

IAFSM – Annual Conference  
3/13/2024

# The Happy Marriage between Engineering and GIS



Terra McParland, PE, CFM  
Flood Surveillance Program Manager

Pamela Brooks, GIS Specialist  
OWR GIS Manager

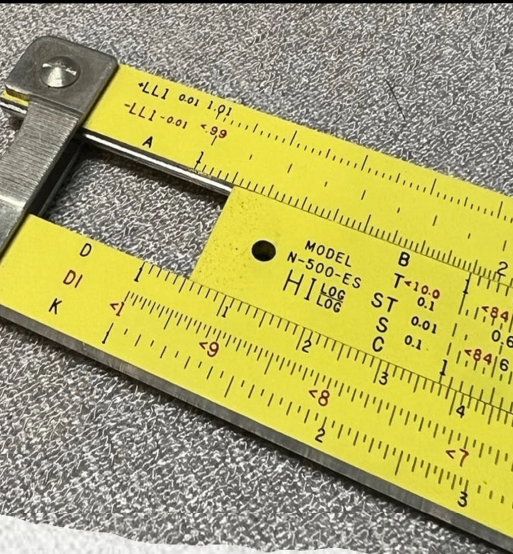
# AGENDA

---

- INTRODUCTION
- PROJECT EXAMPLES
  - ✓ DATA COLLECTION AND SHARING
  - ✓ PUBLIC DATA COLLECTION
  - ✓ ILLUSTRATING RISK
  - ✓ OUTREACH AND VISUALIZATION
- SUMMARY



# Evolution of Engineering Data



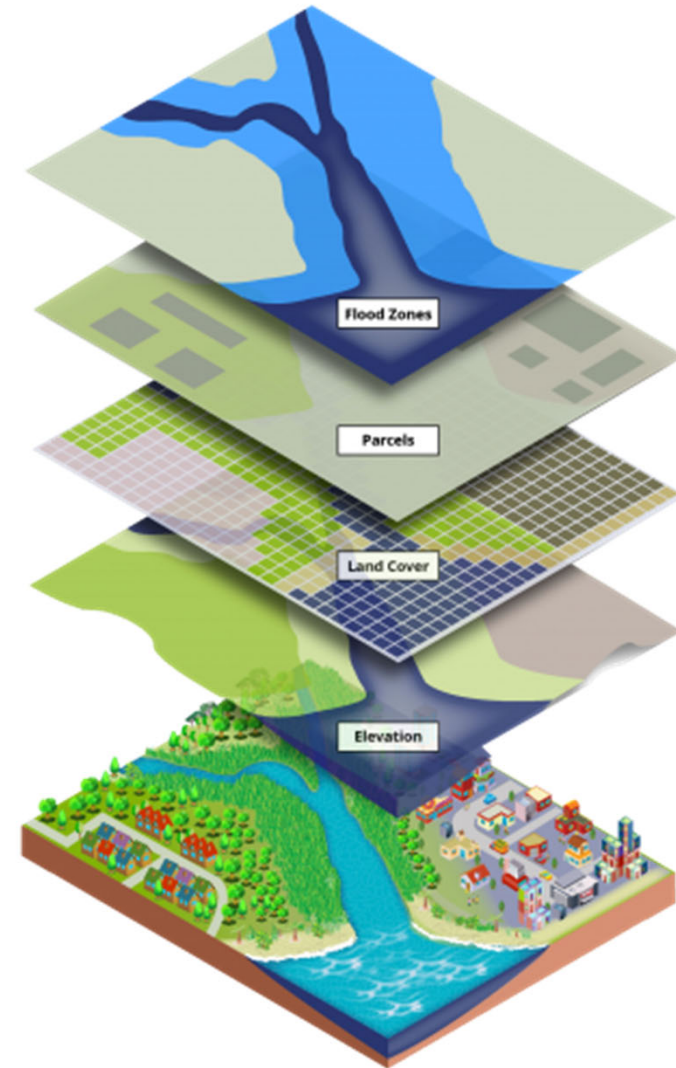
StructureID	Station	StructureDescr	StructureCategory	IF_Elevation	REC_E	SERV_E
559	323.41	NO TAX ID FOUND	COMMERCIAL	625.8	625.2	0
557	323.43	117 NORTHFIELD RD	PUBLIC	625.5	625.5	0
570	323.44	1809 WINNETKA RD	RESIDENTIAL	628.4	627	0
558	323.45	113 RIVERSIDE DR	RESIDENTIAL	629	628.1	0
560	323.45	111 RIVERSIDE DR	RESIDENTIAL	629.3	627.4	0
563	323.45	1839 WINNETKA AVE	RESIDENTIAL	628.2	627	0
565	323.45	1829 WINNETKA AVE	RESIDENTIAL	628.2	627.2	0
556	323.46	117 RIVERSIDE DR	RESIDENTIAL	629	628.1	0
555	323.47	123 RIVERSIDE DR	RESIDENTIAL	628.8	627.5	0
562	323.47	1843 WINNETKA AVE	RESIDENTIAL	628.5	626.6	0
569	323.47	1849 WINNETKA AVE	RESIDENTIAL	627.1	627.1	0
554	323.48	127 RIVERSIDE DR	RESIDENTIAL	628.7	627.2	0
564	323.48	1869 WINNETKA AVE	RESIDENTIAL	628.9	627.3	0
567	323.48	1861 WINNETKA AVE	RESIDENTIAL	628.3	626.8	0
568	323.48	1873 WINNETKA AVE	RESIDENTIAL	628.2	628.2	0
571	323.48	1857 WINNETKA AVE	RESIDENTIAL	628.2	626.9	0
553	323.49	133 RIVERSIDE DR	RESIDENTIAL	628.6	627.5	0
561	323.49	1887 WINNETKA RD	RESIDENTIAL	631	629.8	0
566	323.49	1879 WINNETKA AVE	RESIDENTIAL	630.1	628.8	0
546	323.5	161 NORTHFIELD RD	COMMERCIAL	626.5	625.9	0
552	323.5	139 RIVERSIDE DR	RESIDENTIAL	628.5	628.5	0
548	323.51	162 NORTHFIELD RD	COMMERCIAL	626.5	625.9	0
551	323.51	143 RIVERSIDE DR	RESIDENTIAL	628.2	626.9	0
550	323.52	149 RIVERSIDE DR	RESIDENTIAL	628.1	627.1	0
549	323.53	153 RIVERSIDE DR	RESIDENTIAL	627.9	626.6	0
547	323.54	157 RIVERSIDE DR	RESIDENTIAL	627.7	626.8	0
541	323.55	195-197 NORTHFIELD RD	COMMERCIAL	626.2	626.2	0
545	323.55	165 RIVERSIDE DR	RESIDENTIAL	627.4	625.9	0
544	323.56	171 RIVERSIDE DR	RESIDENTIAL	627.3	626.4	0
540	323.57	190 NORTHFIELD RD	COMMERCIAL	626.3	626.3	0
543	323.57	173 RIVERSIDE DR	RESIDENTIAL	627.2	626	0
542	323.58	183 RIVERSIDE DR	RESIDENTIAL	627.5	626.2	0
				627.7	626.6	0
				627.8	626.8	0



How Can Engineers Use GIS?

# GIS System and APPs

- GIS = Geographic Information System
- GIS Software – ArcGIS Pro (Desktop), ArcGIS Online
- Applications –
  - ✓ ArcGIS Field Maps
  - ✓ ArcGIS Instant Apps
  - ✓ ArcGIS Survey123
  - ✓ ArcGIS Dashboards
  - ✓ ArcGIS StoryMaps
  - ✓ The Living Atlas – Base Maps
  - ✓ ArcGIS Web AppBuilder

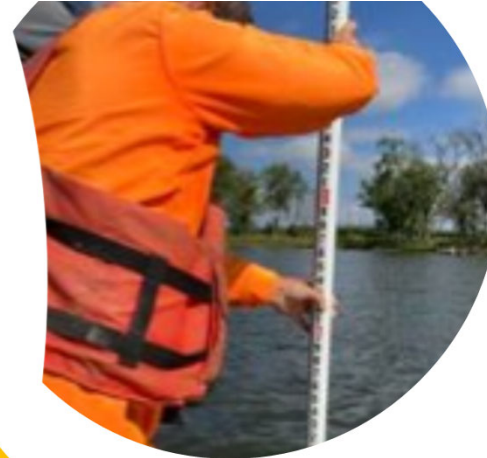


# Data collection and sharing

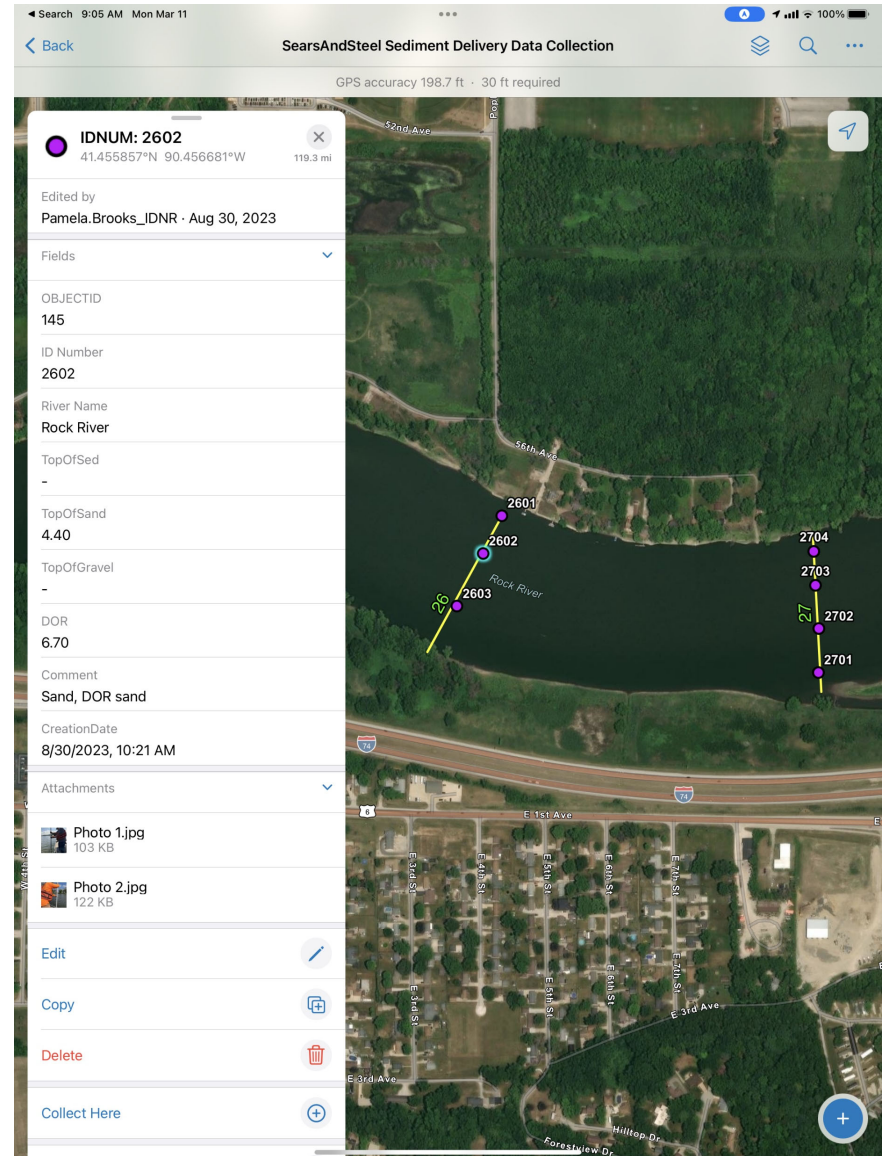
# Sediment Survey ArcGIS Field Maps and Instant Apps

## DAM REMOVAL STUDIES

- Document sedimentation upstream of dam
- Sediment Transport Model
- USACE/IEPA Permitting
- Live maps
- Multiple Device Data entry
- Efficient collection
- Consultant checked data and provided new needs



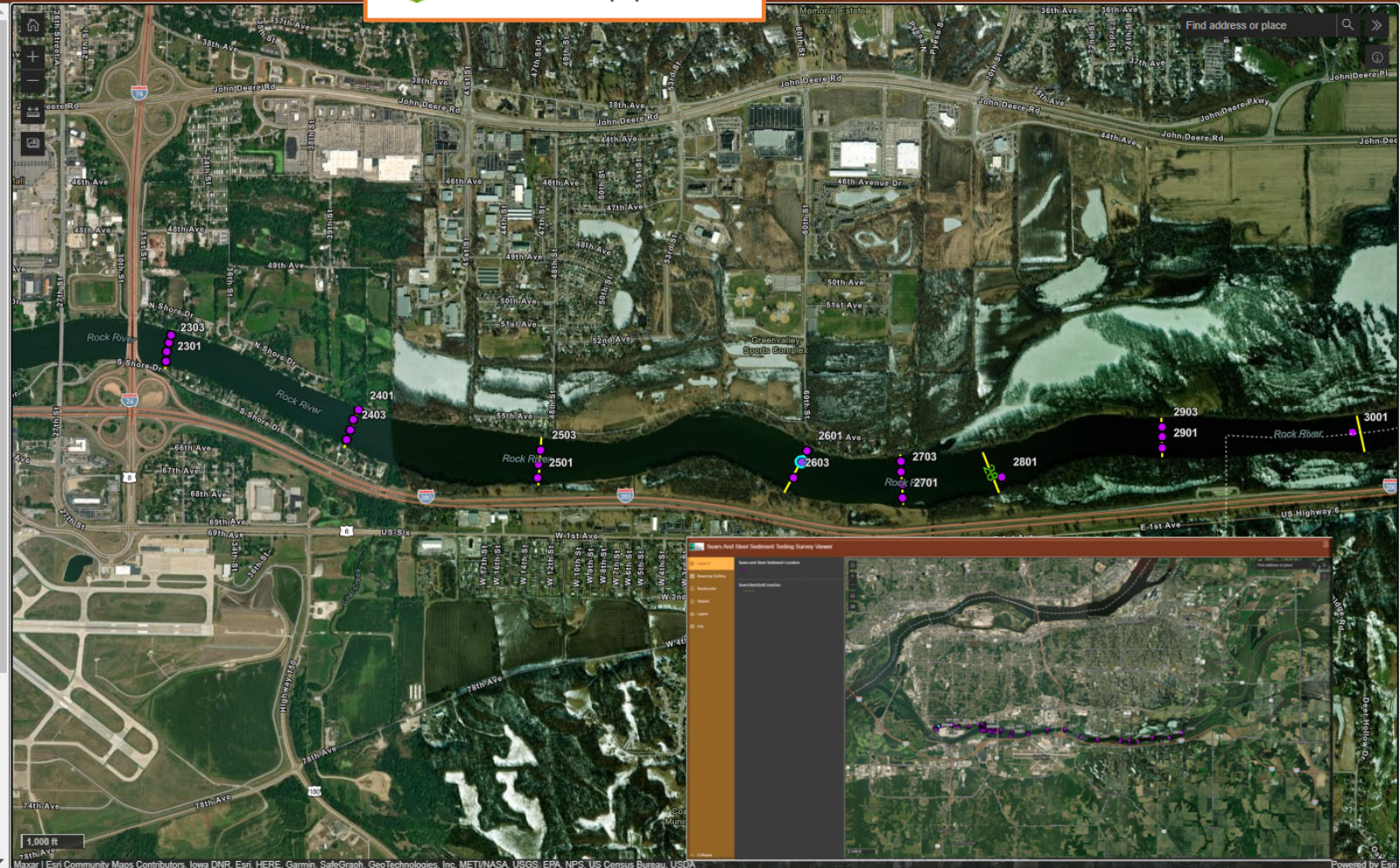
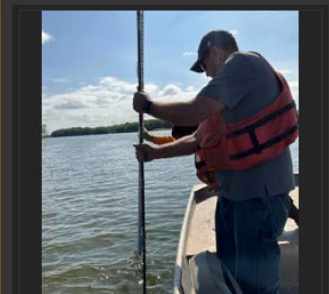
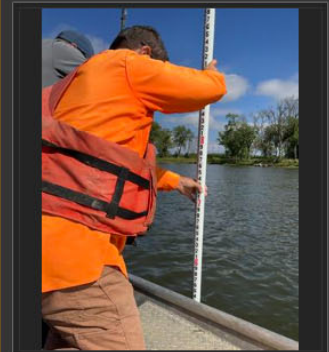
- Example using GIS mobile apps to collect Sediment data on the Rock River
- Since the project is **Map Centric** the collection relied on **ArcGIS Field Maps** for data collection
- The data can be collected on multiple devices and is shown here using an iPad to collect locations and add attribute information such as sediment type and depth of refusal
- Using ArcGIS Field Maps the survey took 1.5 days vs. the estimated week to collect the sediment information



- Legend
- Basemap Gallery
- Bookmarks
- Details
- Layers
- Info

IDNUM: 2602

OBJECTID	145
ID Number	2602
River Name	Rock River
TopOfSed	
TopOfSand	4.40
TopOfGravel	
DOR	8.70
Comment	Sand, DOR sand
CreationDate	8/30/2023, 10:21 AM



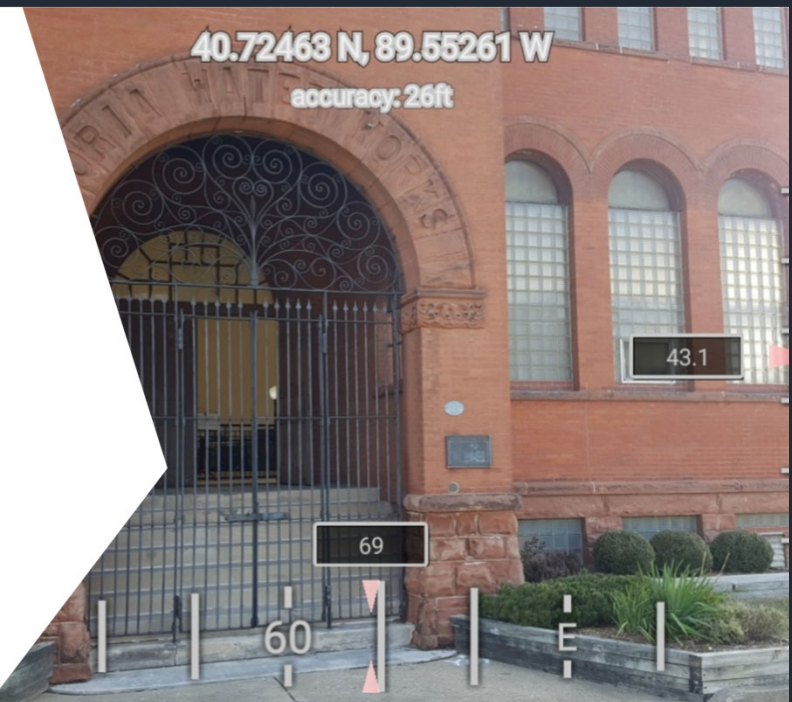
Smaller view of the survey viewer interface, showing a zoomed-in view of the river and testing points.

<< Collapse



# Structures at Flood Risk (SAFR)

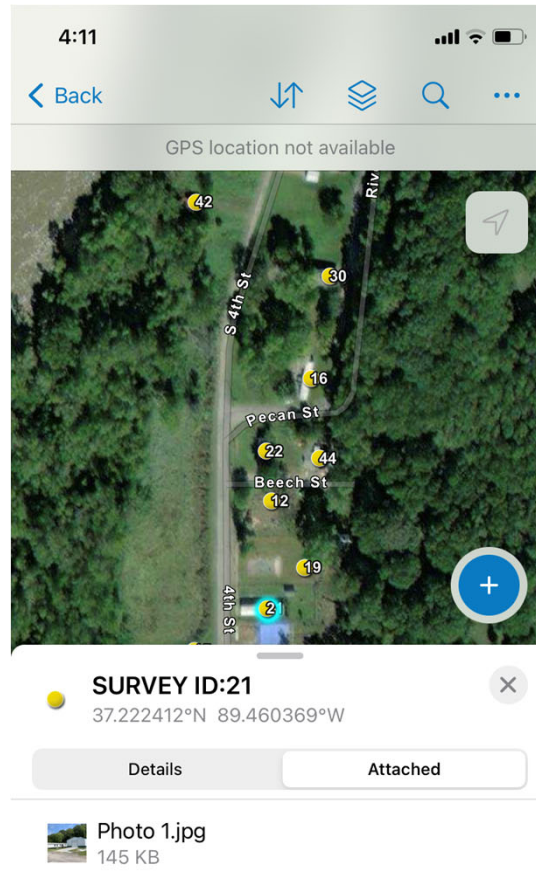
## ArcGIS Field Maps, Dashboard



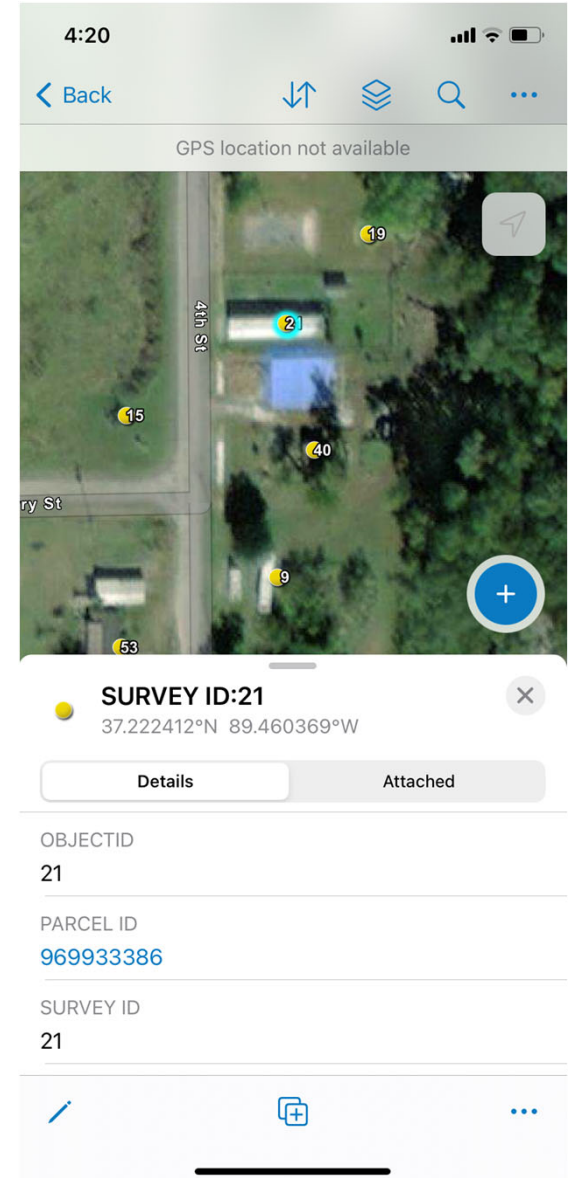
### SURVEY DATA

- Key for SAFR is structure data
- Use GIS to collect structure data for at risk locations
- Data used for Damage Assessment
- Elevations (first floor, low entry)
- Structure notes (foundation type, no. of stories, etc.)



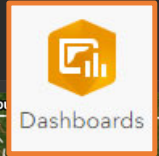


- Pre-determined structures prone to flood. Often referenced as target structures



# Silver Jackets Middle Mississippi Dashboard

Target Structures to Survey in Phase 2



Select a County **All** Alexander Brown Cass Greene Jackson Morgan

# 144

Click Structure in List below to Filter and Unfilter Structure in Map View

- Date Edited: 9/15/2021, 1:53 PM
- SurveyID: 2  
County: Alexander  
Date Edited: 9/22/2021, 9:04 AM
- SurveyID: 3  
County: Alexander  
Date Edited: 9/21/2021, 2:33 PM
- SurveyID: 4  
County: Alexander  
Date Edited: 9/21/2021, 2:29 PM
- SurveyID: 5  
County: Alexander  
Date Edited: 7/20/2021, 5:48 PM
- SurveyID: 6  
County: Alexander  
Date Edited: 7/20/2021, 5:48 PM
- SurveyID: 7  
County: Alexander  
Date Edited: 9/15/2021, 2:18 PM
- SurveyID: 8  
County: Alexander  
Date Edited: 9/15/2021, 1:53 PM
- SurveyID: 9  
County: Alexander  
Date Edited: 7/20/2021, 5:48 PM
- SurveyID: 10  
County: Alexander

**Silver Jackets Middle Mississippi Dashboard**  
Target Structures to Survey in Phase 2

# 144

Click Structure in List below to Filter and Unfilter Structure in Map View

- SurveyID: 9  
County: Alexander  
Date Edited: 7/20/2021, 5:48 PM
- SurveyID: 12  
County: Alexander  
Date Edited: 7/20/2021, 5:48 PM
- SurveyID: 15  
County: Alexander  
Date Edited: 7/20/2021, 5:48 PM
- SurveyID: 19  
County: Alexander  
Date Edited: 7/20/2021, 5:48 PM
- SurveyID: 21  
County: Alexander  
Date Edited: 9/15/2021, 1:08 PM
- SurveyID: 22  
County: Alexander  
Date Edited: 9/15/2021, 11:41 AM
- SurveyID: 40  
County: Alexander  
Date Edited: 7/20/2021, 5:48 PM
- SurveyID: 44  
County: Alexander  
Date Edited: 9/15/2021, 1:19 PM
- SurveyID: 53  
County: Alexander  
Date Edited: 9/15/2021, 1:14 PM

**SURVEY ID: 21**  
Editor: Bradley.hoene\_IDNR  
SURVEY ID: 21

**MidMSPPhoto**  
Structures

State of Missouri, Maxar, Microsoft | CoreLogic | Esri Community Maps Contributors, County of Cape Girardeau, Scott County, MO, Missouri Dept. of Conservation, Missouri DNR, ... Powered by Esri

High Water Mark Documentation Form

River/Stream: \_\_\_\_\_ Date: \_\_\_\_\_  
 Community Name: \_\_\_\_\_ Date of Flood Peak: \_\_\_\_\_

Name	Date modified	Type
image000000 (5).jpg	7/26/2022 4:02 PM	JPG File
image000000 (6) (1).jpg	7/26/2022 4:02 PM	JPG File
image000000 (6).jpg	7/26/2022 4:02 PM	JPG File
image000001 (4).jpg	7/26/2022 4:02 PM	JPG File
image000001 (5).jpg	7/26/2022 4:02 PM	JPG File
image000002 (4).jpg	7/26/2022 4:02 PM	JPG File
image000003 (1).jpg	7/26/2022 4:02 PM	JPG File
image000004 (2).jpg	7/26/2022 4:02 PM	JPG File
image000004 (3).jpg	7/26/2022 4:02 PM	JPG File
image000005 (1).jpg	7/26/2022 4:02 PM	JPG File
image000005 (2).jpg	7/26/2022 4:02 PM	JPG File
image000006.jpg	7/26/2022 4:02 PM	JPG File
image000007 (1).jpg	7/26/2022 4:02 PM	JPG File
image000007 (2).jpg	7/26/2022 4:02 PM	JPG File
image000008 (1).jpg	7/26/2022 4:02 PM	JPG File
image000008 (2).jpg	7/26/2022 4:02 PM	JPG File
image000009 (1).jpg	7/26/2022 4:02 PM	JPG File

2019-03-15_Freepo..._NHendersonAve_H...	3/18/2019 2:13 PM	JPG File	280 KB
2019-03-15_Freepo..._NWilburAve_Churc...	3/18/2019 2:18 PM	JPG File	313 KB
2019-03-15_Freepo..._ShermanAve_Home...	3/18/2019 2:19 PM	JPG File	283 KB

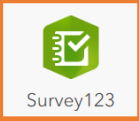
# Flood Surveillance and High Water Marks

## ArcGIS Survey123, Instant Apps

### DOCUMENT FLOOD IMPACTS DURING EVENT

- Type of flooding (riverine/urban)
- Area of flooding (road, structure)
- Take notes about flooding impacts
- Photographs of flooding
- Set high water marks of event





- The project is **Form Centric**, so the data collection relied on **ArcGIS Survey123** mobile GIS technology
- **Two** separate surveys were developed for this project to collect two different types of information
  - **First** to collect locations and associated photos of flooded structures, vehicles and road locations
  - **Second** to record High-Water Marks (HWM) locations, photos and information
- The survey data can be collected on multiple devices and is shown here on an iPad

**Flood Surveillance Survey Form**

Flood Event Name \*  
Enter the Name of the Incident or NWS Event

Select Date and Time \*  
Choose Date from Calendar  
Wednesday, March 6, 2024

Team Name  
Please Enter Name of Team

River in Illinois  
Please Choose one River in the Drop-down.

Choose the Closest Gauge  
Please choose one Gauge from the Drop-Down

Choose a County  
Please Choose the County where you are entering flood information

What is your Location?  
Enter an Address if known or Choose your location on the Map

Choose a Location on the Map \*  
Enter an Address in the Find Box or Choose a Location using the Current Location in the Map tools.

What Community, Neighborhood or Place  
What Community, Neighborhood or Place is the data being collected? Please enter a name below.

**Flood Section**  
Overview Notes

Is the Area Flooding? \*  
Choose Yes or No below:  
 Yes  No

**OWR Survey to Collect High Water Mark Information**

Survey Party \*  
Please Enter the Name of your Survey Party  
TEAM OWR

Enter Date and Time \*  
Please choose data and time below if not correct  
Wednesday, March 6, 2024 11:13 AM

Date of Flood Peak \*  
Wednesday, March 6, 2024

County  
Please choose a County from the List below

Enter a River or Stream \*  
Please choose Major Rivers from a drop-down or enter Stream name in Other category  
Mississippi

Data Collection Location \*  
Use Current location or Choose a location on the Map

Road Name  
Please Enter a Road Name or Intersection of Road below as text

Community  
Please enter the Name of the community if known.

HWM Number \*  
Please enter a numeric value below

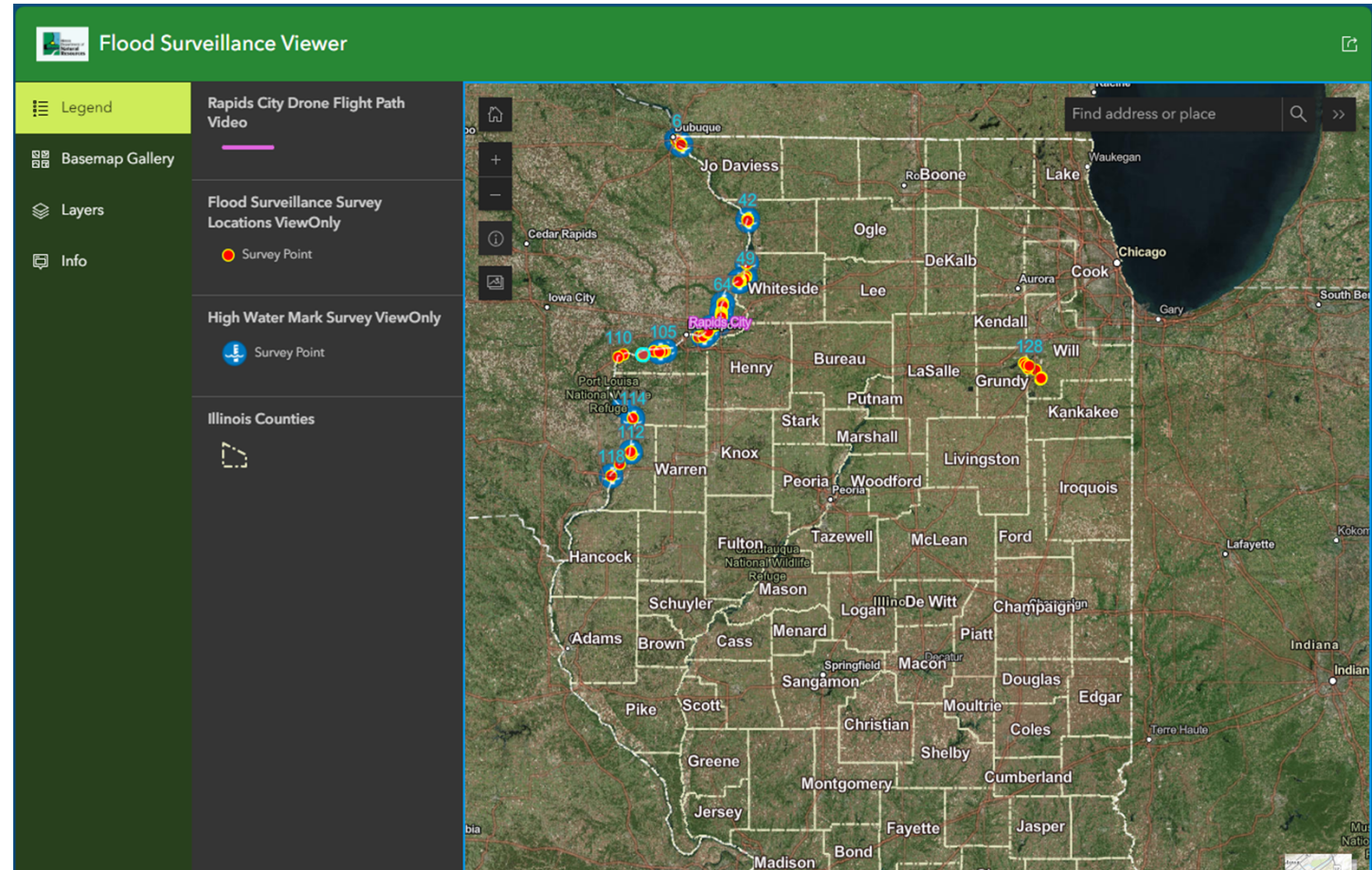
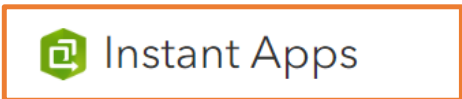
HWM Quality  
Please select one HWM Quality category below  
 Excellent  Good  Fair  Poor  Other

Height of Location \*  
Location of Structures in below Options in Ft in Reference to to HWM. Distance **NOT** Height is needed here in Feet.

Location of Measurement  
Please choose structure and position below. **One Choice ONLY**  
Bridge Dam Culvert Other

**ArcGIS Survey123 Web Designer Version – Shared in ArcGIS Online**

- Developed using **ArcGIS Sidebar Instant App**
- Viewer Displays both Flood Surveillance and HWM locations collected by OWR staff on the ground
- Combines the two different surveys coming in from the **two** separate GIS survey layers
- GIS Layers were shared with IDNR management and IEMA for **Near Real-Time** situational awareness



[Flood Surveillance Viewer \(arcgis.com\)](https://arcgis.com)

- Zoomed in View of Flood Surveillance data collected by OWR staff on the ground along the Mississippi River
- Users can select a location on the map and see a detailed side list of attributes and photos associated with the Flooded structure or location – **Click on photos to enlarge**

The screenshot displays the 'Flood Surveillance Viewer' interface. The main map shows a section of the Mississippi River with several data points marked by colored circles and numbers (e.g., 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100). A red circle highlights a specific data point labeled '82'. The left sidebar contains a 'Legend' section, a 'Basemap Gallery', and an 'Info' section. The 'Info' section is expanded, showing details for the selected location: 'Flooded structures', 'River in Illinois: Mississippi', 'Select Date and Time: May 2, 2023', 'Team Name: Flood Surveillance', 'What Community, Neighborhood or Place: Hampton', and 'What is your Location?'. Below the 'Info' section, there are three thumbnail photos of flooded structures. The main map area includes a search bar at the top right, a scale bar at the bottom left, and a small inset map at the bottom right. The map shows various landmarks such as 'Argo', 'Great Oaks', 'Hampton', 'Campbell Island', 'Rapid City', and 'Port Byron'.

- Example View of HWM location collected by OWR staff on the ground
- User can select a location and see information and photos related to the HWM
- Flood Surveillance Viewer Developed within ArcGIS Online

**Flood Surveillance Viewer**

High Water Mark Survey :  
Mississippi SurveyID:6

Legend  
Basemap Gallery  
Layers  
Info

Enter a River or Stream	Mississippi
Enter Date and Time	May 1, 2023
HWM Elevation	594.19
HWM Found On	Neighboring garage and grass
HWM Mark Type	Stake with Flagging
Survey Party	TEAM OWR
HWM Number	4
HWM Quality	Good
HWM Type	Debris Line
Other	
Other - HWM Mark Type	
Other - HWM Quality	
Other - HWM Type	
Surveyor Entry?	Yes

Other - HWM Mark Type  
Other - HWM Quality  
Other - HWM Type

Surveyor Entry? Yes

1 of 2

200 ft

Esri, Maxar, Earthstar Geographics, CNES/Airbus DS, and the GIS User Community | Esri Community Maps Contributors, Iowa DNR, © OpenStreetMap, Microsoft, Esri, Tom... Powered by Esri





# Stormwater Drainage Investigation

## ArcGIS Field Maps, Instant Apps

### EAST ST. LOUIS / PRAIRIE DUPONT WATERSHED

- Triggered by July 2022 storm events (6" rain)
- Infrastructure Condition Assessment
- Application was highlighted in FEMA Risk Management Article

**Welcome to the IDNR Prairie Du Pont Watershed Storm Sewer Survey**  
Developed Using ESRI Instant Apps

[Click below to Open Application](#)

[Link to Application: Prairie Du Pont Watershed Storm Sewer Survey Information Viewer \(acgis.com\)](#)



# Prairie Du Pont Watershed Storm Sewer Survey Information Viewer



## Legend

Basemap Gallery

Details

Layers

Info

Filter

### Piat Place Field Maps Storm Sewer Survey Functional Level

- Good
- Poor
- Damaged
- Unknown

### Piat Place IDNR Flood Survey Data

- 

### East St. Louis Field Maps Storm Sewer Survey Function Level

- Good
- Poor
- Damaged
- Unknown

### East St. Louis IDNR Flood Survey Data

- 

### Piat Place Storm Sewer Survey Boundary

- Area 2

### Piat Place Storm Sewer Survey Boundary

- Area 1

### East St. Louis Storm Sewer Survey Boundary

- 

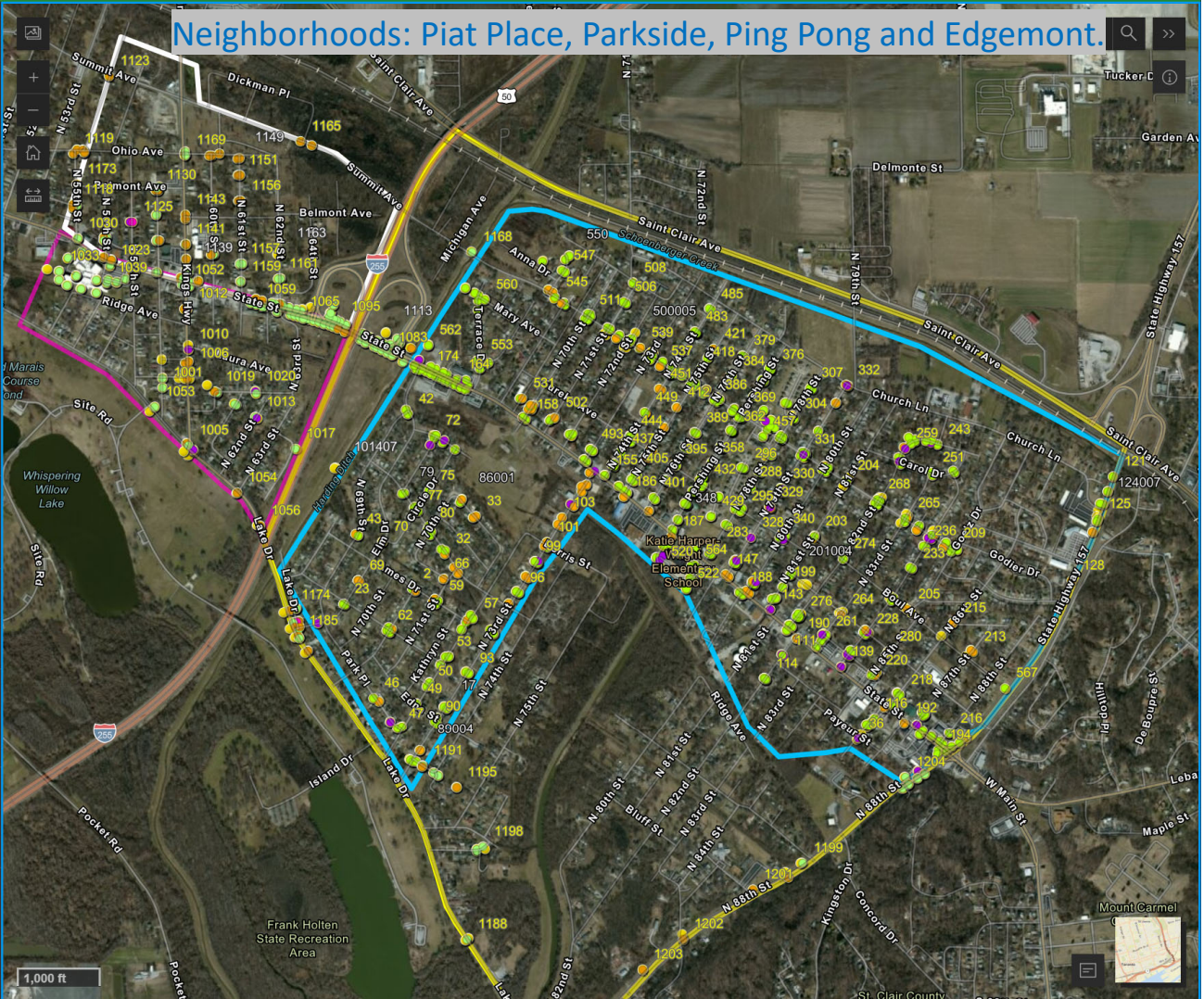
### East St. Louis Project Boundary

- 

<< Collapse



## Neighborhoods: Piat Place, Parkside, Ping Pong and Edgemont.



Legend

Basemap Gallery

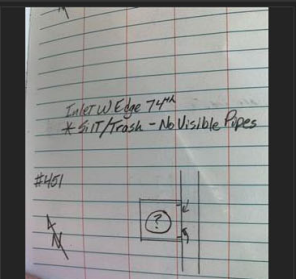
Details

Layers

Info

Filter

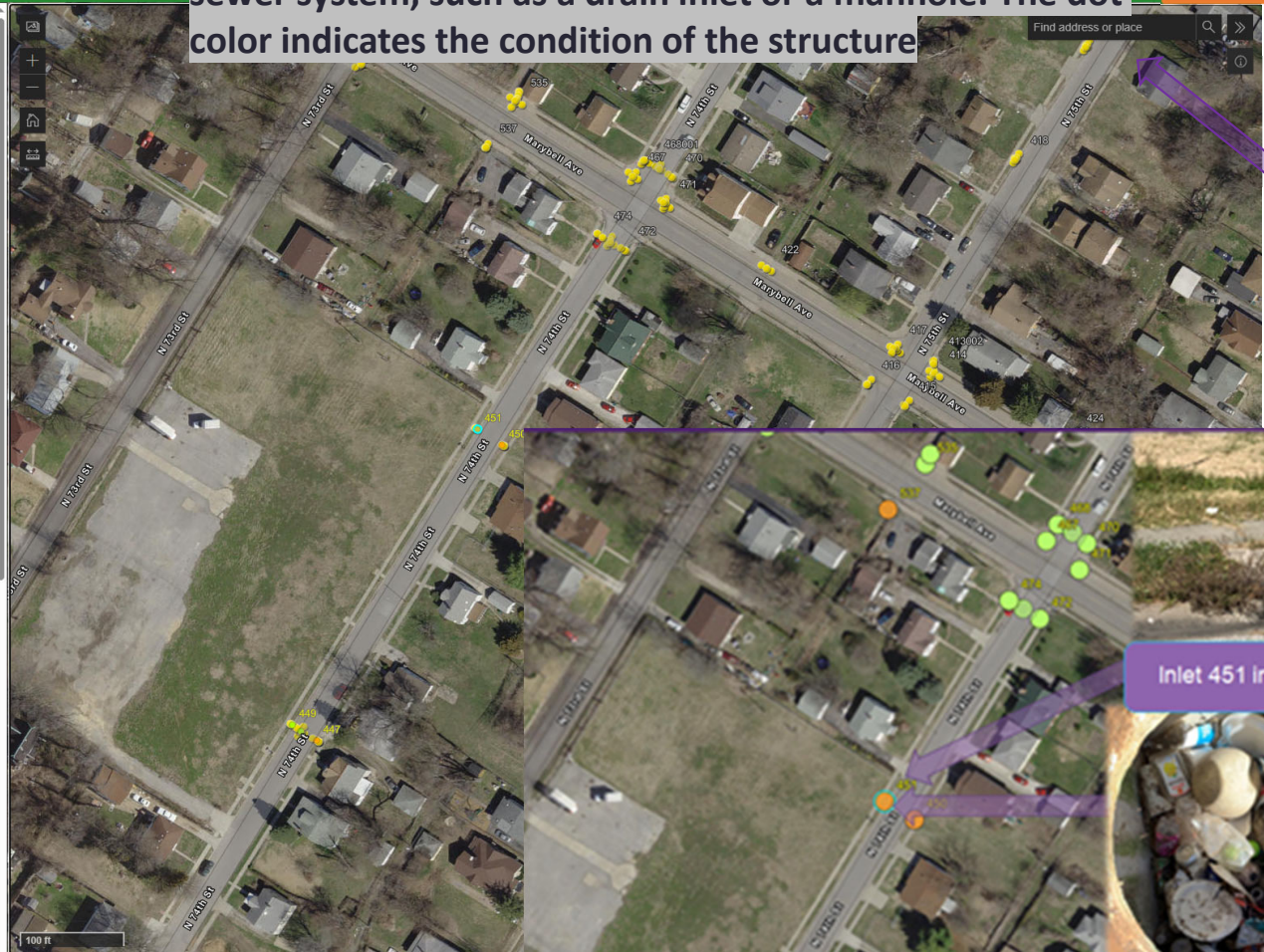
Survey ID Number: 451	
SurveyID	451
Elevation	418.980
Comments	Over 1ft of silt and garbage, no pipes visible
SSType	Inlet
Function Level	Poor
CreationDate	October 17, 2022
Creator	Bradley.hoene_IDNR
OWRCODE	308
OWRDESC	Drop Inlet



Each dot on the map represents a piece of the storm sewer system, such as a drain inlet or a manhole. The dot color indicates the condition of the structure

Instant Apps

To quickly find your own home or business, type the address into the search box in the upper right corner of the map



Inlet 451 In Poor Condition



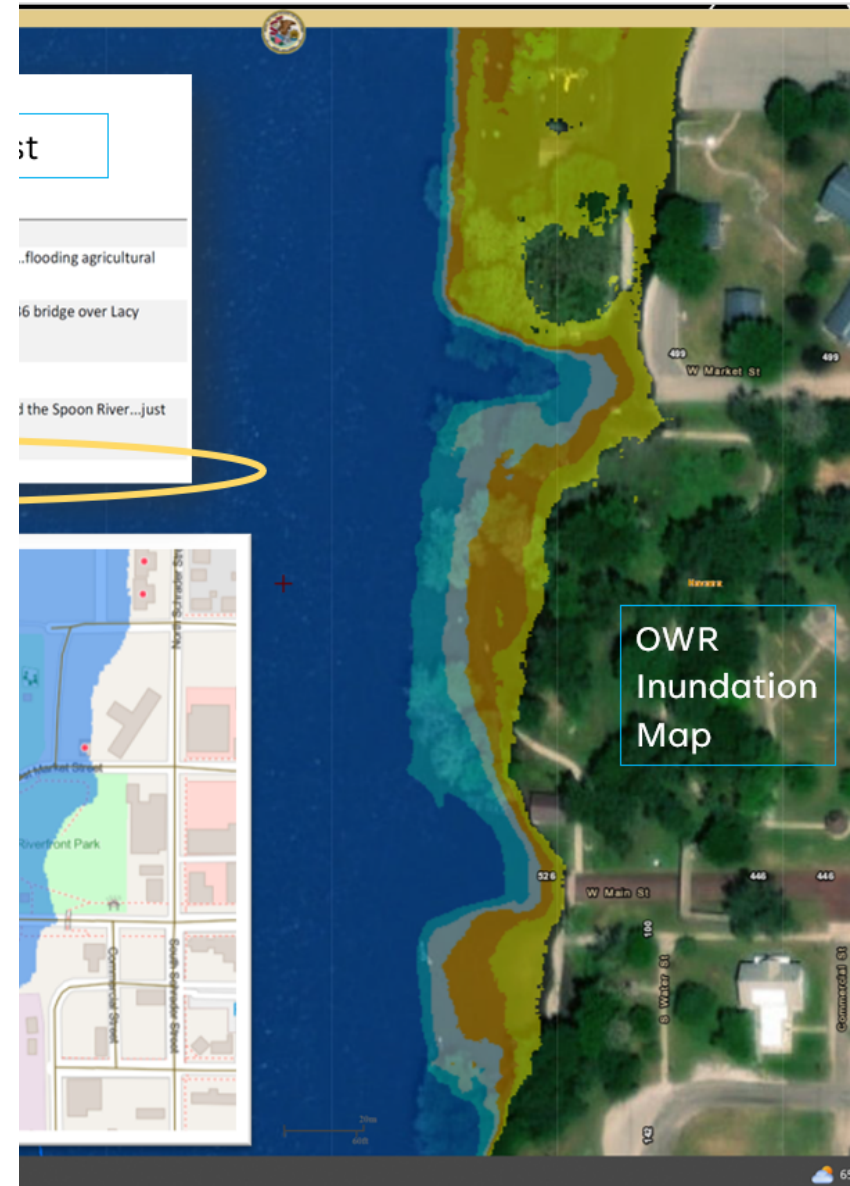
User can click on a dot to see the surveyor's notes regarding condition, a picture of the structure, and the surveyor's sketch

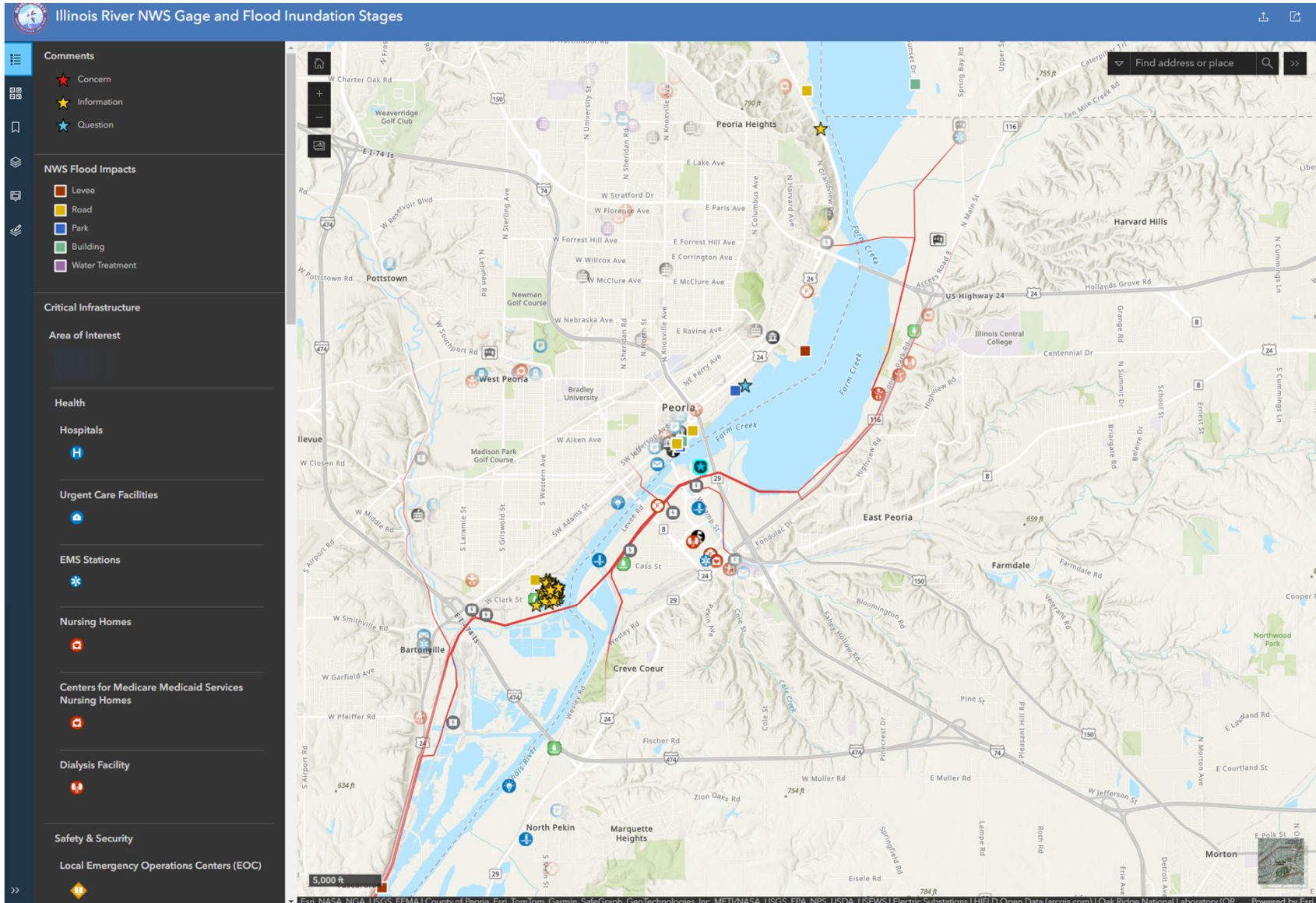
Public data collection

# Flood Stage/ Impacts Update Instant Apps

## PILOT—PEORIA AND HAVANA GAUGES

- Flood impacts noted on website
- Gauges hit minor/moderate often
- Requested emergency manager input for updated flood impacts using map interface
- Pilot project





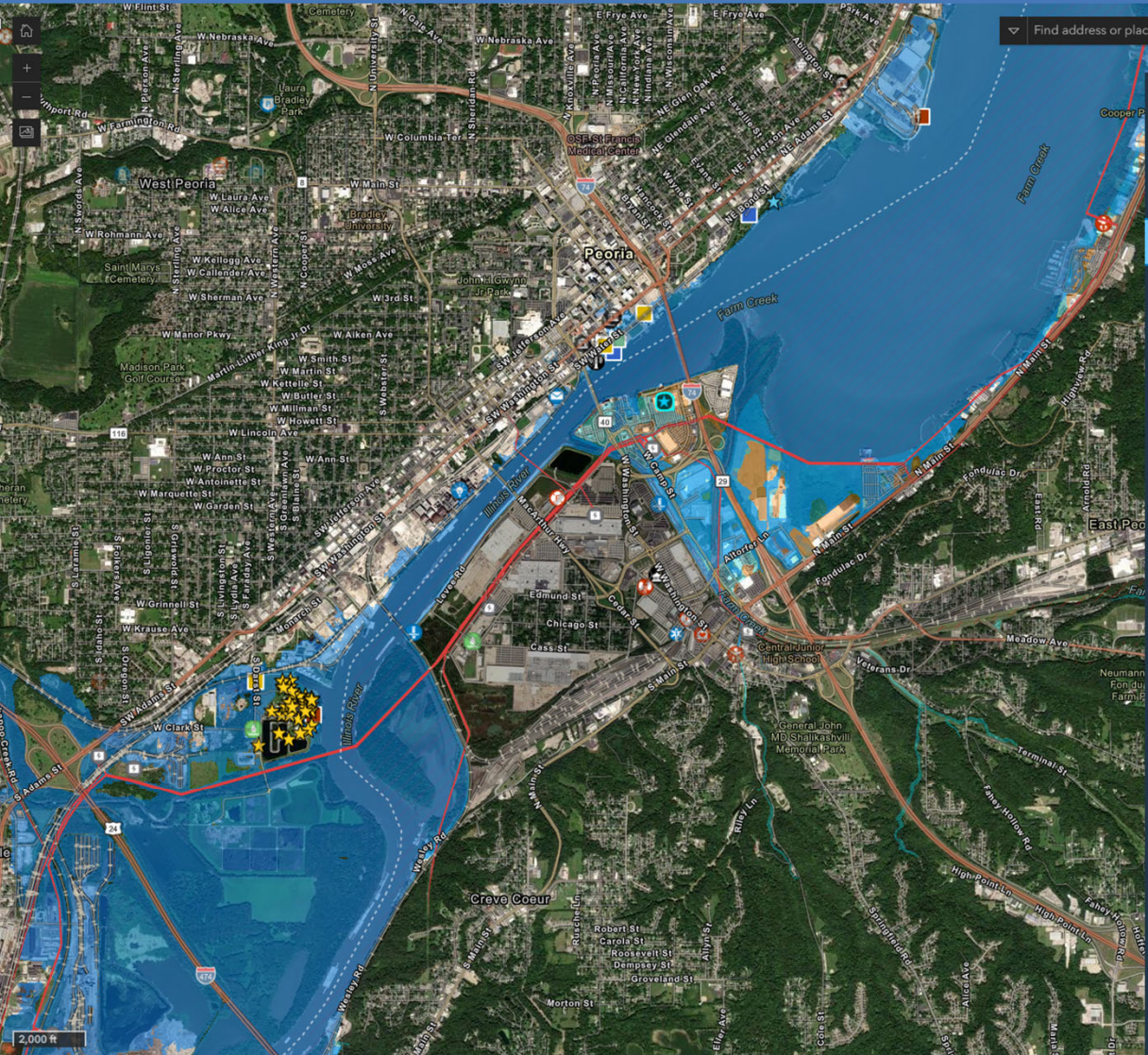
- This public input application was developed by USACE using an Instant App.

- The map shows Critical infrastructure layers combined with areas of concern due to flooding – Peoria Area Example



**Editor**

- Settings
- Edit features
  - Select
- Create features
  - Filter types
- Comments
  - Concern
  - Information
  - Question



Find address or place

- Comments
- Peoria County Illinois River Mitigation Plan
- River Miles
- River Gages - Observed River Stages
- NWS Flood Impacts
  - Critical Infrastructure
  - Transportation
  - Structure Inventory
  - Flood Protection
  - Depth Grids
- Inundation Extents
  - 0.2% Annual Chance Exceedance
  - 0.5% Annual Chance Exceedance
  - 1% Annual Chance Exceedance
  - 2% Annual Chance Exceedance
  - 4% Annual Chance Exceedance
  - 10% Annual Chance Exceedance
- FEMA FIRMette - Flood Hazard Zones
- Elevation



## Fox River/Chain of Lakes Boating Impact Mapping ArcGIS Survey123 and Instant Apps

### DOCUMENT INSTANCES OF BOATS HITTING BOTTOM

- Documented historical records in map
- Allows users to input data to be added to the map



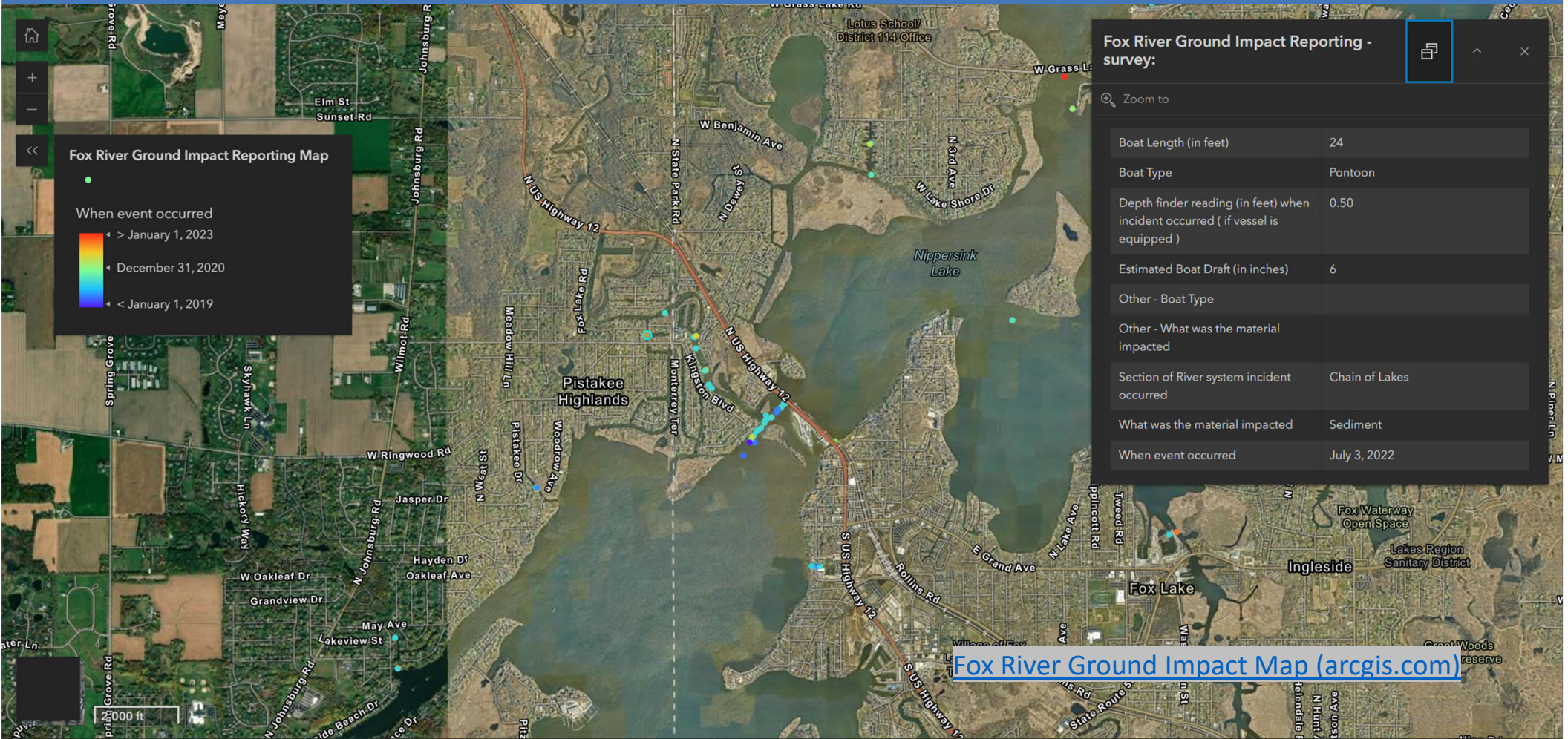
- This project relied on questions and data that originated from a spreadsheet developed in a Microsoft Survey. This survey was migrated to **ArcGIS Survey123** technology by one of our engineers
- The data is entered by the public into the survey shown here using a Google Chrome Browser
- Boaters can fill in information related to individual incidents
- Once data is entered and a location is identified on the map, this location and data can be viewed in near-real time in a GIS Viewer Application

The screenshot displays the 'Fox River Ground Impact Reporting' survey form. At the top, it shows 'Reset Saved' and a user profile for 'Pamela'. The form includes a detailed introduction for boaters, followed by input fields for 'Name' (First Last), 'Contact Information' (email or phone number), 'Boat Type' (dropdown menu), 'Boat Length' (units in feet), 'Estimated Boat Draft' (units in inches), and 'Depth Finder Reading' (feet where incident occurred). A 'Location' section features a map of the Fox River area with a search bar and instructions: 'Pan the map to the proper area', 'Zoom in to find the exact area', 'Click on location of impact', 'A blue marker should appear at this location', and 'Or select Find My Location on the map(only if at location where impact occurred)'. Below the map, there is a 'Type of Material Impacted' dropdown menu. A 'Survey123' logo is visible in the top right corner of the interface.

[Fox River Ground Impact Reporting \(arcgis.com\)](https://arcgis.com)



# Fox River Ground Impact Map



**Fox River Ground Impact Reporting Map**

When event occurred

- < January 1, 2023
- December 31, 2020
- < January 1, 2019

**Fox River Ground Impact Reporting - survey:**

Zoom to

Boat Length (in feet)	24
Boat Type	Pontoon
Depth finder reading (in feet) when incident occurred ( if vessel is equipped )	0.50
Estimated Boat Draft (in inches)	6
Other - Boat Type	
Other - What was the material impacted	
Section of River system incident occurred	Chain of Lakes
What was the material impacted	Sediment
When event occurred	July 3, 2022

Fox River Ground Impact Map (arcgis.com)

# Fox River/Chain of Lakes Flood Reporting

## Survey123

### REQUEST PUBLIC FLOODING DATA INPUT

- Allows user to input location, upload photos and document impacts
- Uploaded data will be used to help identify future flood control projects and request funding

#### Fox River/Chain of Lakes Flood Reporting

This form is to be utilized by residents of the Chain of Lakes system to document when and where flooding occurs. The information will be logged into a database to identify operation or maintenance needs. The data provided is critical in determining potential operations and maintenance of the system. The Office of Water Resources may pursue project funding to reduce impacts. The more documentation that is received, the easier the agency is able to determine the priority of future actions.

**Name\***  
First Last

**Contact Information\***  
Should further outreach be required

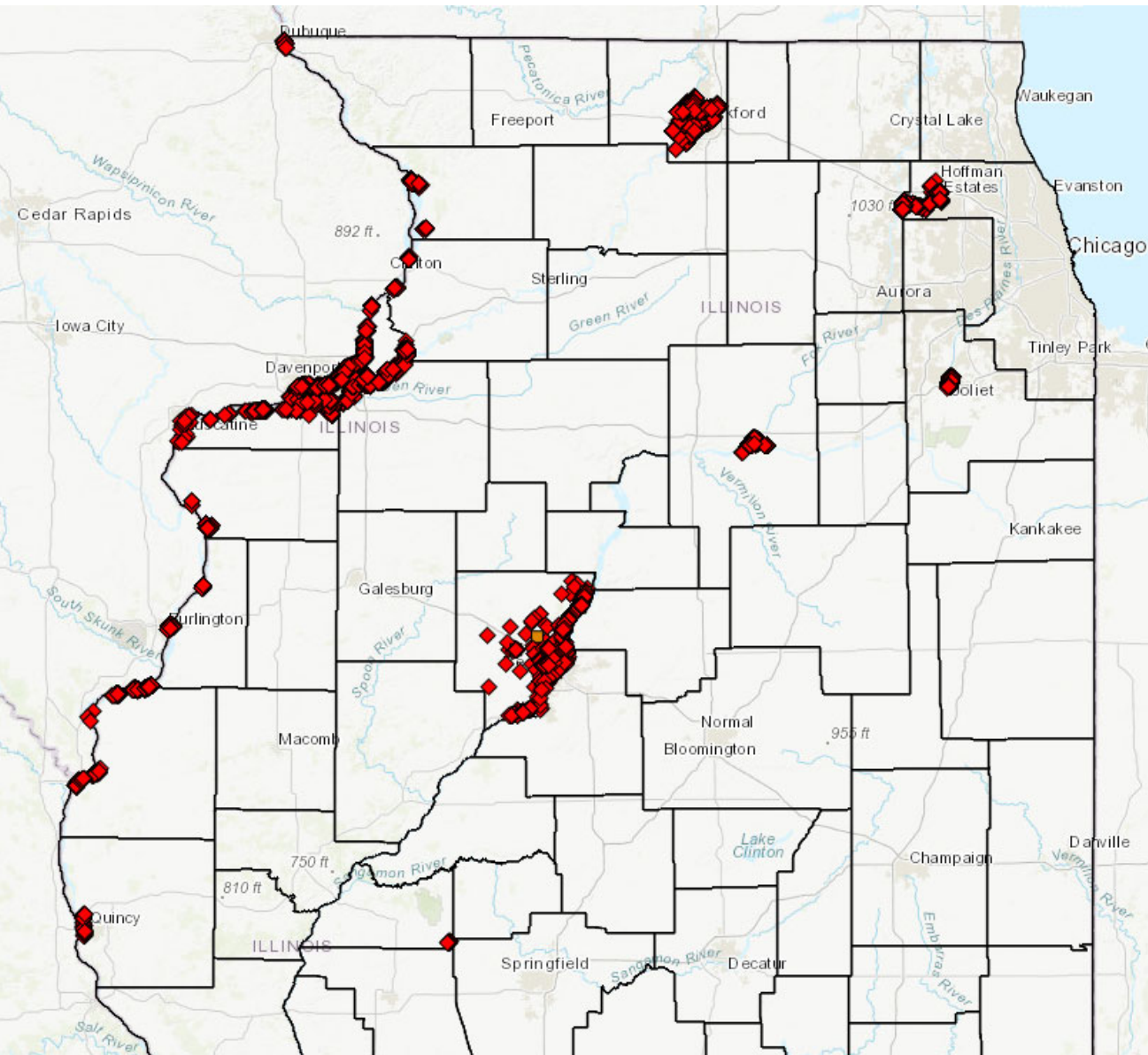
**Date and Time Flooding Occurred\***  
Needed for correlation to USGS gage readings

MM/DD/YYYY  hh:mm

**Location of Flooding\***  
Pan the map to the proper area  
Zoom in to find the exact area  
Click on location of flooding  
A blue marker should appear at this location  
Or select Find My Location on the map (only if at location where flooding is occurring)

```
border: 1px solid #ccc; .gbt1 .gbm{-moz-br  
color:#ccc;display:block;position:absolu  
line=5);*opacity:1;*top:-2px;*left:-5px;  
width:100%;top:-4px\0/;left:-6px\0/;rig  
-moz-inline-box;display:inline-block;fo  
0 .gbm{display:block;list-style:none;  
display:inline-block;line-height:27px;pad  
width:100%;height:27px;cursor:pointer;  
position:relative;z-index:1000}.gbt{*dis  
padding-right:9px}#cbs
```

Illustrate risk

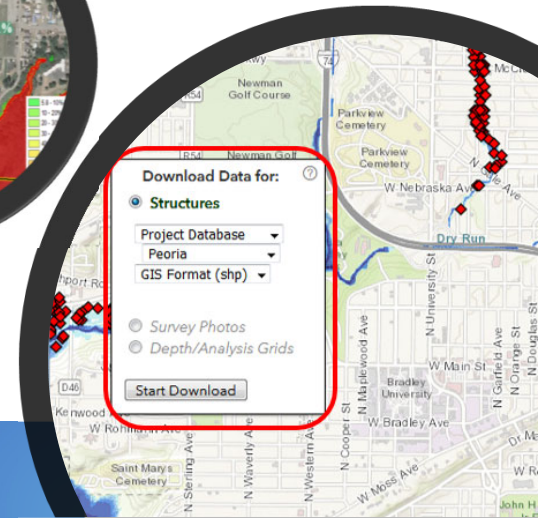
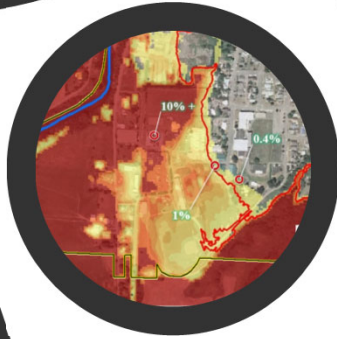
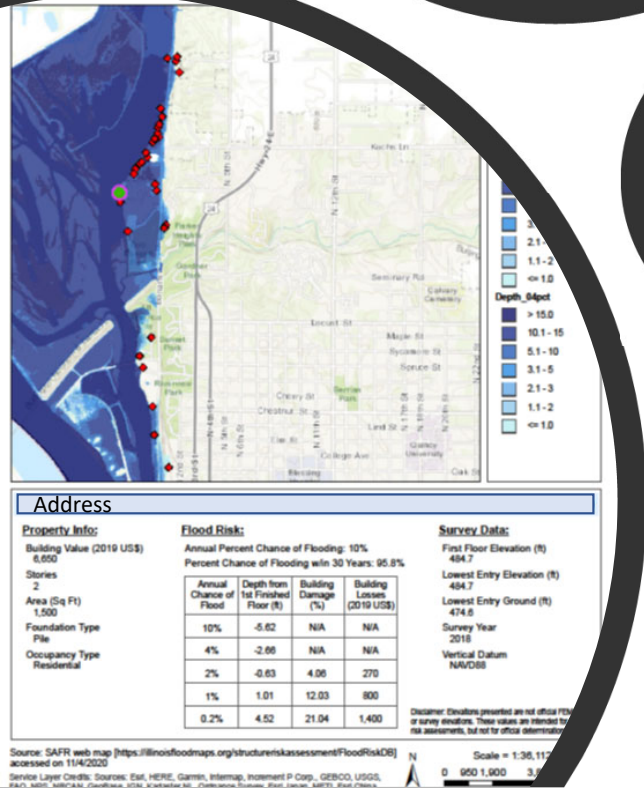
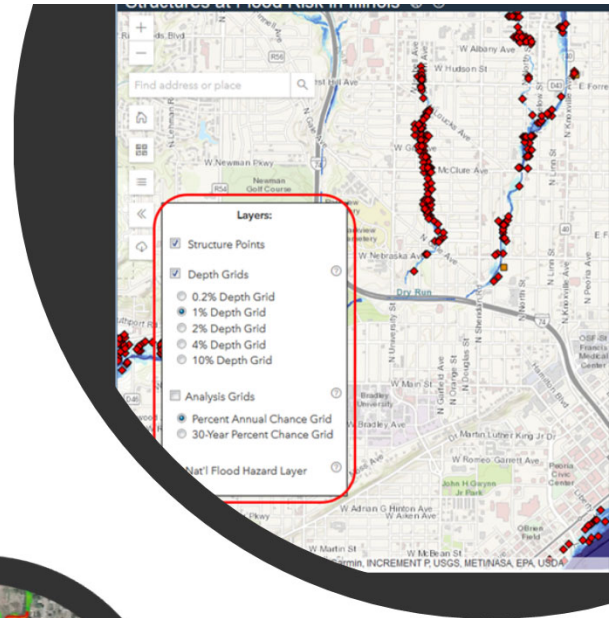
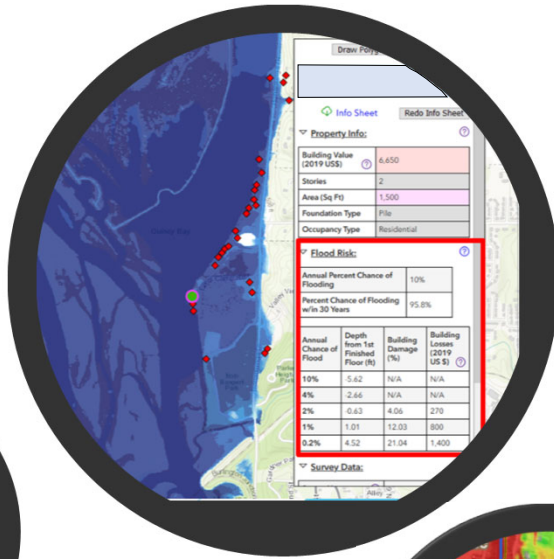


---

# Structures at Flood Risk (SAFR) Custom App

ISWS DEVELOPED WEBSITE

- Geodatabase includes:
  - ✓ Survey Data
  - ✓ Structural information
  - ✓ Flood Risk Information
  - ✓ Downloadable



# SAFR Web Interface



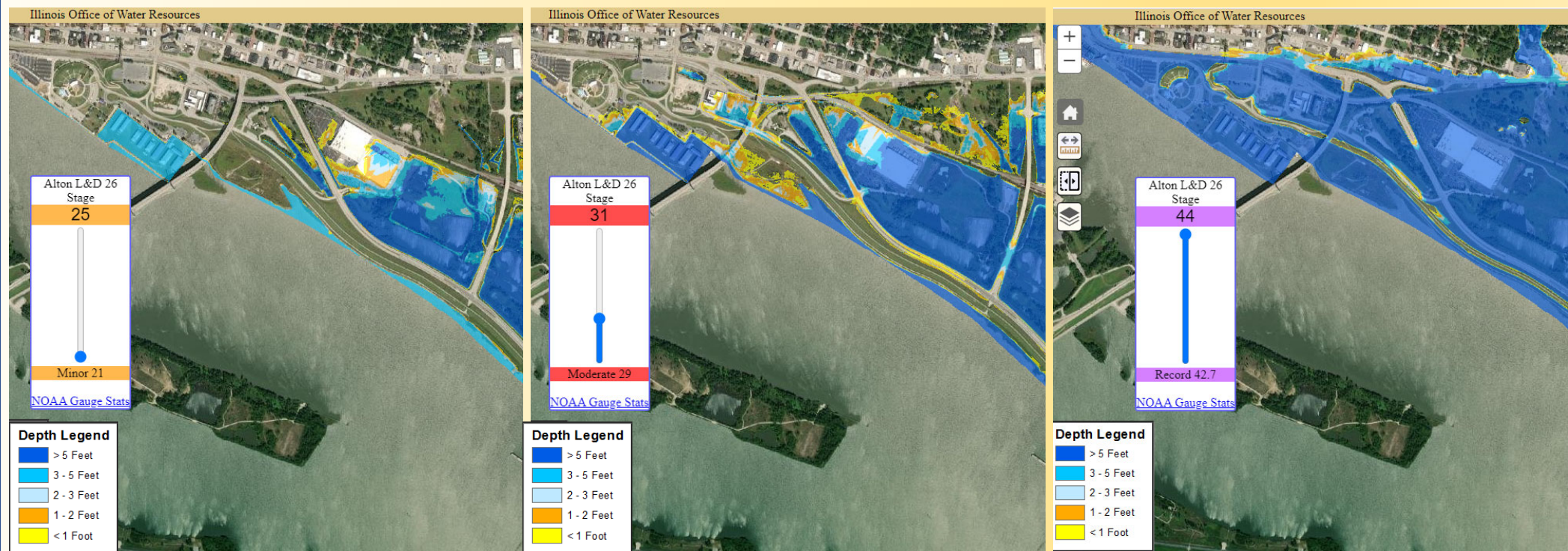
# Flood Response and Planning Custom App

## DYNAMIC INUNDATION MAPPING\* WITH GAUGE WIDGETS

- Mississippi River, Des Plaines River and Illinois River
- Shows inundation maps at 1' flood increments

\* (Migrating to *ArcGIS Experience Builder* in future)





# Mississippi River Dynamic Flood Inundation Map

<https://maps.dnr.illinois.gov/INUND/inund.html>



# Outreach and visualization

<https://storymaps.arcgis.com/stories/0db0525de78f4d87a224d3c1f92f6a82>

## Natural Resources and Illinois State Water Survey Structures at Flood

View Story

## ArcGIS StoryMap

STORYMAP  
DEVELOPED BY FEMA

- Includes explanation of project
- Summarizes how the product can be used by communities and emergency planners

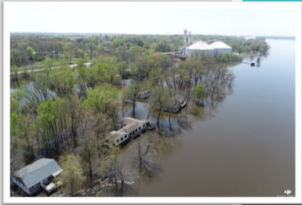


Various flooded areas throughout Illinois.

There

- Target
- Identifier
- Hotspot
- Priority
- Hazard
- Corridor
- Future

# Outreach with Partners and Stakeholders



## 2023 Spring Floods

Mississippi River

Rick Pohlman, P.E.  
OWR Capital Programs  
Division Manager

# ArcGIS Survey123



Are Roads Flooded?	Yes
Are Vehicles Flooded?	No
Choose a County	Jo Daviess
Choose a Flood Type	Riverine
Choose the Closest Gauge	DBQI4 Dubuque Railroad Bridge
Describe Flooded Home or Businesses	Resident
Describe Road and or Vehicle Flooding	



# Drone Surveillance

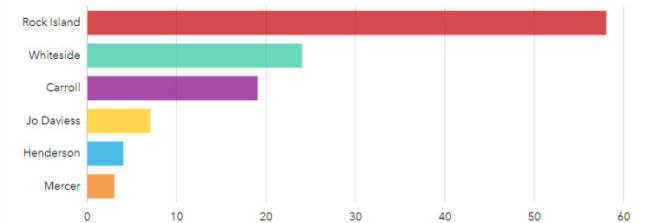


## Summary of Visits

4/27/23-5/4/23

Ground/Drone Sites: **115**

HWM's Set: **27**



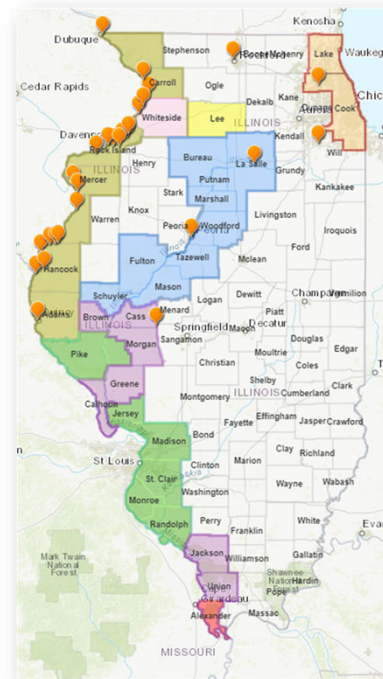
# Structures and Flood Risk (SAFR)

## ArcGIS Web AppBuilder

### DEVELOPED TO SUMMARIZE COMPLETED PROJECTS

- Provided geographical summary of where work was completed
- Showed which counties were included in each project

County	Community in Proposal	USACE Title Region/Phase	USACE Proposal	River	Date Survey	Survey Data Reduced	Data to USACE?	USACE H/H and Econ Done?	Uploaded to SAFR?	USACE Lead	Notes
Jo Daviess	East Dubuque	Upper MS	FY18	MS	3/18-19/19	2/14/2019	Yes	Yes	No	MVR	List of locations for all Upper MS obtained from Silver Jackets Website
Carroll	Savanna	Upper MS	FY18	MS	3/6, 3/7, 3/11	2/3/2019	Yes	Yes	No	MVR	
	Thomson			MS	3/12, 3/24/19		Yes	Yes	No	MVR	
Whitehall	Hulton	Upper MS	FY18	MS	2/28, 3/5/19	2/13/2019	Yes	Yes	No	MVR	
	Albany			MS			Yes	Yes	No	MVR	
	Fort Byron			MS			Yes	Yes	No	MVR	
	Republic City			MS			Yes	Yes	No	MVR	
	Hampton			MS			Yes	Yes	No	MVR	
Rock Island	Campbell's Island	Upper MS	FY18	MS	7/10-11, 7/17-19, 7/23-26, 7/31, 8/1-2, 8/4-9, 8/13	8/28/2018	Yes	Yes	No	MVR	
	East Moline			MS			Yes	Yes	No	MVR	
	Rock Island			MS			Yes	Yes	No	MVR	
	Andalusia			MS			Yes	Yes	No	MVR	
	MS			MS			Yes	Yes	No	MVR	
Mercer	New Boston	Upper MS	FY18	MS	2/26-27, 3/14/19	2/7/2019	Yes	Yes	No	MVR	
	Keithsburg			MS			Yes	Yes	No	MVR	
Henderson	Oquawka	Upper MS	FY18	MS	2/7-7, 2/13/19	3/12/2019	Yes	Yes	No	MVR	
Henderson and Hancock	Ballas City	Upper MS	FY18	MS			Yes	Yes	No	MVR	
	Pontiosucc			MS			Yes	Yes	No	MVR	
Hancock	Midia	Upper MS	FY18	MS	4/8-10, 11/4-17, 1/23/19	3/12/2019	Yes	Yes	No	MVR	
	Marion			MS			Yes	Yes	No	MVR	
	Hamilton			MS			Yes	Yes	No	MVR	
	Warsaw			MS			Yes	Yes	No	MVR	
Adams	Quincy	Upper MS	FY18	MS	8/21, 10/10-11, 10/15, 11/14, 11/18, 12/19	1/8/2019	Yes	Yes	No	MVR	
Jersey	Griffon	Middle MS Ph 1	FY19	MS/IL	9/18, 9/23-26, 9/28, 10/1-10/1, 10/7/19	3/5/2020	Yes	Yes	No	MVS	MVS (Hydraulics)/M/M (Economic)
	Chautauque			MS/IL			Yes	Yes	No	MVS	MVS (Hydraulics)/M/M (Economic)
	Islip			MS/IL	10/7/19		Yes	Yes	No	MVS	MVS (Hydraulics)/M/M (Economic)
Madison	Aiton	Middle MS Ph 1	FY19	MS	12/5, 12/10-11/19	4/13/2020	Yes	Yes	No	MVS	MVS (Hydraulics)/M/M (Economic)
Randolph	Chester	Middle MS Ph 1	FY19	MS	1/7-8/20	4/14/2020	Yes	Yes	No	MVS	MVS (Hydraulics)/M/M (Economic)
Monroe		Middle MS Ph 1	**	MS	48817	4/13/2020	Yes	Yes	No	MVS	** Not in Formal Proposals
Pike		Middle MS Ph 1	**	MS/IL	8/3-5, 9/9-11, 9/16/17/19	10/22/2019	Yes	Yes	No	MVS	** Not in Formal Proposals
Scott		Middle MS Ph 1	**	IL	9/17-18/19	10/7/2019	Yes	Yes	No	MVS	** Not in Formal Proposals
St. Clair		Middle MS Ph 1	**	MS	12/13, 12/17/19	3/13/2020	Yes	Yes	No	MVS	** Not in Formal Proposals
				MS	10/9-10, 10/15		Yes	Yes	No	MVS	** Not in Formal Proposals
Calhoun		Middle MS Ph 2	FY21	MS/IL	17, 10/21-24, 10/28-31, 11/18-23, 12/2-12/4/19	3/30/2020	Yes	No	No	MVS	MVS (Hydraulics)/M/M (Economic)
Union		Middle MS Ph 2	FY21	MS						MVS	MVS (Hydraulics)/M/M (Economic)
Jackson		Middle MS Ph 2	FY21	MS						MVS	MVS (Hydraulics)/M/M (Economic)



#### Legend

**Silver Jacket Project Communities**

**Silver Jacket Project Area**

- IL River
- Middle Mississippi Phase1
- Middle Mississippi Phase2
- Upper Mississippi
- Middle Fork/Des Plaines
- Lower Rock River
- Middle Mississippi Phase2/Middle Mississippi Phase3
- Upper Mississippi
- Not Started

**Mason County**

Project: IL River  
 Survey Date completed: 9/24/2021  
 Building value appraised in: NA  
 OWR Project Manager: Terra McParland  
 OWR Project Manager Email: Terra.McParland@illinois.gov  
 OWR GIS: Pam Brooks  
 OWR GIS Email: Pamela.Brooks@Illinois.gov  
 USACE Project Manager: Kaleigh Scott  
 USACE Project Manager Email: Left  
 Contact: Chris Hawes  
 Email: er.C.Hawes@usace.army.mil

**Silver Jacket Project Area2**

Name	Tazewell
CreationDate	November 10 2022
Creator	Paul.Osazuwa_IDNR
EditDate	November 15 2022
Editor	Paul.Osazuwa_IDNR
Lnkj	3
USACE	IL River
USACE Region	IL River
WebLink	NA

# SUMMARY

- Gather and share information
- Allows for public input
- Improves efficiency
- Use of data visualization
- Visualize results
- Communicate risk to stakeholders
- Management Support

$bd^2 = 7813.547$   
 $d = 22.10$

	$b_1$ [in]	16	$b_{1m}$ [in]	80
	$h$ [in]	27	$t$ [in]	3
	$d$ [in]	24	$a$ [in]	0.49
	$A_1$ [in <sup>2</sup> ]	2.65	$\beta_1$	0.81
	$A_{1,max}$ [in <sup>2</sup> ]	1.214	$c$ [in]	
	$d_{req}$ [ft-x]	253.36	$e$	

Neutral Axis C

$T$  [kios] 142.2

BAR	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
#4	0.39	6.80	0.58	8.30															
#6	0.88	7.00	1.32	8.80															
#7	1.20	7.20	1.80	9.00	2.41														
#8	1.57	7.30	2.35	9.30	3.14	11.20	12.30												
#9	2.00	7.60	3.00	9.80	4.00	12.10	5.00	14.30	6.10										
#10	2.53	7.80	3.79	10.40	5.06	12.90	6.33	15.50	7.59										
#11	3.12	8.10	4.68	10.90	6.25	13.80	7.81	16.60	9.37										
#14	4.50	8.90	6.75	12.30	9.00	15.70	11.25	19.00	13.50	22.4									
#18	8.00	10.60	12.70	15.70	17.60	20.00	24.10	24.00	28.00										





Terra McParland

[Terra.McParland@illinois.gov](mailto:Terra.McParland@illinois.gov)

217-524-9113

Pamela Brooks

[Pamela.brooks@illinois.gov](mailto:Pamela.brooks@illinois.gov)

217-782-4486

