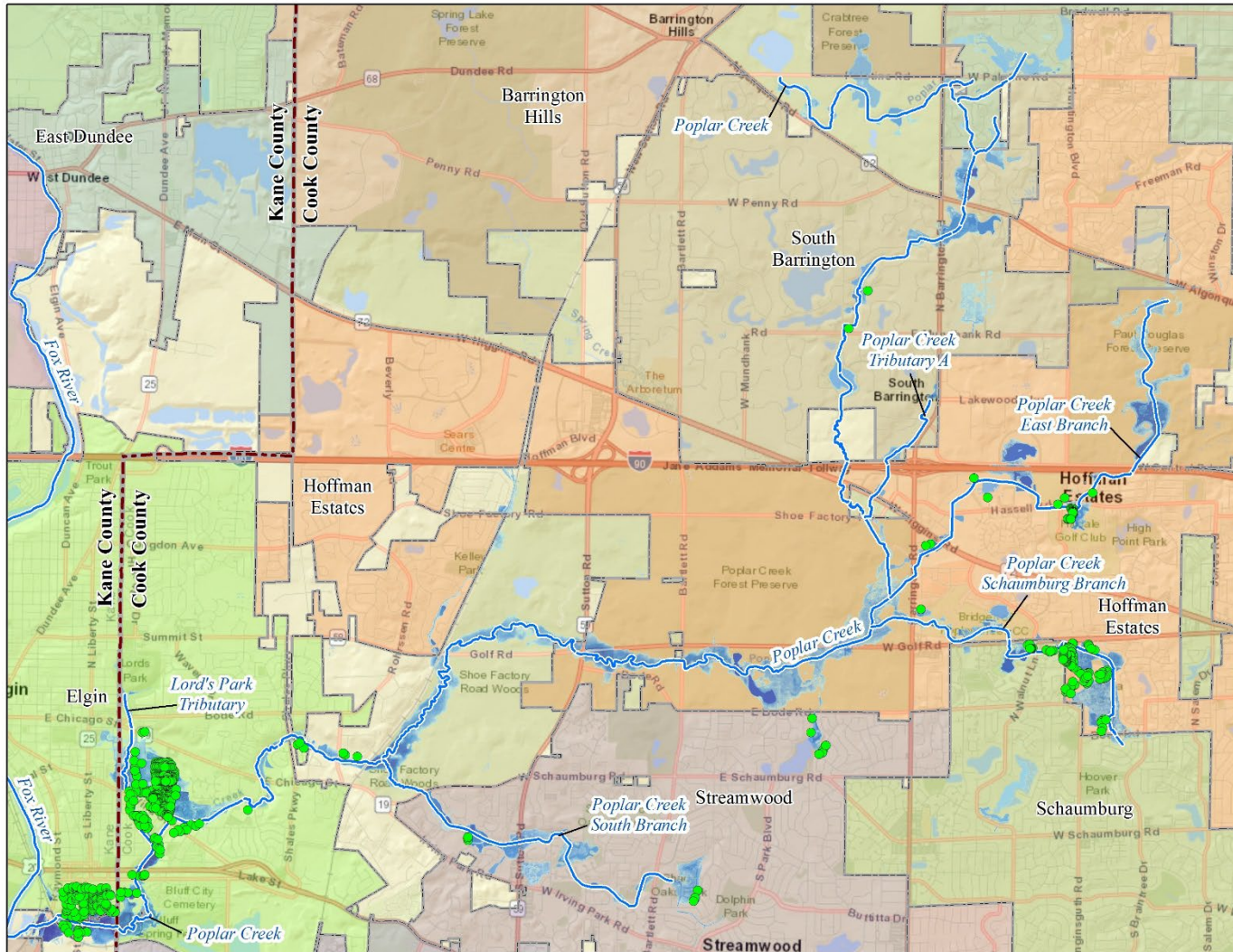
The screenshot shows the ArcGIS Online interface for a map titled "Poplar and Spring Creeks Flood Risk Review Meeting Comments". The map displays various flood risk zones in red, orange, and green. A comment dialog box is open, showing the following details:

Comments (Points)	
Name	Kingsley Allan, Illinois State Water Survey
Category	Category 1
Location	Culvert Crossing on US34 near 15th Street
Date	5/4/2018
Time	12:00:00 PM
Comments	The road regularly floods
Attachments	None
Add:	<input type="button" value="Browse..."/>
Edited seconds ago	

Red annotations on the screenshot include:

- Arrow 1: Points to the "Edit" button in the top toolbar.
- Arrow 2: Points to the "Point of Interest" tool in the "Add Features" panel.
- Arrow 3: Points to the comment dialog box.

# Flood Risk Assessment - Poplar





# Scope of Flood Risk Assessment

- **Poplar Creek Watershed Studies**

- Multi-frequency Flood Depth Grids
- Annual Percent Chance of Flooding Grid
- Chance of Flooding over 30 Years Grid
- HAZUS Level 2 Risk Assessment
- GIS Database
- Flood Risk Assessment Report
- Integrate into our online platform Structures at Flood Risk (SAFR)

# FRA Data Deliverables

- Detailed, structure-by-structure flood risk data for each building in the floodplain.
  - Survey Data (almost 860 structures)
    - First Floor Elevation, Low Entry Elevation, Lowest Elevation Ground
  - Building Characteristics
  - Flood Risk Information



FEMA

# Flood Depth Grids

**RiskMAP**  
Increasing Resilience Together



# Flood Depth Grids

## Inputs, Outputs, and Delivery

### ■ Inputs:

- Multi-Frequency Water Surface Elevations
  - Derived from newer and effective models
- Topographic Data: *2008 LiDAR Cook & Kane Counties*

### ■ Outputs:

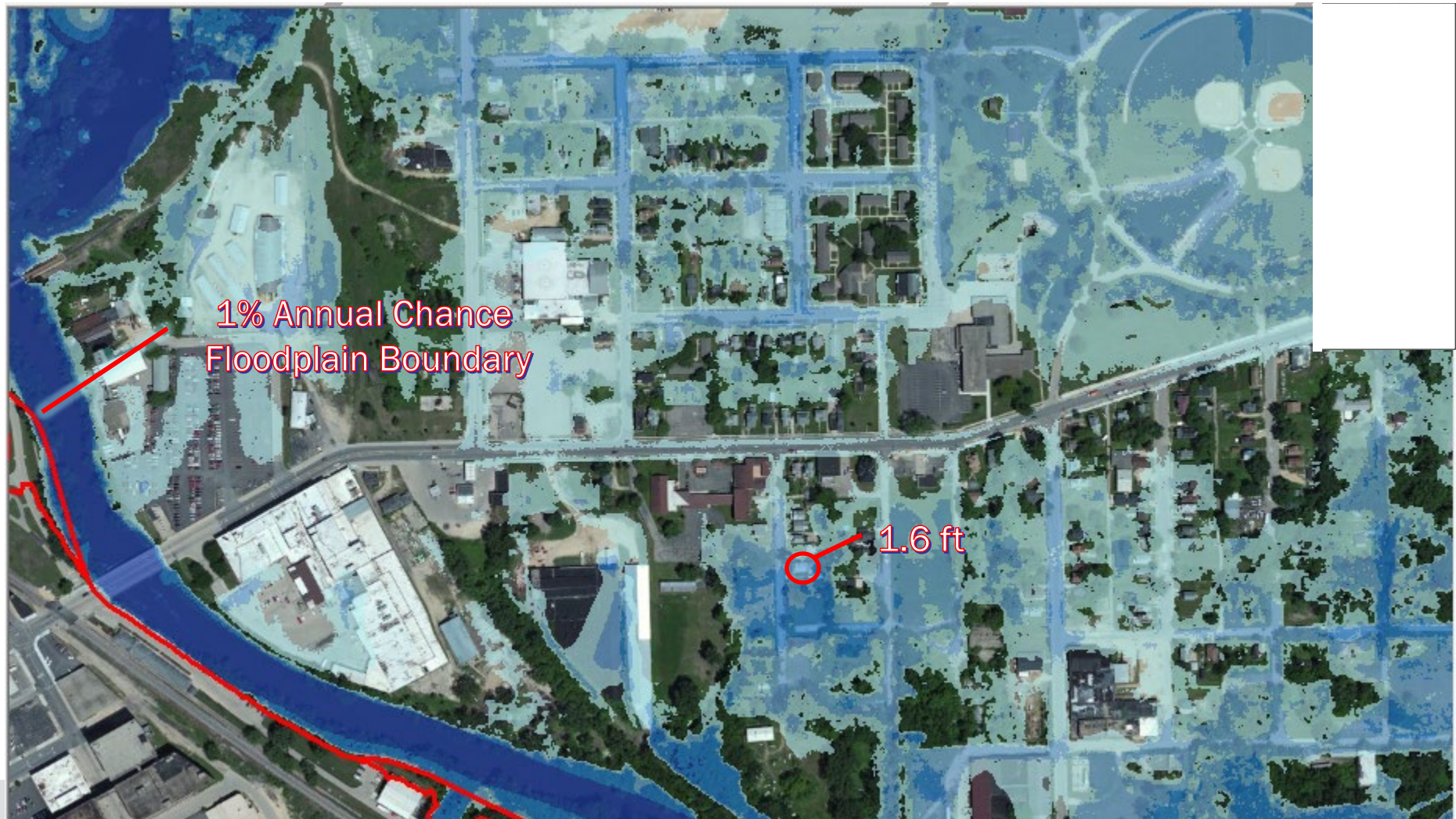
- Flood Depth Grids for Multi-Frequencies

### ■ Delivery:

- File GeoDatabase Raster Dataset



# 10% Depth (10 year)





# 4% Depth (25 year)



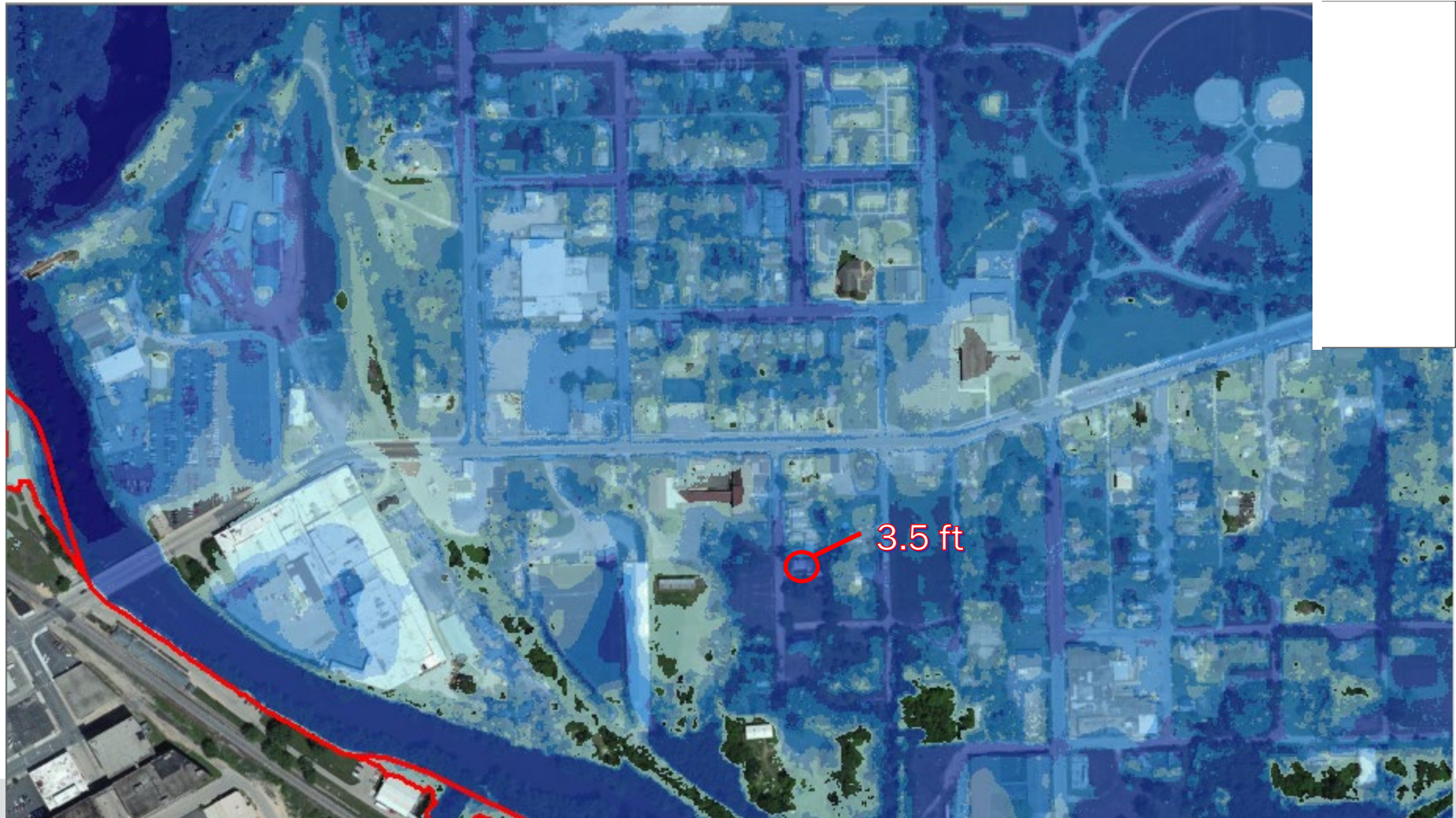


# 2% Depth (50 year)





# 1% Depth (100 year)





# 0.2% Depth (500 year)



# Purpose of Flood Depth Grids

- Help building officials, property owners and developers understand the elevation requirements for specific sites according to local flood damage prevention ordinances
- Use to identify areas of highest flood risk according to frequency and magnitude (depths) for possible mitigation actions
- Serve as pre-screening criteria for mitigation project potential (e.g. positive 10-yr depths)
- Communicate that hazard, and risk, varies within the mapped floodplain
- Inform land use and comprehensive planning decisions to guide development
- Use to revise zoning codes and subdivision regulations – ensure appropriate land use in high-hazard areas





FEMA

# Flood Analysis Grids

**RiskMAP**

Increasing Resilience Together



# Flood Analysis Grids

## Inputs, Outputs, and Delivery

### ■ Inputs:

- Multi-Frequency Water Surface Elevations
  - Derived from new models
- Topographic Data: *2008 LiDAR*

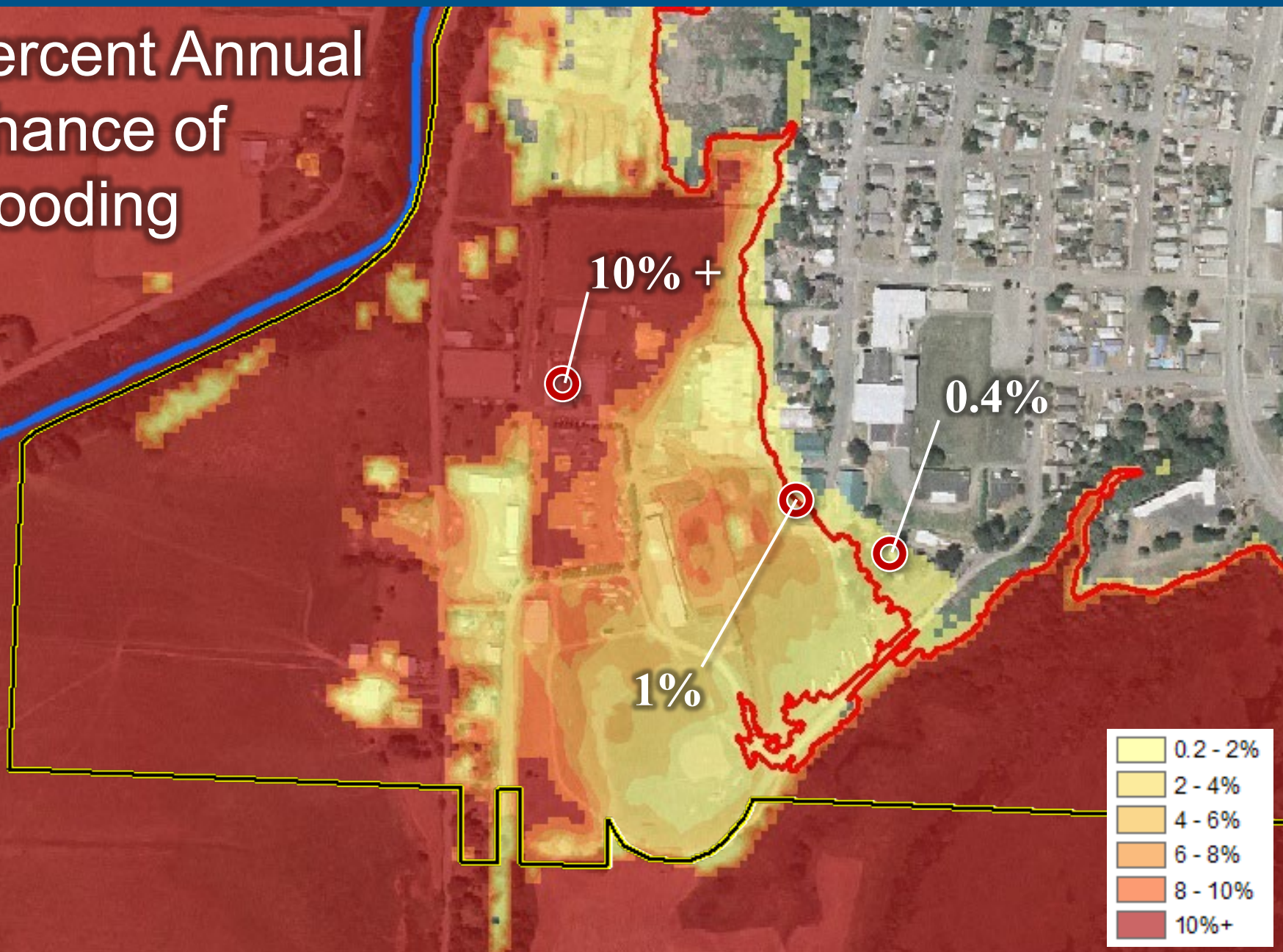
### ■ Outputs:

- Percent Annual Chance of Flooding
- Chance of Flooding Over 30 Years

### ■ Delivery:

- File GeoDatabase Raster Dataset

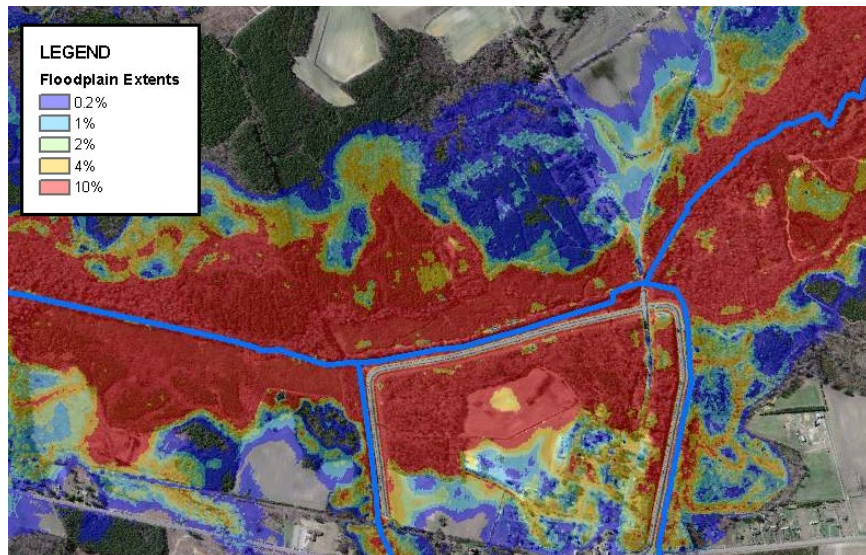
# Percent Annual Chance of Flooding



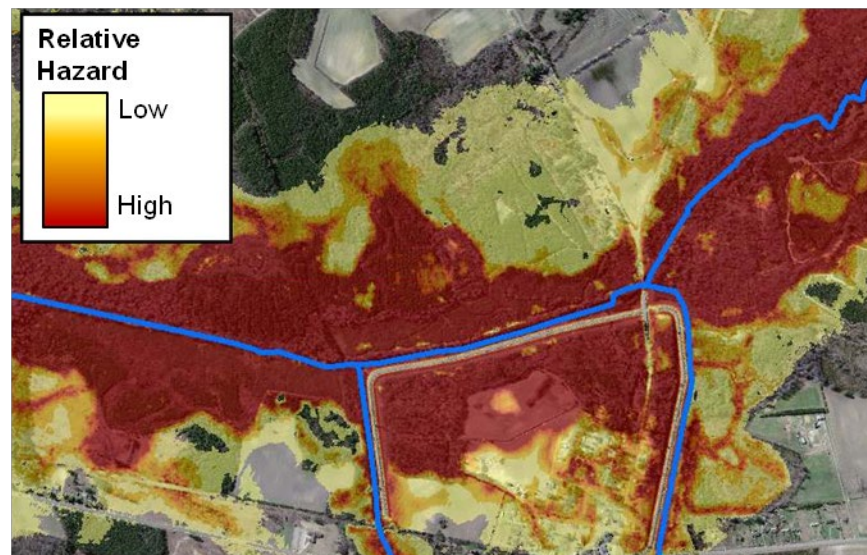


# Percent Annual Chance of Flooding Grid

- Display Options



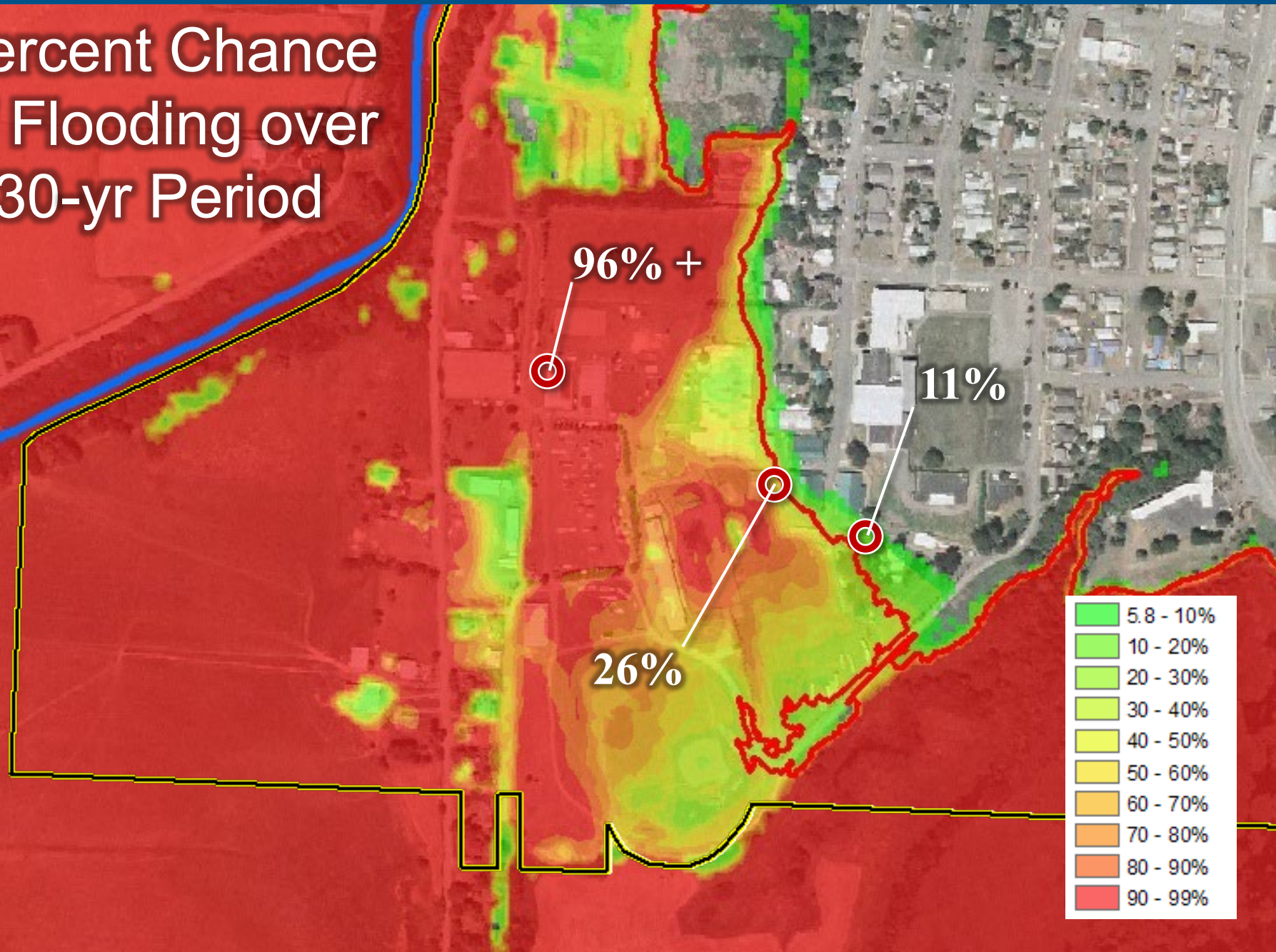
Floodplain Extents for Each Flood Frequency



Relative Flood Hazard within Floodplain



# Percent Chance of Flooding over a 30-yr Period

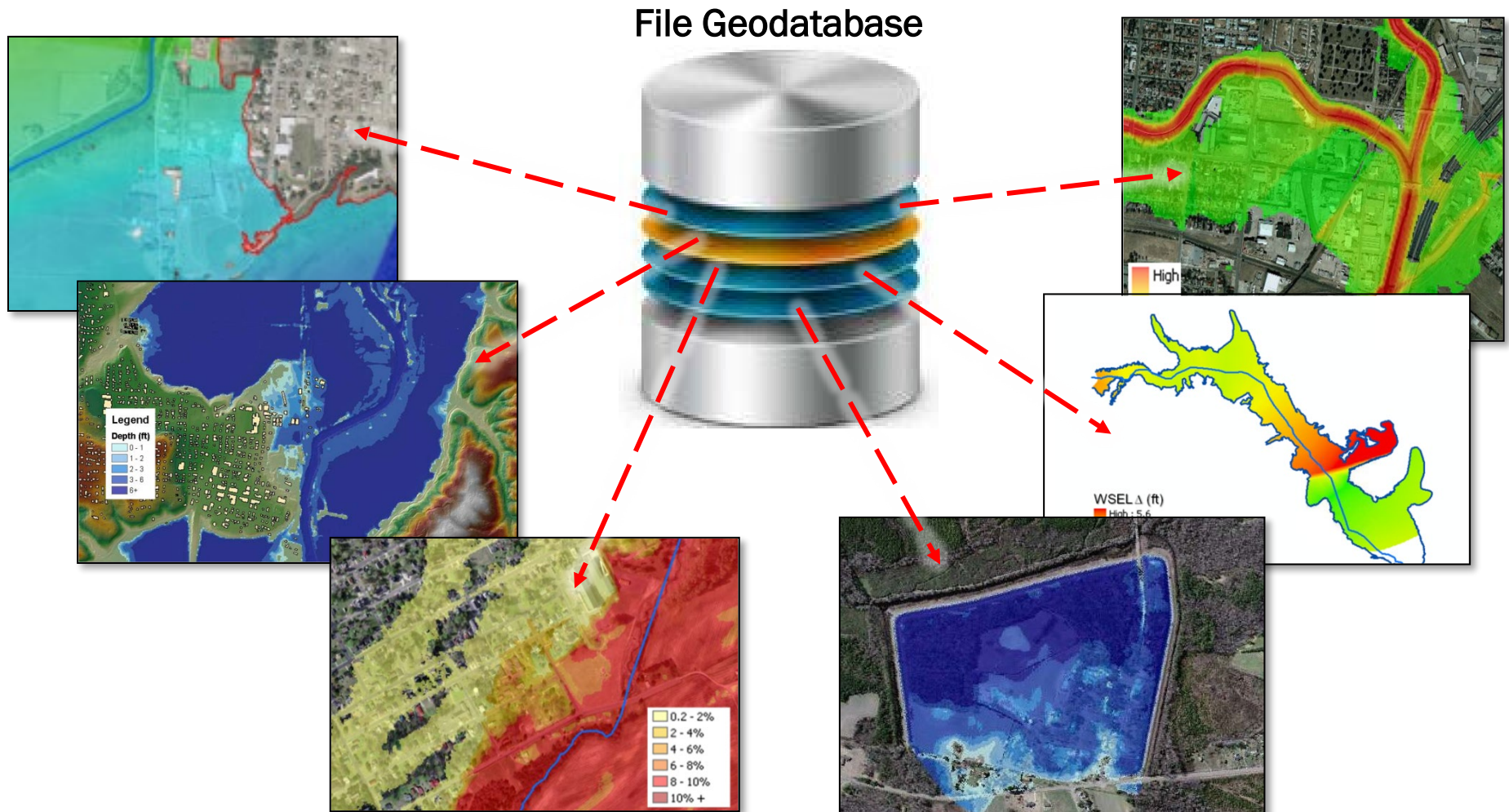


# Purpose of Flood Analysis Grids

- Clear depiction of high flood risk areas for future planning
- Communicate / 'Show' flood inundation as function of event's magnitude or severity
- Increase flood risk awareness as acknowledged from varied contexts (depth, probability, etc)
- Communicate that hazard, and by extension risk, varies within the mapped floodplain



# Flood Depth & Analysis Grids Delivered





FEMA

# Flood Risk Assessment- Results by Community

**RiskMAP**

Increasing Resilience Together



# What is Hazus?

- Program designed by FEMA for the purpose of providing communities with the means to identify and reduce risk from natural hazards
- Program elements include:
  - Hazus-MH
  - User Groups
  - Education Program
  - Other resources
- Available from FEMA free of charge (requires ArcGIS license)



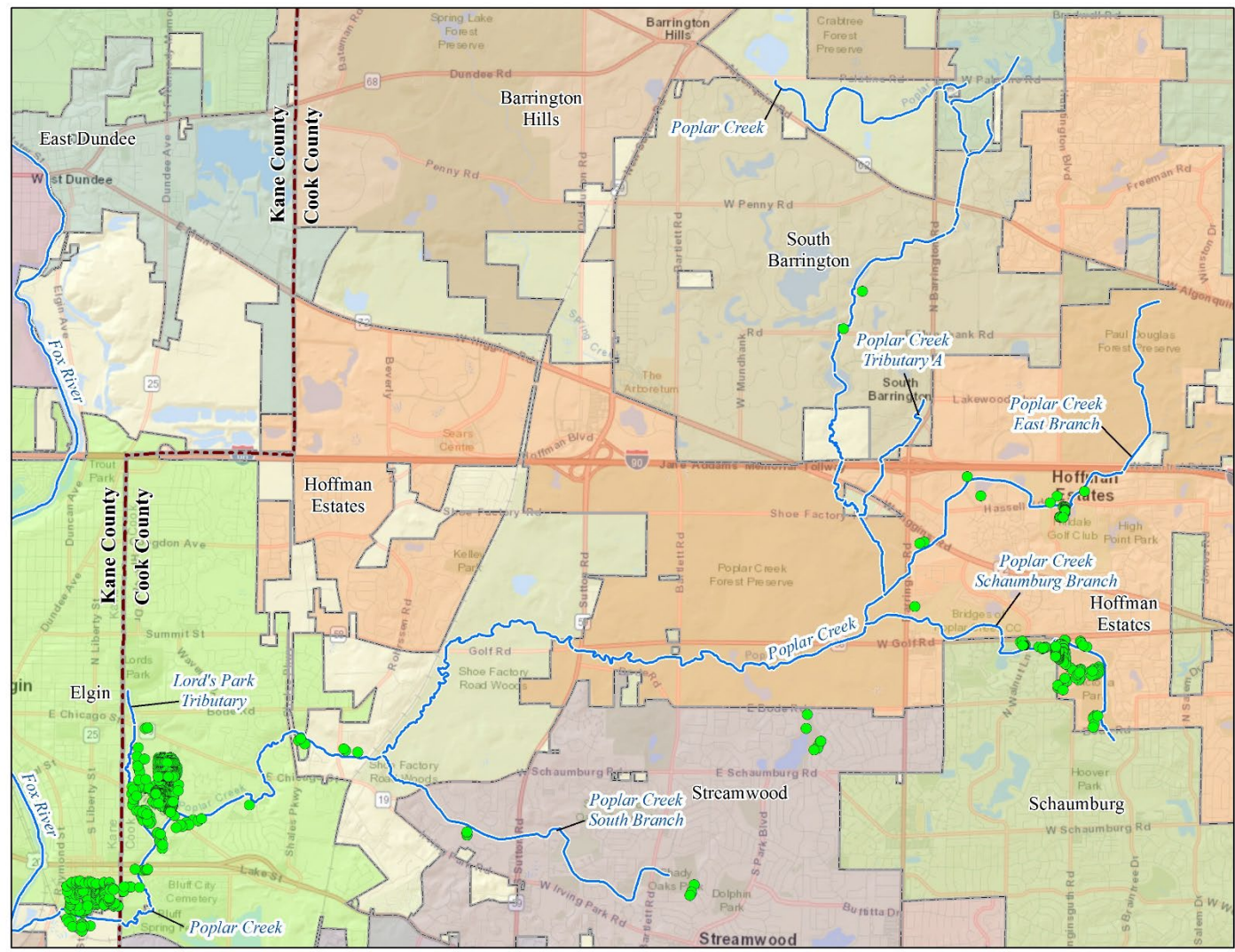


# Hazus Results

- Damages
  - Building Loss
  - Content Loss
  - Inventory Loss
  - Percent Damaged
- Average Annualized Loss
  - Estimated long-term value of losses averaged on an annual basis



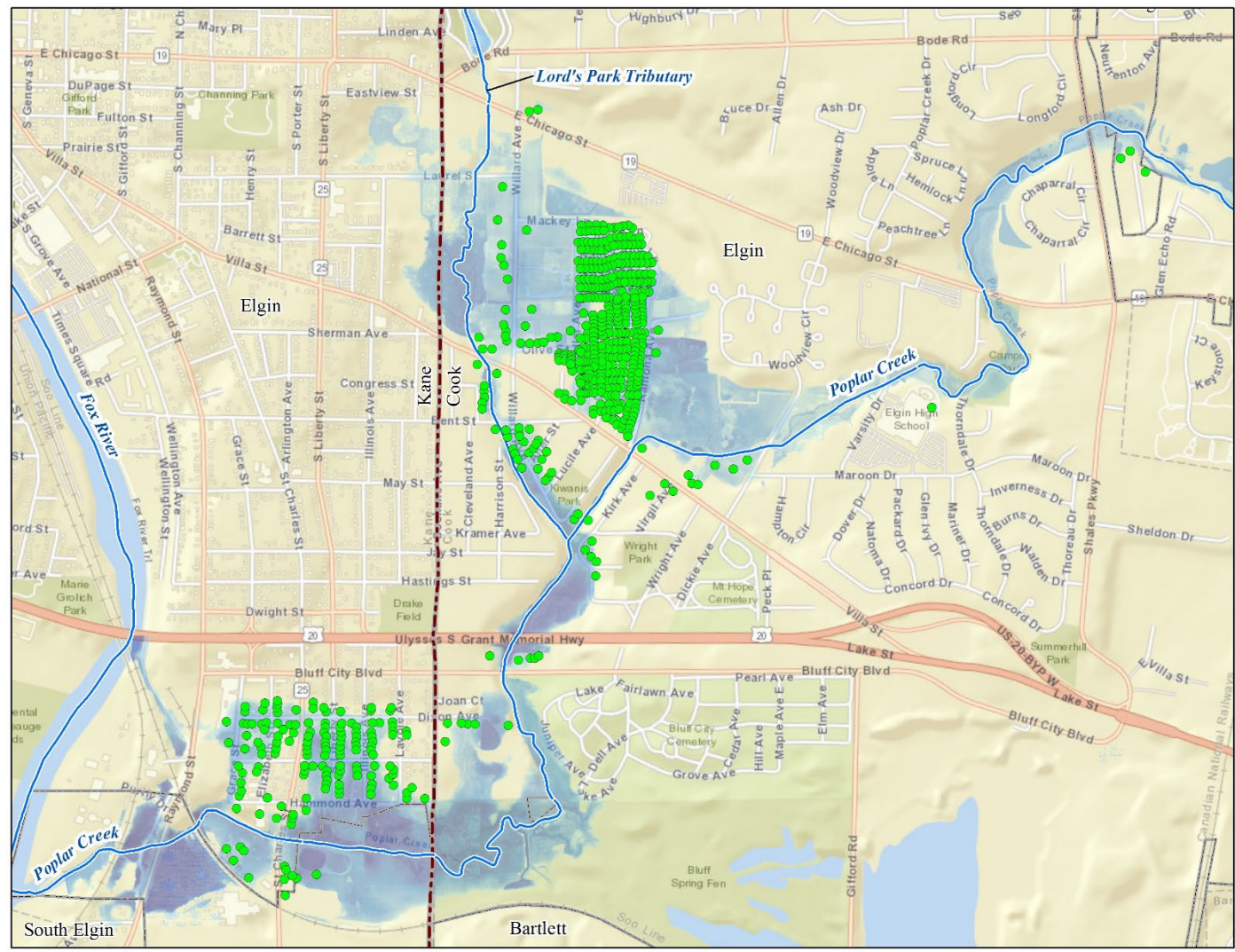
# Project Area



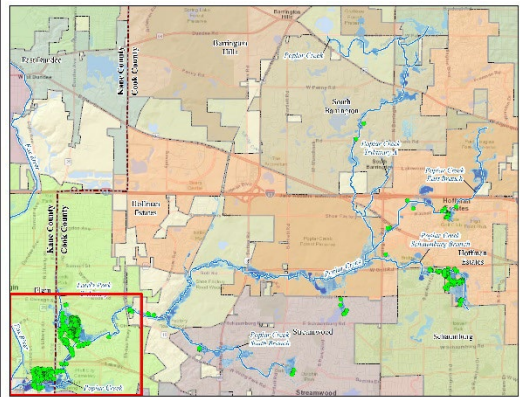
Project Area		
Flood Event	Structures	Total Loss
10% (10yr)	13	\$122,940
4% (25yr)	59	\$1,217,900
2% (50yr)	216	\$3,606,390
1% (100yr)	354	\$8,690,110
0.2% (500yr)	681	\$25,403,440
AAL	681	\$337,800



# City of Elgin

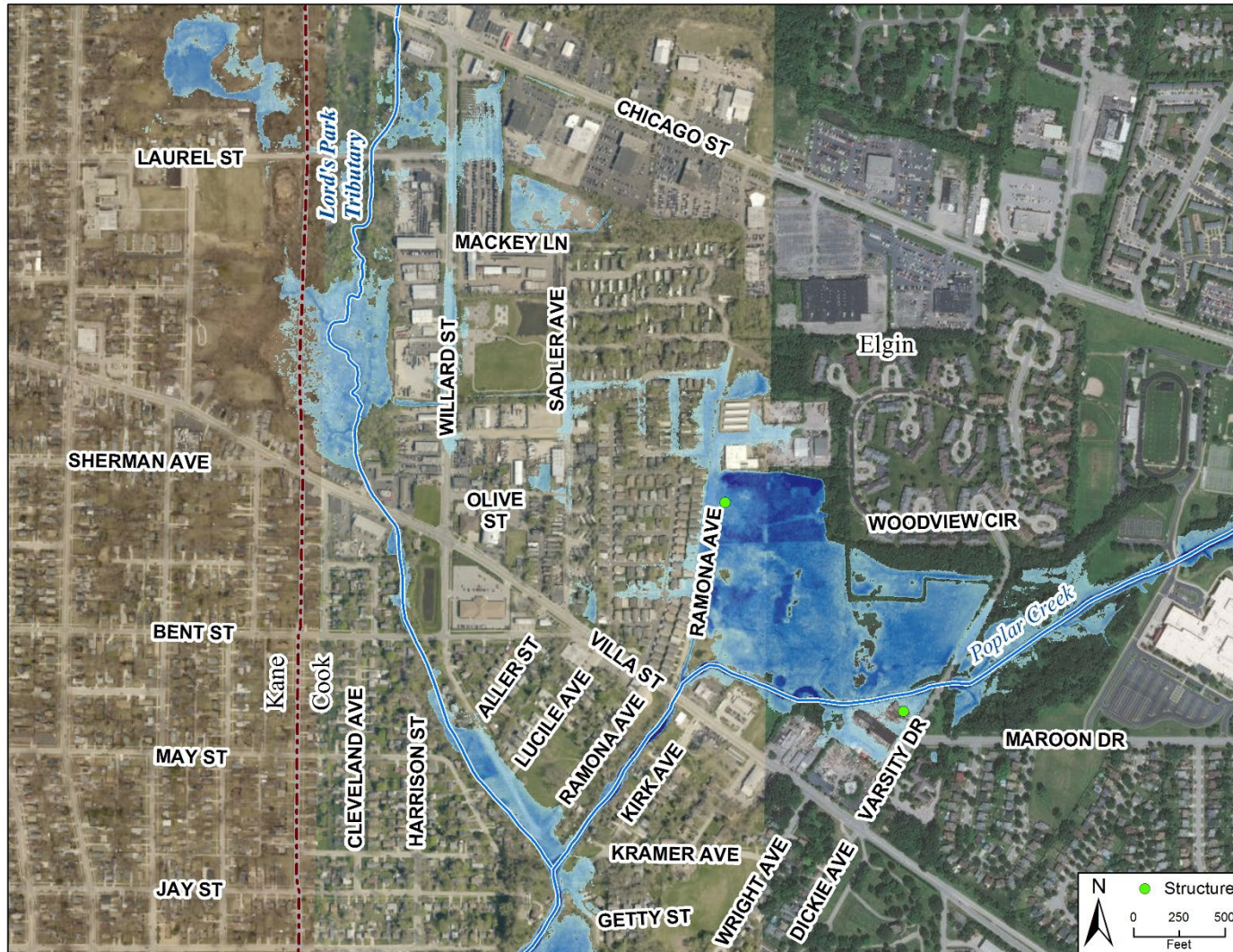


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	13	\$122,940
4% (25yr)	58	\$705,820
2% (50yr)	215	\$2,842,800
1% (100yr)	330	\$7,427,860
0.2% (500yr)	532	\$21,251,920
AAL	532	\$269,450

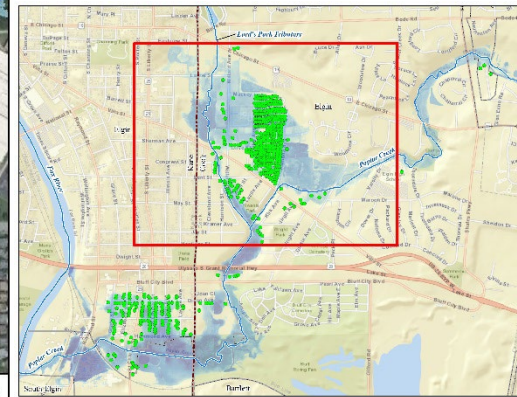




# City of Elgin – 10% (10yr) Depth Grid

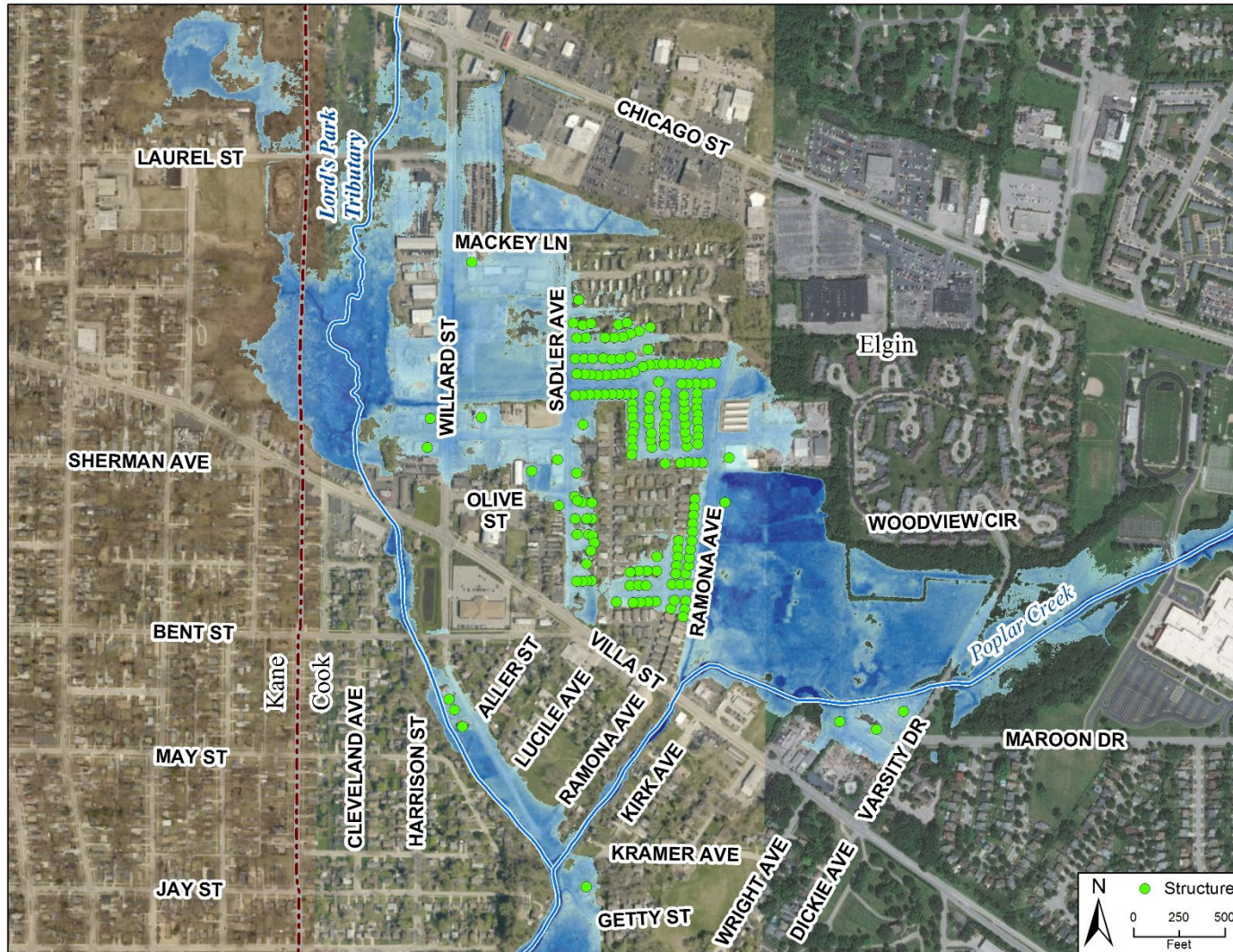


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	2	\$17,030

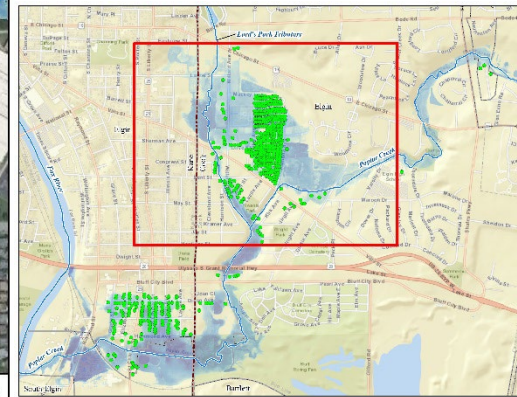




# City of Elgin – 4% (25yr) Depth Grid

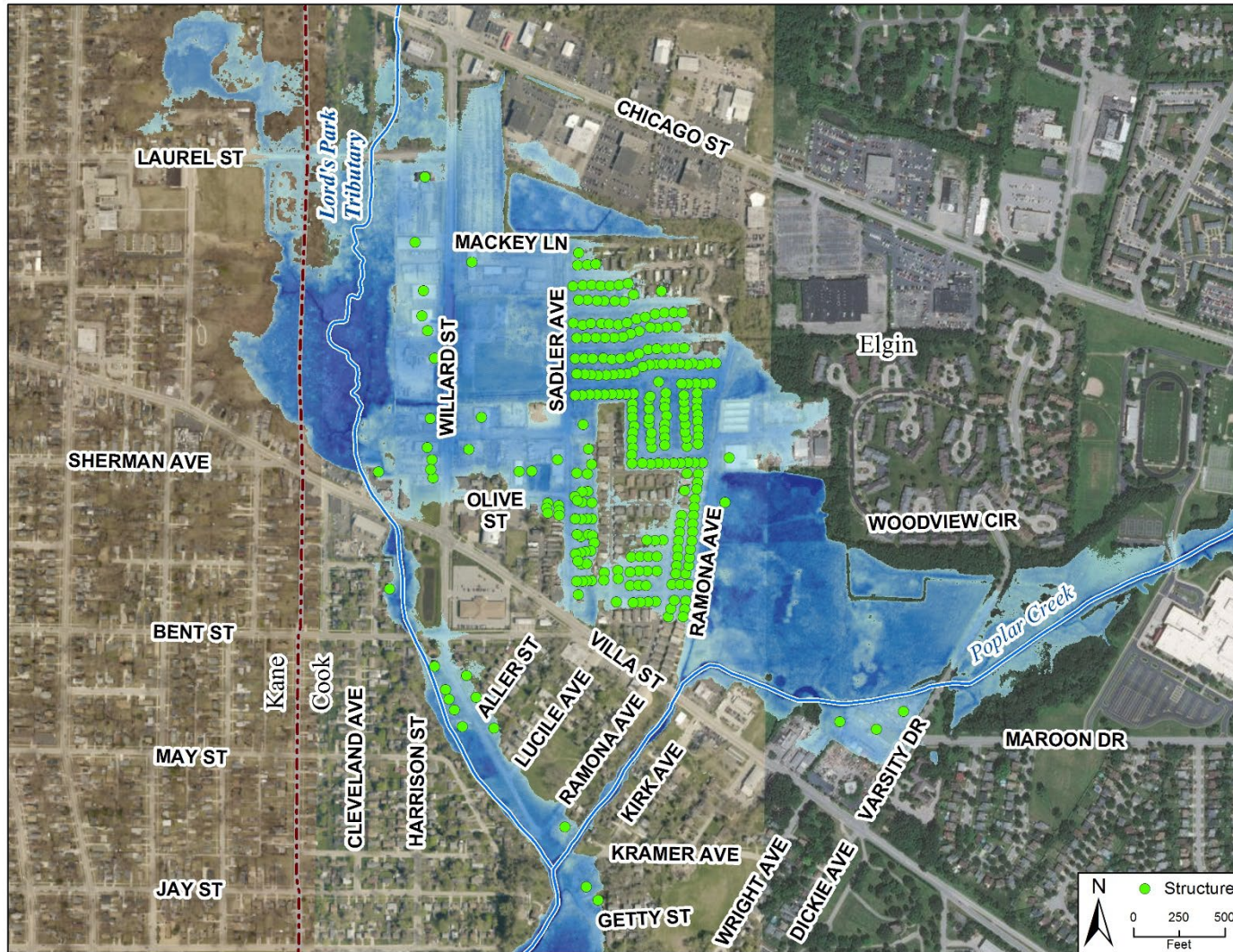


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	2	\$17,030
<b>4% (25yr)</b>	<b>18</b>	<b>\$287,840</b>

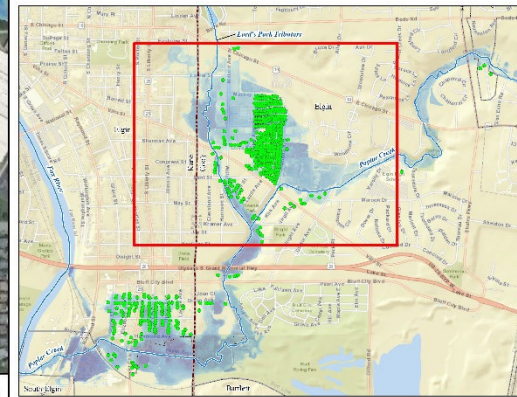




# City of Elgin – 2% (50yr) Depth Grid

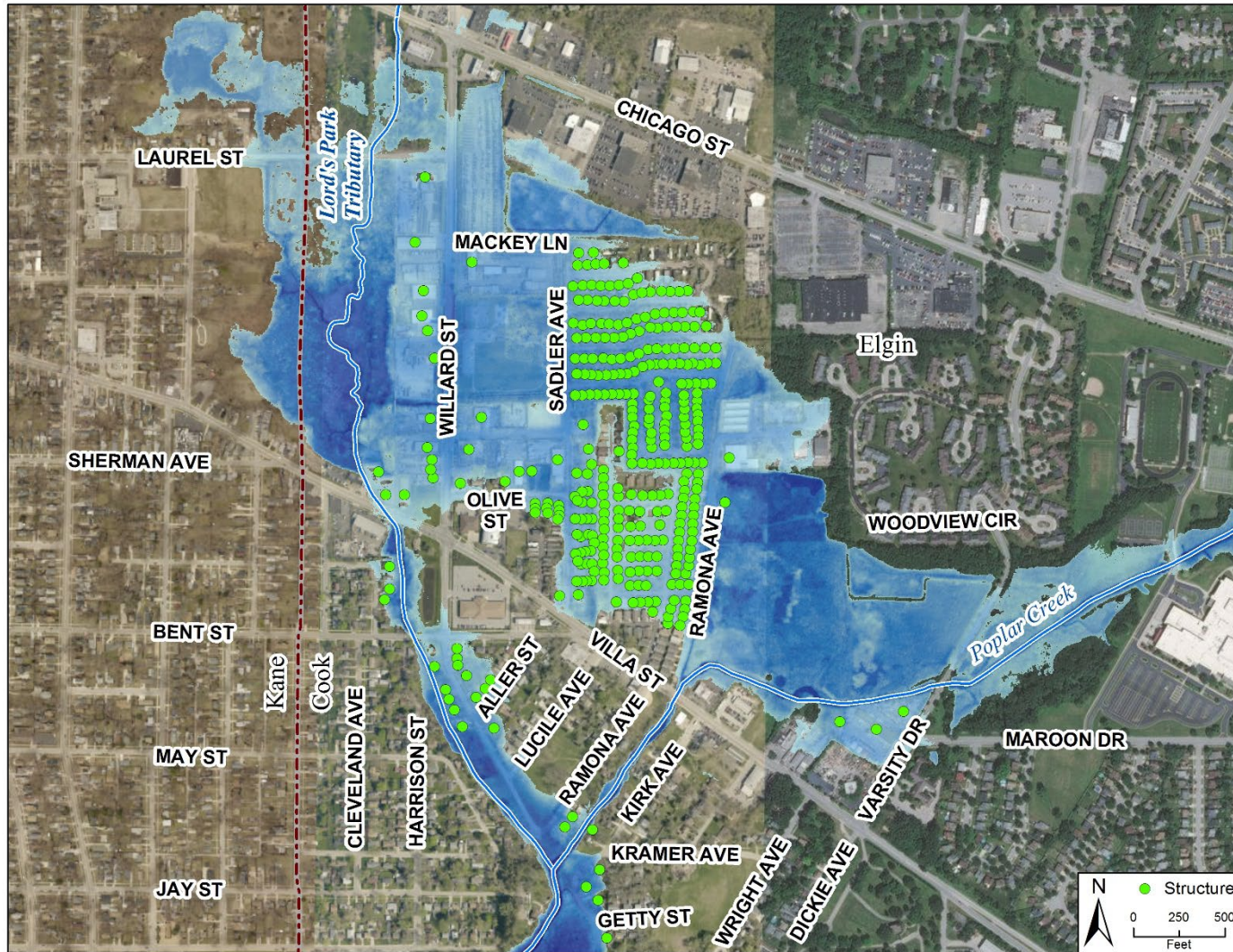


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	2	\$17,030
4% (25yr)	18	\$287,840
<b>2% (50yr)</b>	<b>133</b>	<b>\$1,525,350</b>

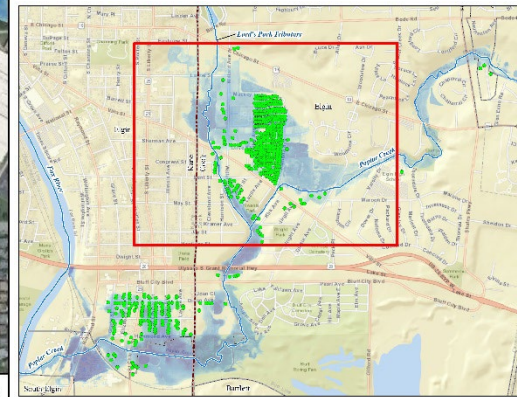




# City of Elgin - 1% (100yr) Depth Grid

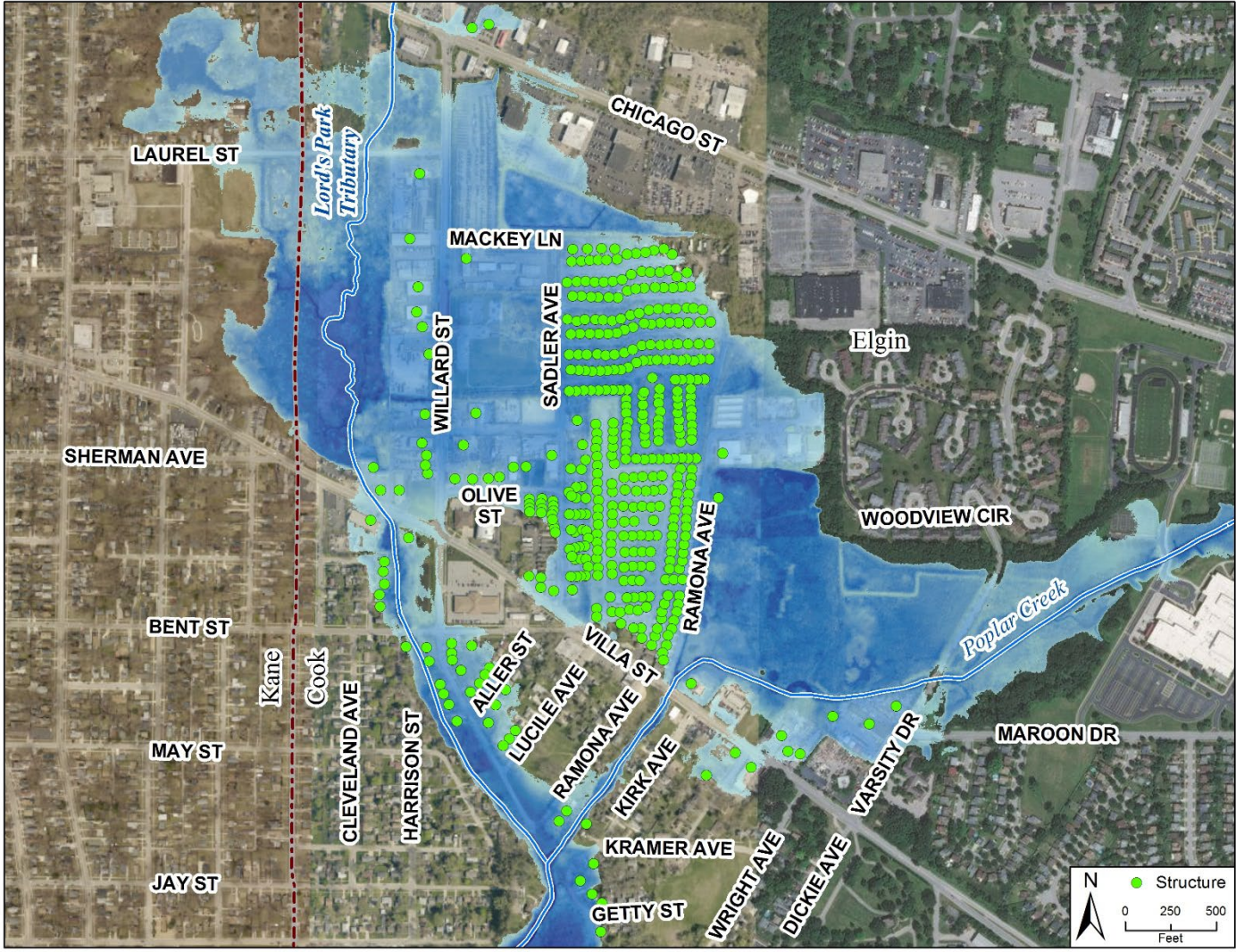


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	2	\$17,030
4% (25yr)	18	\$287,840
2% (50yr)	133	\$1,525,350
<b>1% (100yr)</b>	<b>226</b>	<b>\$3,355,780</b>

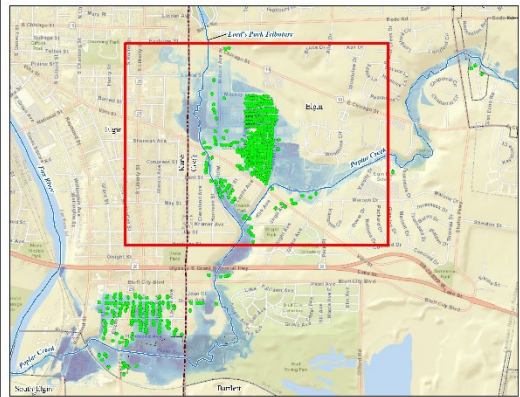




# City of Elgin – 0.2% (500yr) Depth Grid

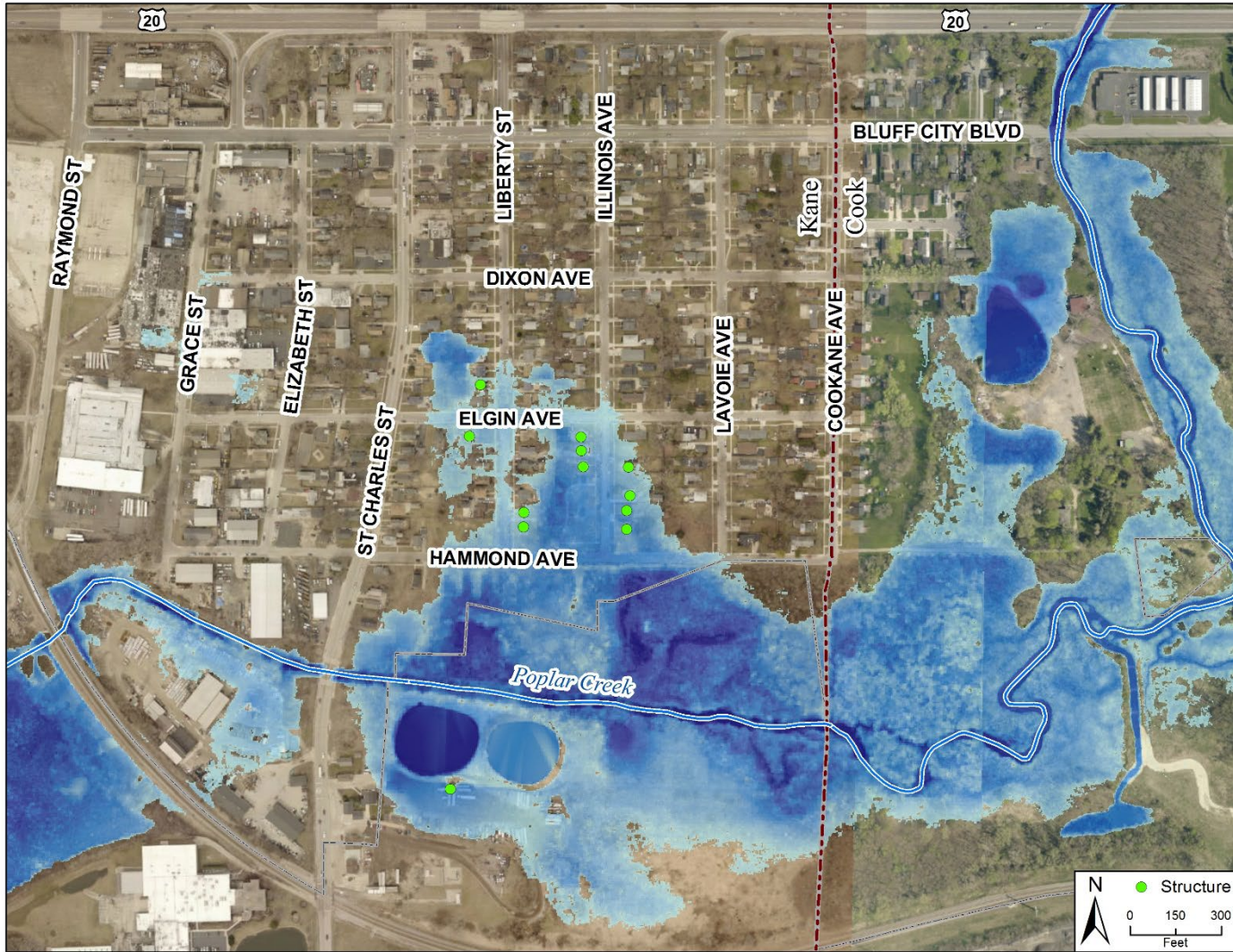


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	2	\$17,030
4% (25yr)	18	\$287,840
2% (50yr)	133	\$1,525,350
1% (100yr)	226	\$3,355,780
<b>0.2% (500yr)</b>	<b>372</b>	<b>\$11,252,790</b>

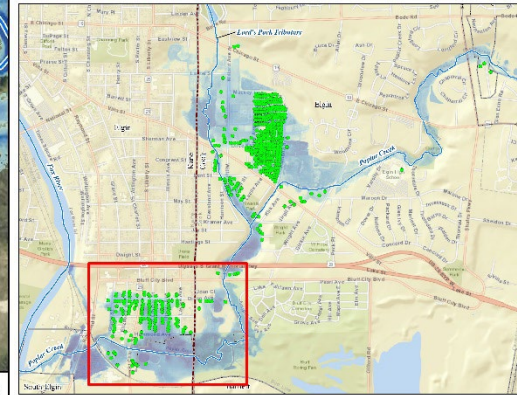




# City of Elgin – 10% (10yr) Depth Grid

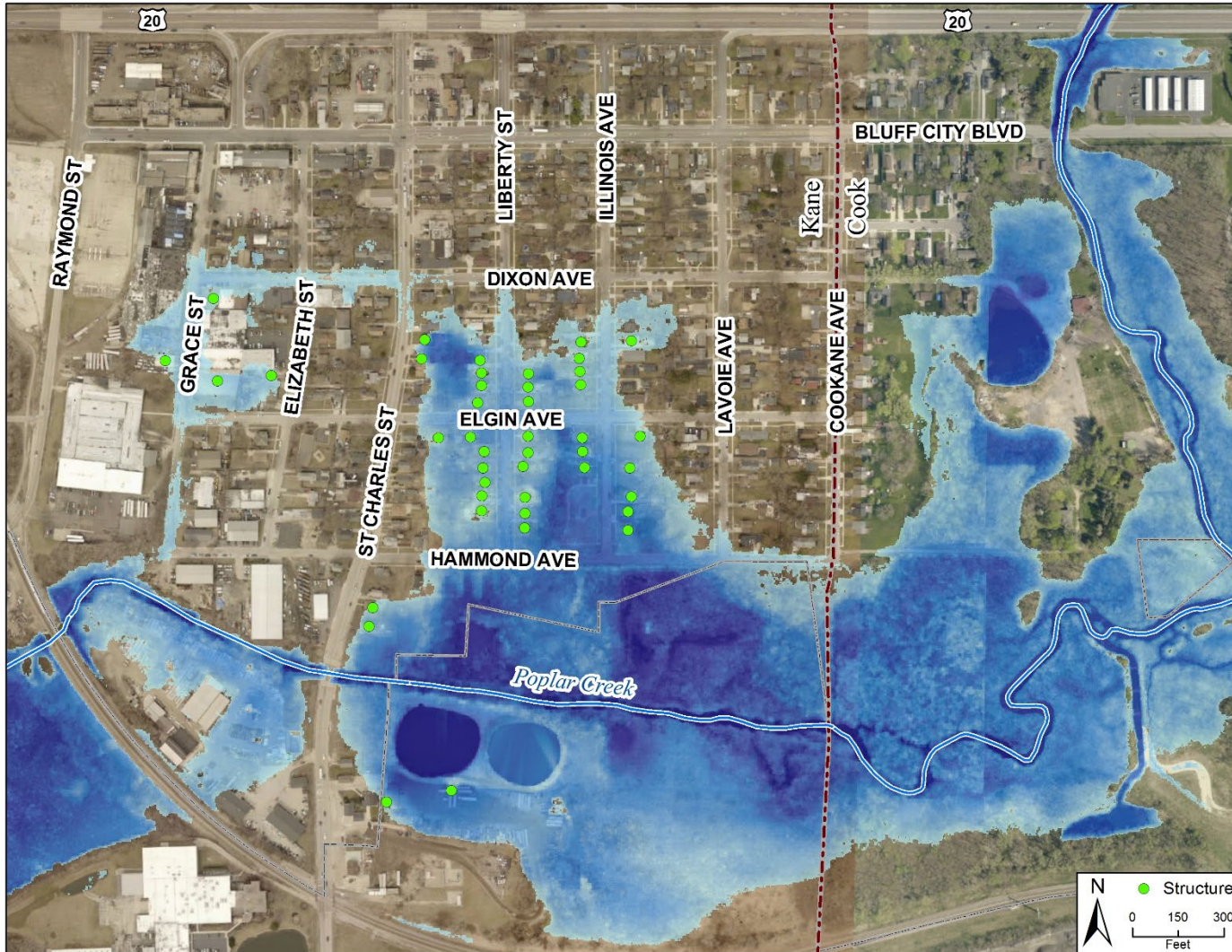


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	11	\$105,910

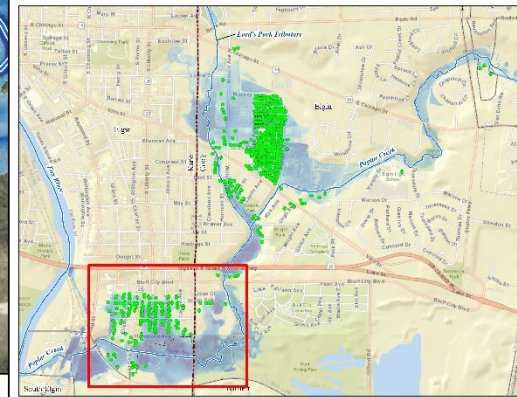




# City of Elgin – 4% (25yr) Depth Grid

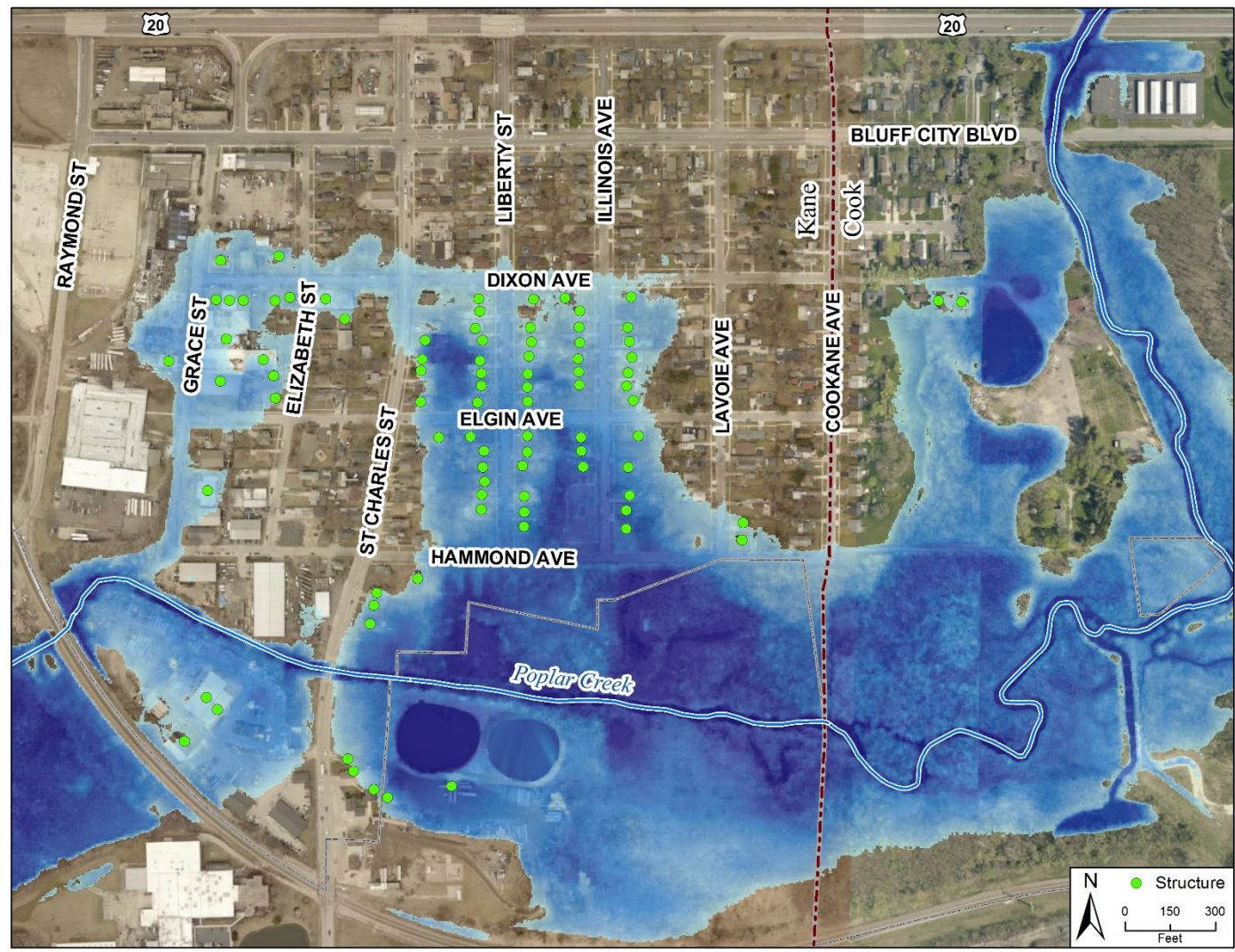


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	11	\$105,910
<b>4% (25yr)</b>	<b>40</b>	<b>\$417,980</b>

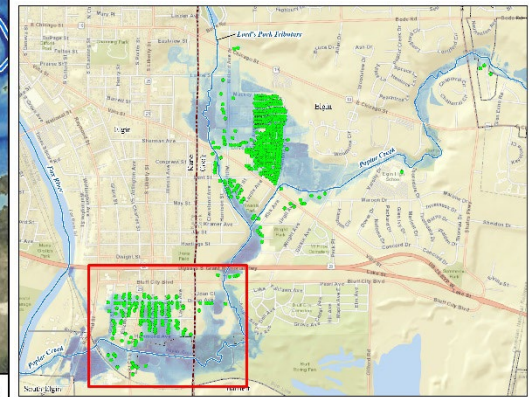




# City of Elgin – 2% (50yr) Depth Grid

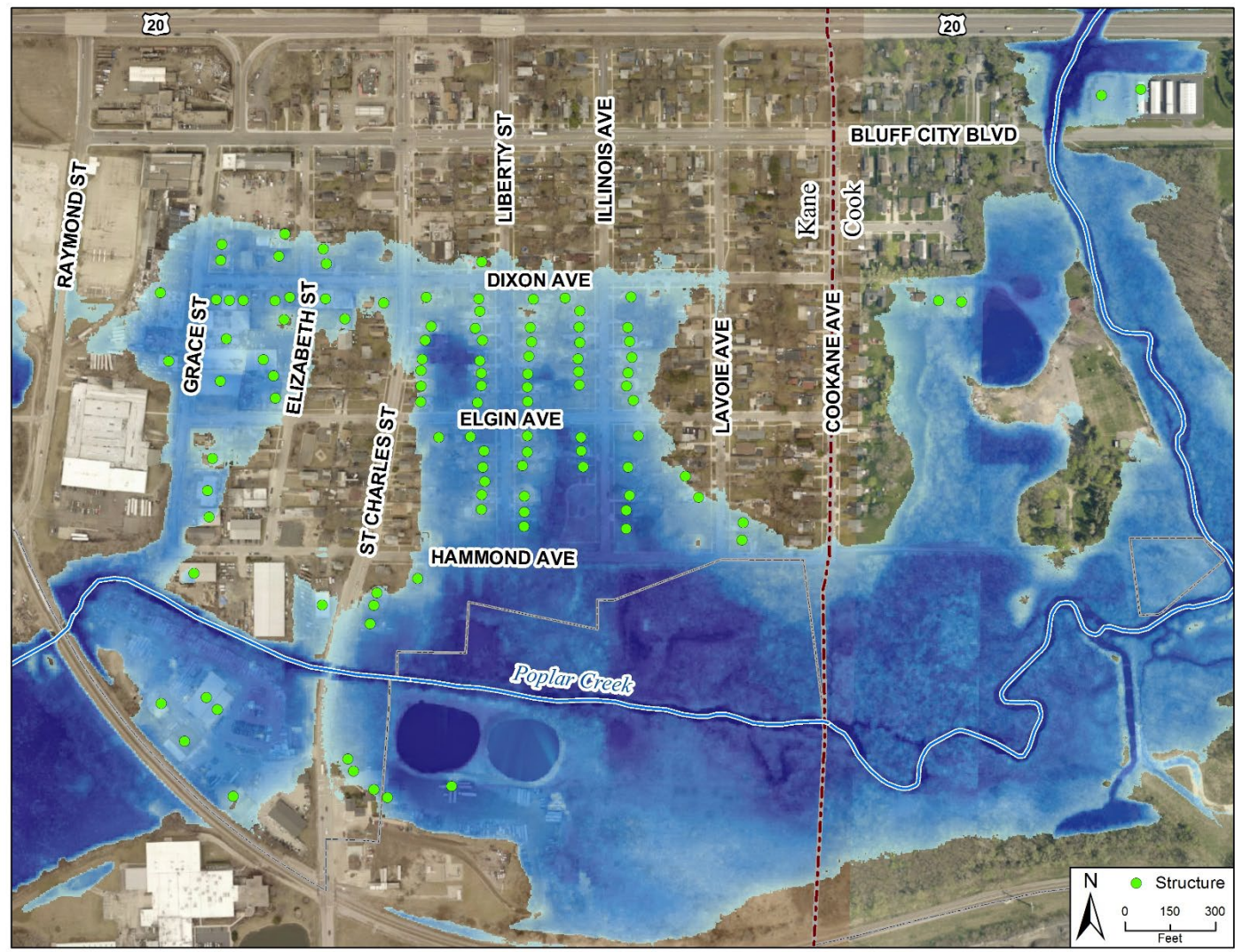


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	11	\$105,910
4% (25yr)	40	\$417,980
<b>2% (50yr)</b>	<b>82</b>	<b>\$1,317,450</b>

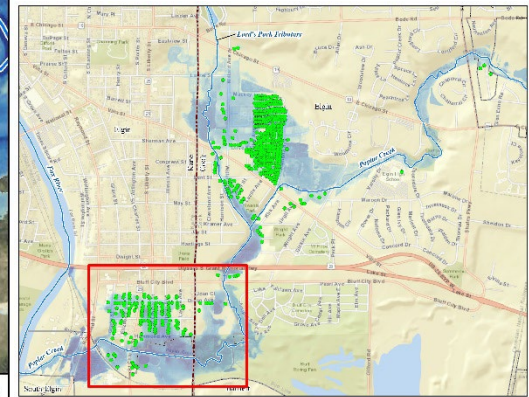




# City of Elgin – 1% (100yr) Depth Grid

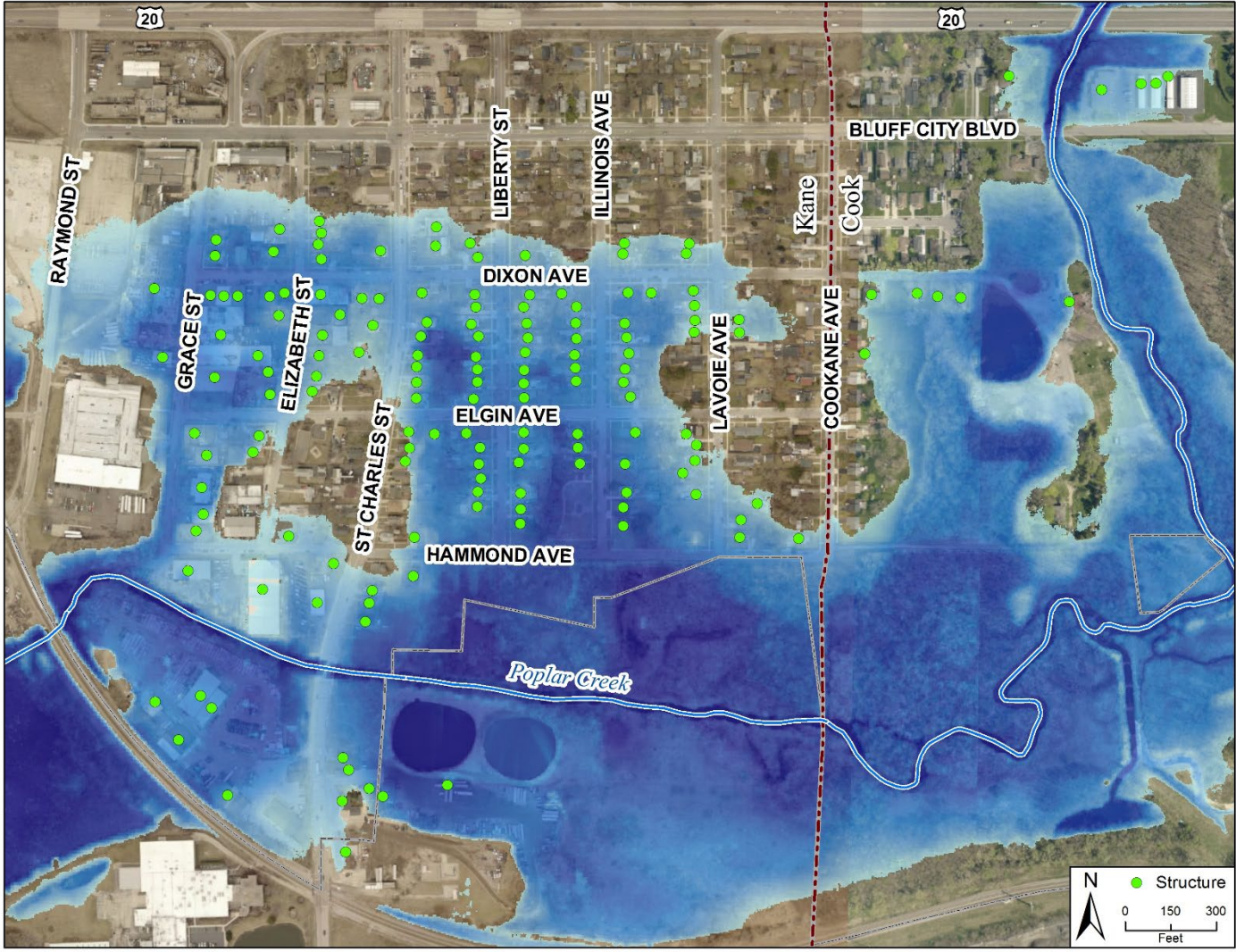


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	11	\$105,910
4% (25yr)	40	\$417,980
2% (50yr)	82	\$1,317,450
<b>1% (100yr)</b>	<b>104</b>	<b>\$4,072,080</b>

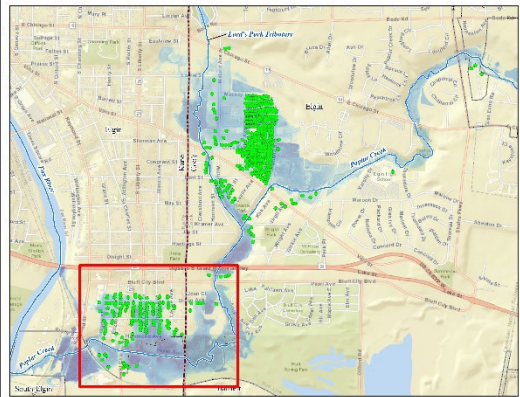




# City of Elgin – 0.2% (500yr) Depth Grid

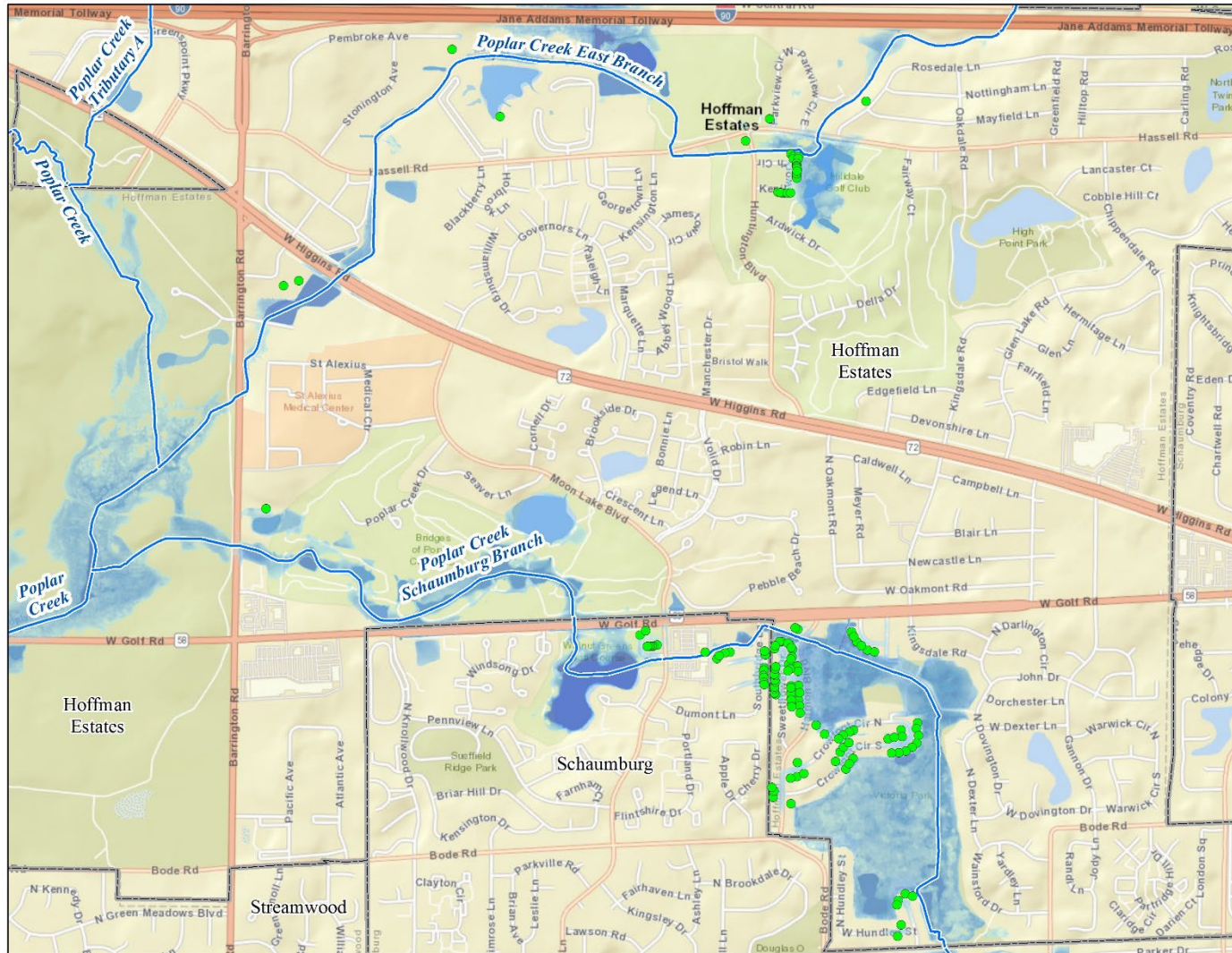


Elgin		
Flood Event	Structures	Total Loss
10% (10yr)	11	\$105,910
4% (25yr)	40	\$417,980
2% (50yr)	82	\$1,317,450
1% (100yr)	104	\$4,072,080
<b>0.2% (500yr)</b>	<b>157</b>	<b>\$9,986,720</b>



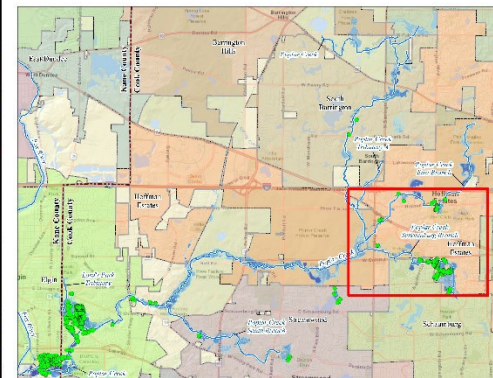


# Village of Hoffman Estates, Village of Schaumburg



Hoffman Estates		
Flood Event	Structures	Total Loss
10% (10yr)	0	\$0
4% (25yr)	1	\$512,080
2% (50yr)	1	\$763,590
1% (100yr)	24	\$1,262,250
0.2% (500yr)	110	\$3,838,550
AAL	110	\$66,430

Schaumburg		
Flood Event	Structures	Total Loss
10% (10yr)	0	\$0
4% (25yr)	0	\$0
2% (50yr)	0	\$0
1% (100yr)	0	\$0
0.2% (500yr)	21	\$176,250
AAL	21	\$1,080



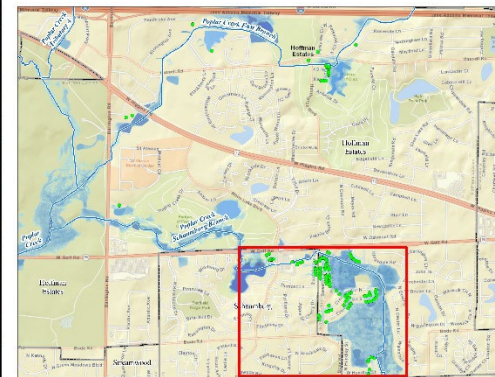


# Village of Hoffman Estates, Schaumburg – 1% (100yr) Flood



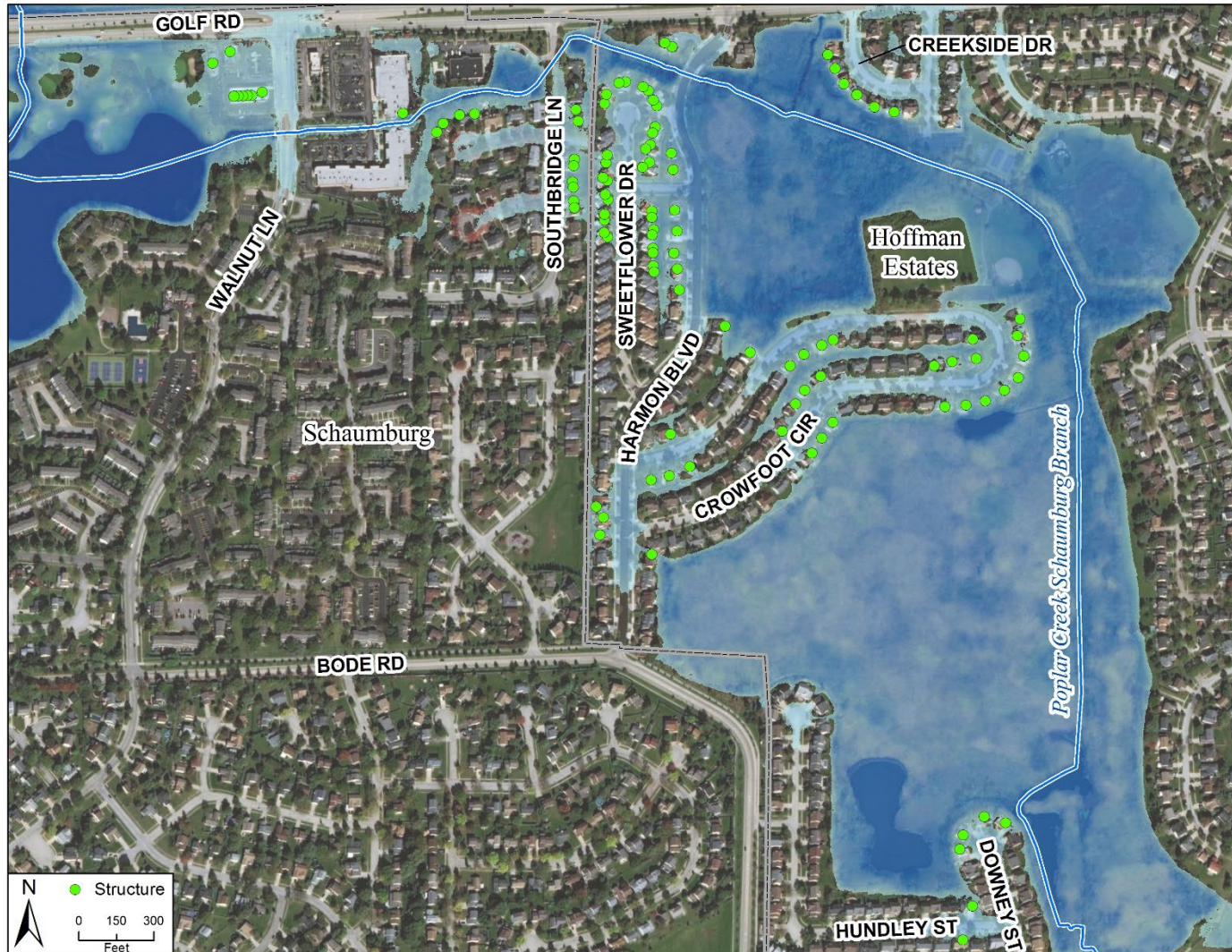
Hoffman Estates		
Flood Event	Structures	Total Loss
1% (100yr)	9	\$70,000

Schaumburg		
Flood Event	Structures	Total Loss
1% (100yr)	0	\$0



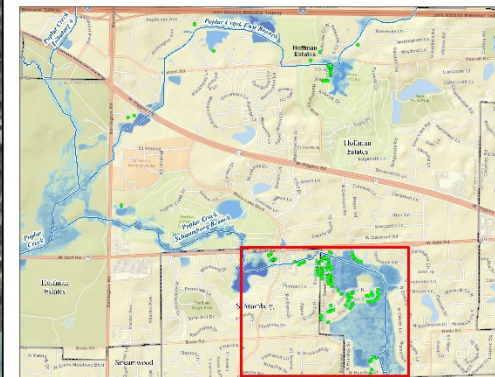


# Villages of Hoffman Estates & Schaumburg – 0.2% (500yr) Flood



Hoffman Estates		
Flood Event	Structures	Total Loss
1% (100yr)	9	\$70,000
<b>0.2% (500yr)</b>	<b>86</b>	<b>\$804,610</b>

Schaumburg		
Flood Event	Structures	Total Loss
1% (100yr)	0	\$0
<b>0.2% (500yr)</b>	<b>21</b>	<b>\$176,250</b>

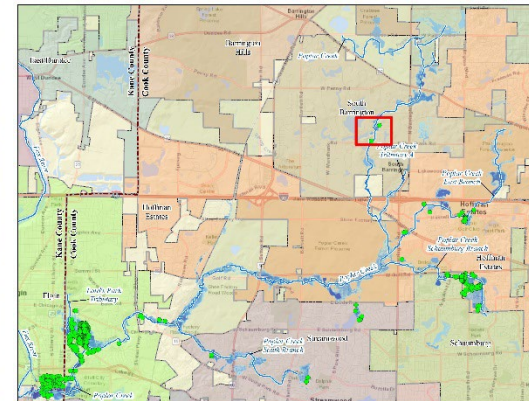




# Village of South Barrington

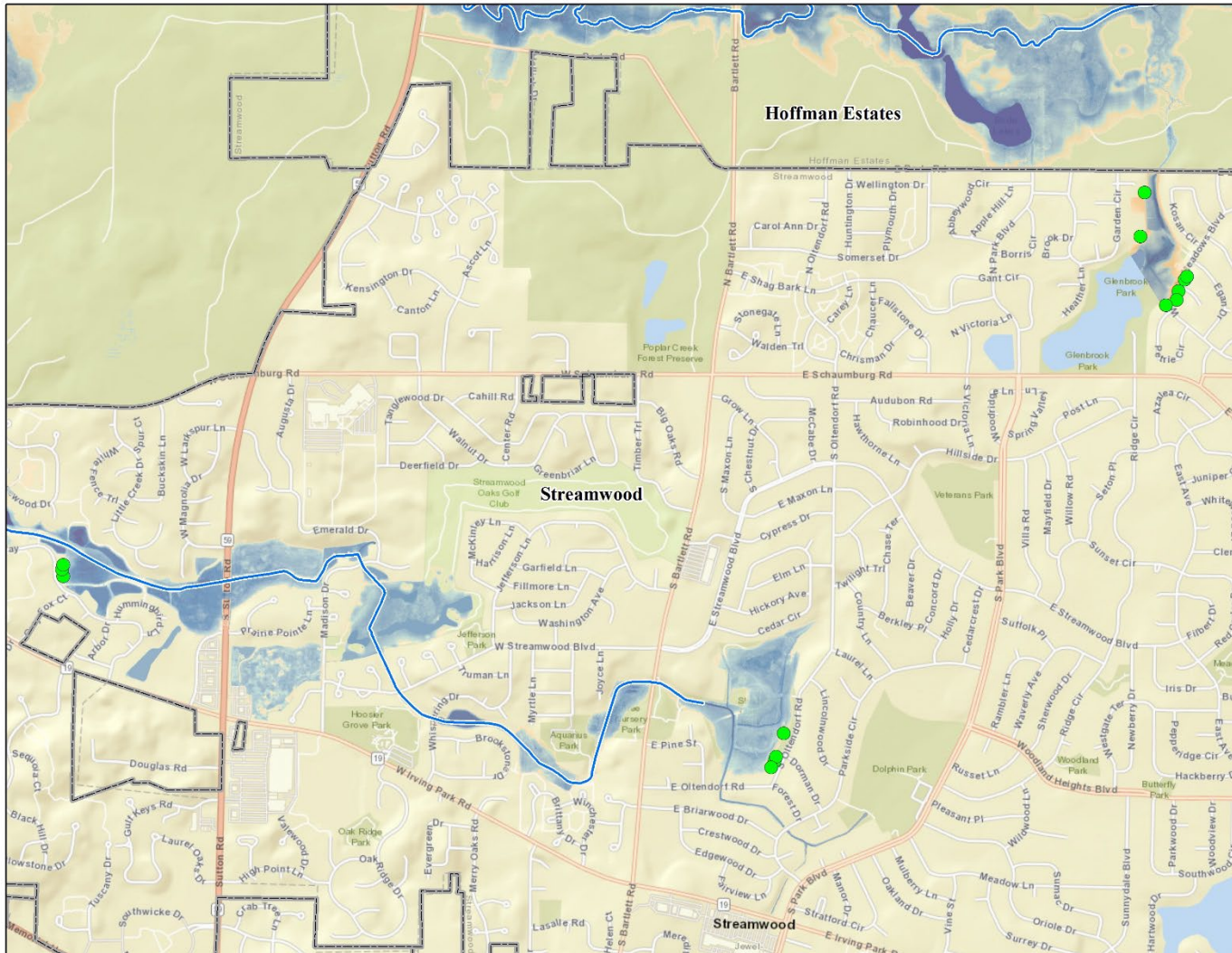


South Barrington		
Flood Event	Structures	Total Loss
10% (10yr)	0	\$0
4% (25yr)	0	\$0
2% (50yr)	0	\$0
1% (100yr)	0	\$0
0.2% (500yr)	2	\$73,930
AAL	2	\$450

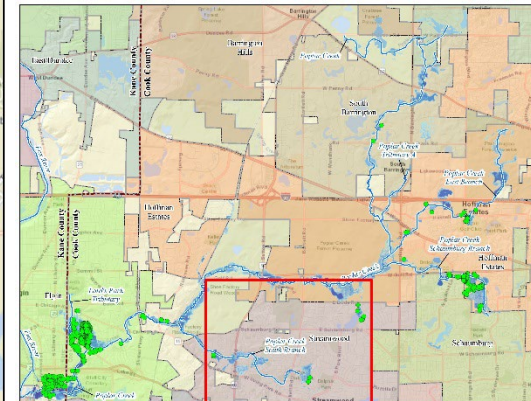




# Village of Streamwood




Streamwood		
Flood Event	Structures	Total Loss
10% (10yr)	0	\$0
4% (25yr)	0	\$0
2% (50yr)	0	\$0
1% (100yr)	0	\$0
0.2% (500yr)	13	\$56,140
AAL	13	\$350



# Structures at Flood Risk (SAFR) Site

Authentication Required

 http://illinoisfloodmaps.org is requesting your username and password.

User Name:

Password:

**Structures at Flood Risk in Illinois**

This web mapping application provides access to digital data about structures in Illinois and their flood risk. It is not intended for use by the general public.

The creators of this web mapping application have made every effort to ensure accuracy of this information. However, this site is under development and is subject to disruptions for updates and revisions. User defined capabilities of the site and access to flood risk data will 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

Choose Area:

Structures at Flood Risk in Illinois

Find address or place

For structure information:  
Click a Point  
OR select multiple structures with

Download Data for:

- Structures
- Survey Photos
- Depth/Analysis Grids

County Database:

GIS Format (shp):

Esri, HERE, Garmin, INCREMENT P, NGA, USGS | Esri, HERE

Powered by Esri



# Download data countywide or select structures

**Structures at Flood Risk in Illinois**

Find address or place

**Download Data for:**

- Structures
  - Selected Structures
  - # Selected: 157
  - GIS Format (shp)
- Survey Photos
- Depth/Analysis Grids

Start Download

**1417 E BEACH ST**

**Property Info:**

Parcel ID # (PIN)	0934451026
Building Value (\$)	25760
Stories	1
Area (Sq Ft)	1044
Foundation Type	Basement (or Garden Level)
Occupancy Type	Residential

**Flood Risk:**

Annual Percent Chance of Flooding	N/A
Percent Chance of Flooding within 30 years	N/A

Annual Chance of Flood	Depth from Finished Floor (ft)	Building Damage (%)	Building Losses (\$)
10%	5.06	43.22	11130
4%	6.37	48.84	12580
2%	7.35	52.35	13490
1%	8.2	53.2	13710
0.2%	9.24	54.24	13970

**Survey Data:**

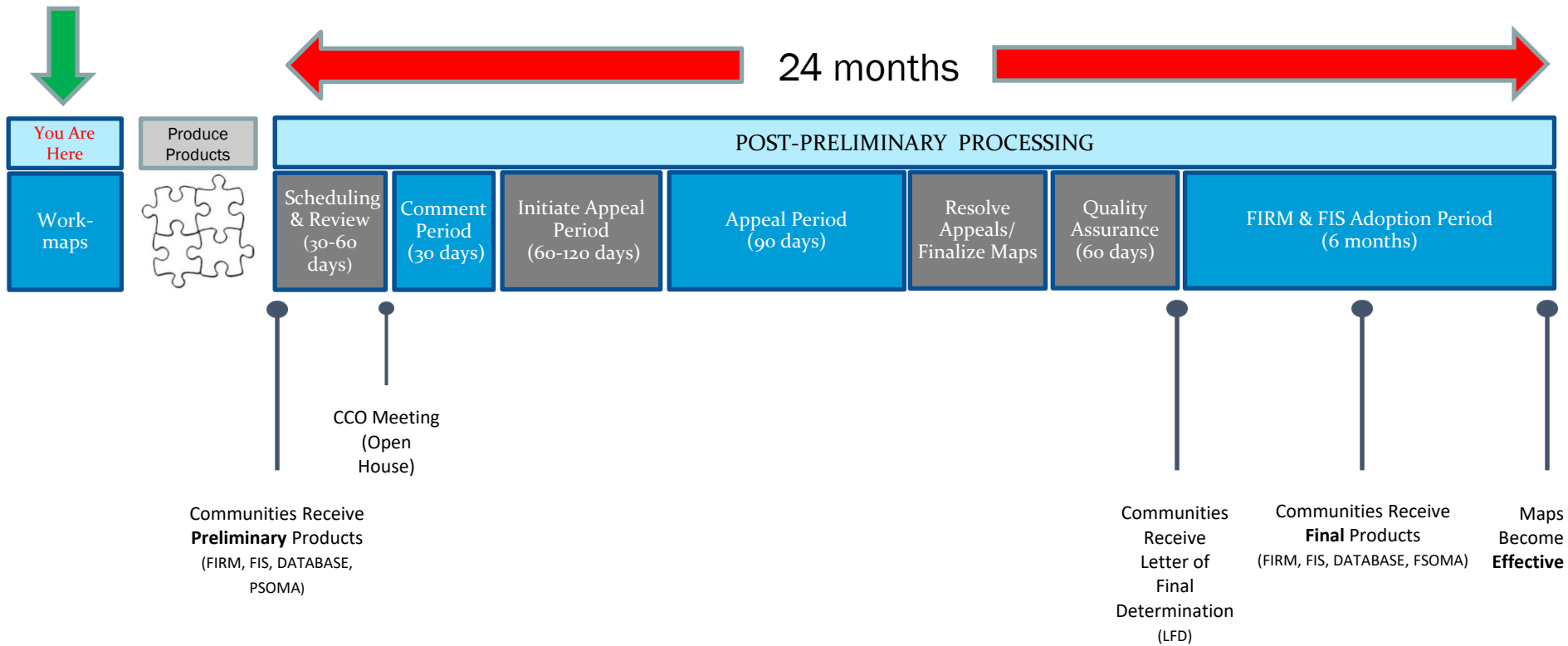
**Survey Photos:**

# Data Delivery

- Data will be available on Structures at Flood Risk (SAFR) site by the end of the month – CEOs, Floodplain Managers, and meeting attendees will be notified via email and given username and password
- FEMA Report will also be distributed by the end of the month
- Data can be viewed via site or downloaded and integrated into your own GIS system
- All data will be available for download – survey, property info, risk, estimated losses, depth grids, analysis grids



# Flood Insurance Rate Map (FIRM) Timeline



# We are asking for your input!

- Review the maps.
- ASK questions!
- Provide technical data and feedback.
  - Mapping discrepancies
  - Overtopped Roadways
  - Channel Improvements
  - New Bridges
  - New Studies
- 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

## **I** ILLINOIS

Illinois State Water Survey

**PRAIRIE RESEARCH INSTITUTE**

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