Flood Risk Project
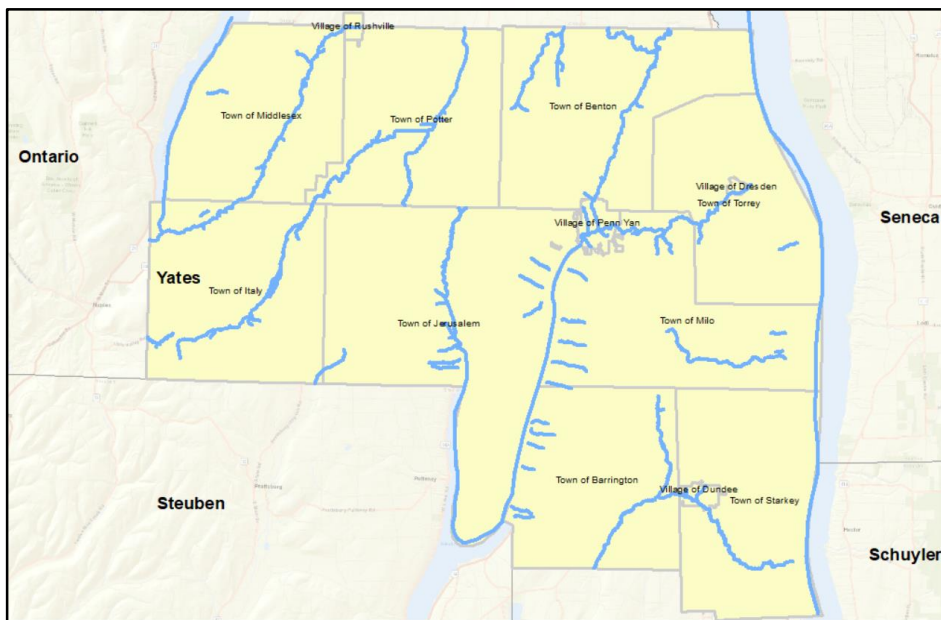
Yates County, New York, Hydraulics Meeting

October 9, 2020

Presentation Agenda

Recap/Refresh

Hydraulics Analysis Review

Path Forward

What Have We Done So Far?
Recap/Refresh

This Project Scope

- **First time digital countywide maps, includes 211 miles from 2018 study**

- **Additional flooding sources studied**
  - 5.1 miles - Detailed (AE) streams
  - 5.4 miles – Approximate (A) streams

- **5 Detailed (AE) study Streams (All within Village of Penn Yan)**
  - Keuka Lake Outlet -1.8 miles
  - Jacobs Brook -1.1 miles
  - Kimbell Gully - 0.6 miles
  - Sucker Brook - 1.1 miles
  - Lincoln Sheet Flow - 0.5 mile
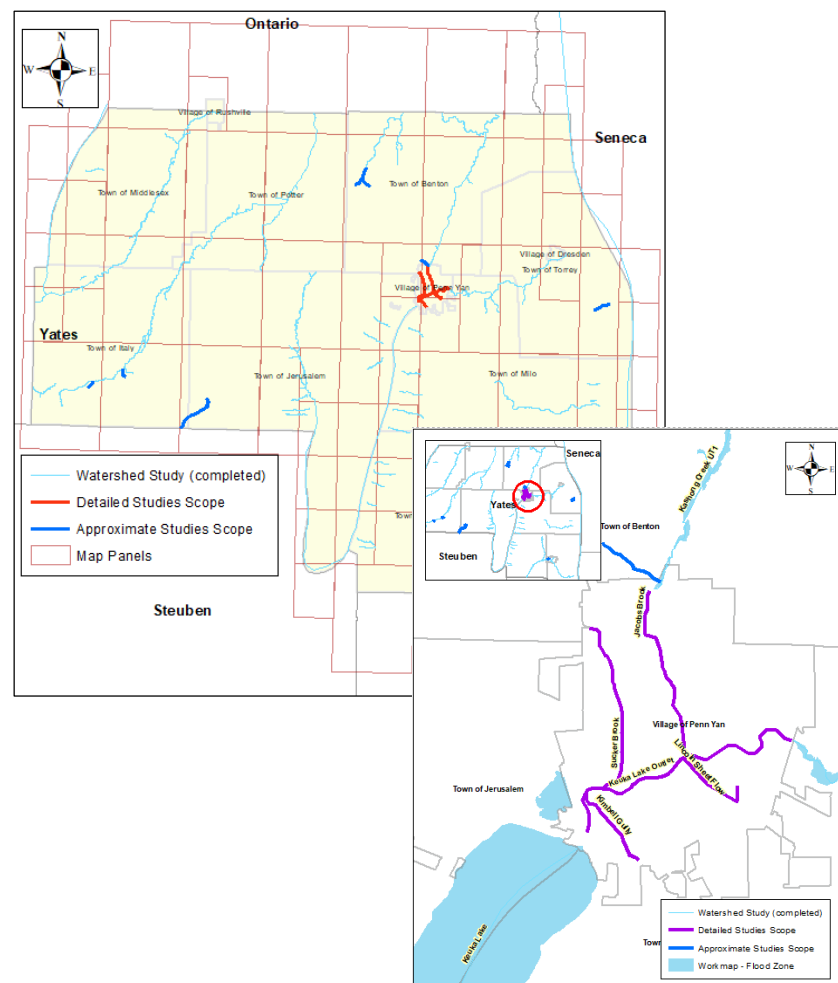
Hydrology Update

- **Since Sep, 2019 hydrology webinar,**
  - Received additional data from USACE and Keuka Lake Association
  - USACE - Gate operational rating curves
  - Lake Association - Lake historic water level data

- **Lake levels for Keuka Lake & outflows re-computed.**
  - Lake levels increased from 2018 study but below effective levels
  - Keuka Lake Outlet discharges decreased from Sep, 2019 update, now within effective study range

- **Tributary discharges**
  - increased slightly from Sep, 2019 update, but still below effective.
  - Jacobs Brook discharges decreased

Keuka Lake 100-Yr Level (feet, NAVD88)	
This Study	718.3
2018 Study	717.4
Effective FIS	720.3

Keuka Lake Outlet 100-Yr Discharge (cfs)	
This update	1640
Sep 2019 update	4043
Effective FIS	1800

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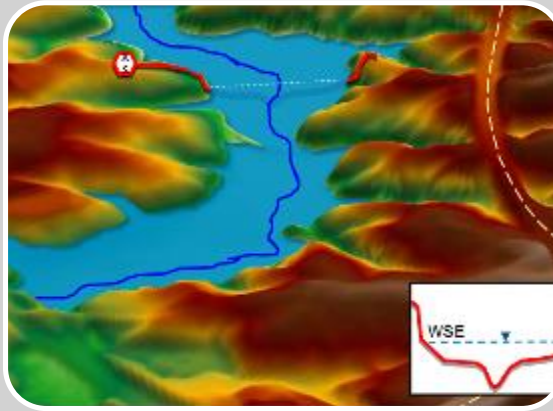RiskMAP
Increasing Resilience Together

Where are we now?
Hydraulics Analysis Review

Flood Hazard Analysis

Hydrology

Volume of water?
Peak Flows?

When will storm water or runoff make it to the stream?

Hydraulics

Will the stream in question be able to convey all storm water or runoff that arrives?

Floodplain Mapping

What areas of a community will be inundated based on engineering analysis?

Data Sources - Terrain

- **2012 FEMA LiDAR Data**

- **2006 Ontario County LiDAR**

- **2 meter Digital Elevation Model (DEM) Developed**

- **Provided overbank elevations for hydraulic model**

- **Channel geometry for AE streams provided field survey**

- **Used for mapping the flood hazard boundaries**
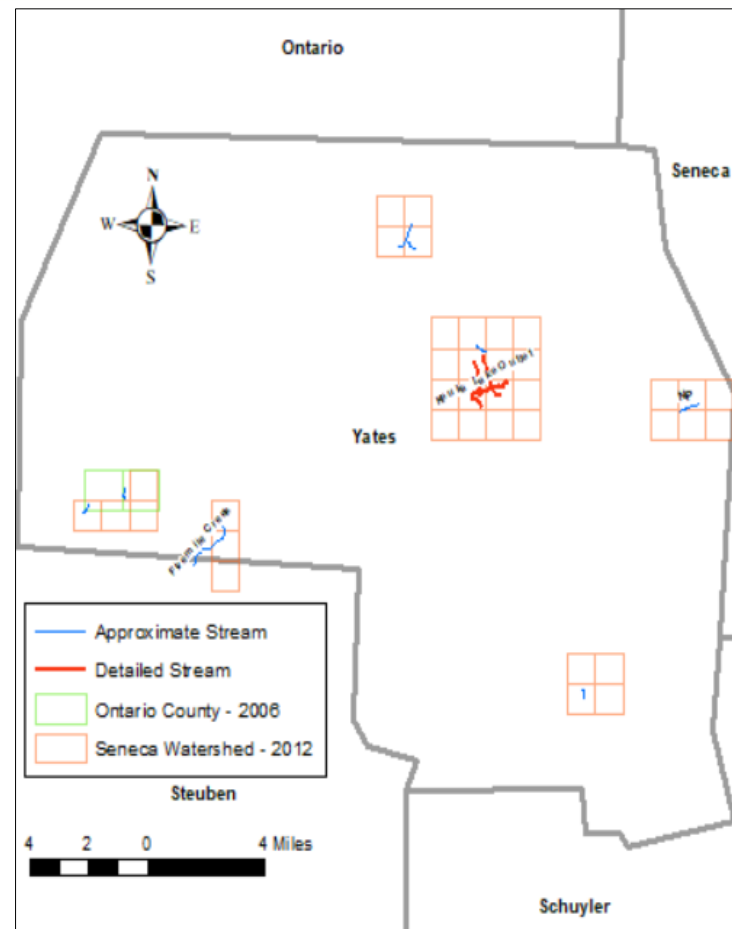
Data Sources – Field Survey

- ► **Conducted for AE Streams only**

- ► **Included Channel and bridge/culvert geometry data to supplement LiDAR**

- ► **'A' streams not included**

- ► **A separate field Reconnaissance conducted to assess the site and floodplain conditions.**

Data Sources – Roughness Coefficients

▸ **Mannings "n" model parameter**

▸ **For approximate reaches, land use from National Land Cover Database (2016)**

▸ **For detailed reaches, further refinement using survey photos and aerial imagery**

Description	Manning's "n"
Open Water	0.025
Developed, Low Density	0.07
Developed, Medium Density	0.08
Developed, High Density	0.09-0.12
Woods / Forest	0.07-0.12
Grassland / Herbaceous	0.04
Pasture / Hay / Cultivated Crop	0.04
Channel	0.025-0.055

KEU_00_300_DSCH.JPG

KEU_00_300_DSFACE.JPG

KEU_00_300_USCH.JPG

KEU_00_300_USFACE.JPG

DEWBERRY

Stream:	Keuka Lake Outlet				Project:			Yates County - Village of Penn Yan	
Designed by:		Date:	7/20/2020	Checked by: Z/L	Date:	7/20/2020		Page	1 of 1

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Hydraulics Methodology

▸ **Detailed (AE) Streams**

- 5 Streams, 5.1 miles, all in Penn Yan
- USACE's HEC-RAS 5.0.7 used for model development
- Primary method: One-Dimensional (1D) Steady State Analyses
- 2D modeling used for Lincoln Sheet Flow and to supplement 1D at some Culvert Crossings
- Detailed channel and structure surveys included
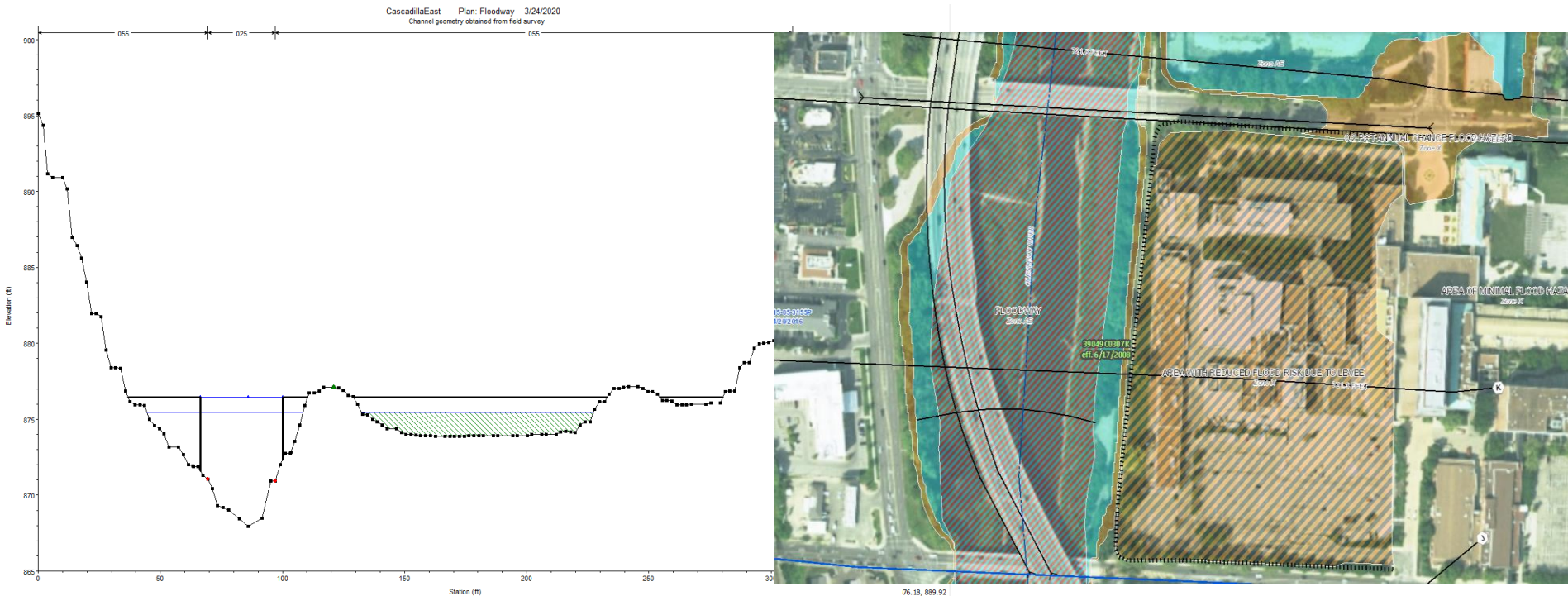- Multiple frequencies and floodways included

▸ **Approximate (A) Streams**

- 5.4 miles spread out
- HEC-RAS 5.0.7, 1D steady state analyses
- No detailed survey included
- Multiple frequencies included but no floodway
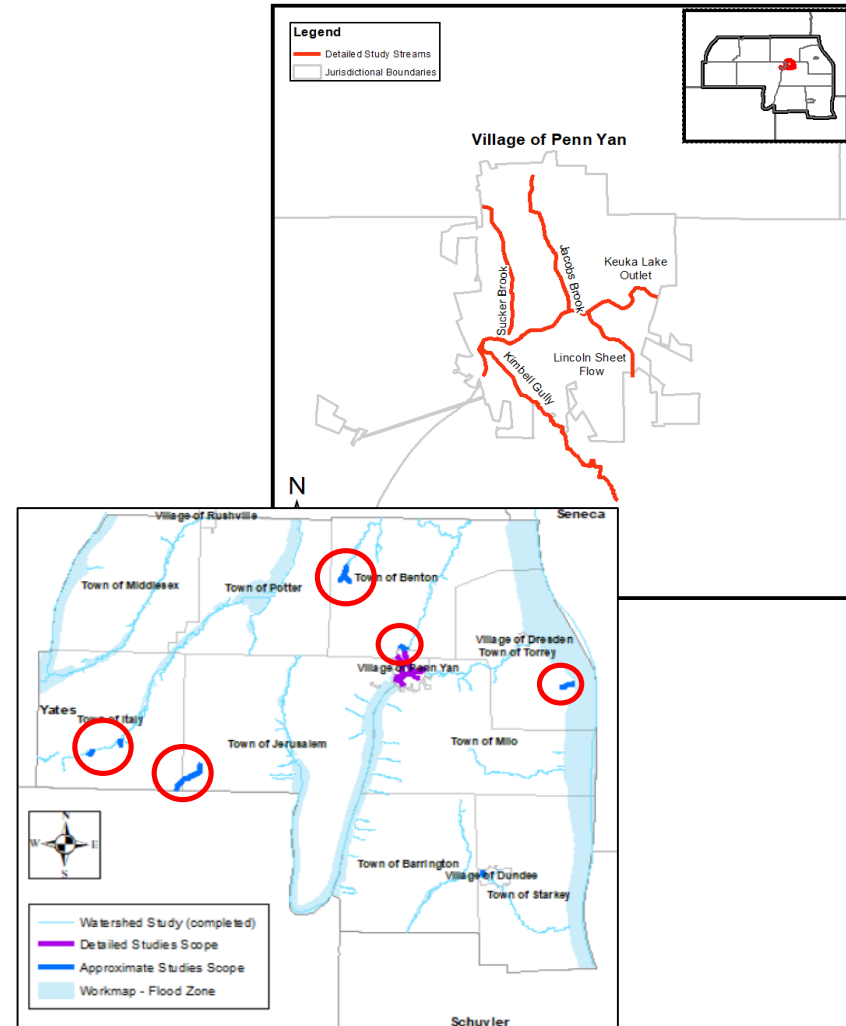
Floodway Analysis

- **Detailed Streams only**

- **Encroachments placed to achieve target 1.0' rise**

Hydraulics Report

Hydraulics Report

Yates County, New York
MIP Case Number 19-02-0013S Deliverable

Prepared by:

STARR II Strategic Alliance for Risk Reduction

Contract No. HSFE60-15-D-0005

Task Order 70FBR2-18-F00000162

Date: September 30, 2020

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Yates County, New York - Hydraulics Report   Page i

Results of the Study

▸ **New countywide floodplains data**

- Expanded floodplain coverage

- Added additional streams with Base Flood Elevations

- Continuous modeling and mapping outside of community boundaries

  ▪ To support future community development

- Includes 500-year floodplain

Floodplain Mapping Comparisons

▸ **New countywide digital data**

- Previous maps produced in 1970s-1980s

- <u>Reason for changes</u> in Floodplains and Base Flood Elevations (BFEs)

  - New Topography

  - Channel and Structure Survey

  - Changes to Land Use

  - Changes to Rainfall

  - Detailed Hydrologic and Hydraulic Analysis

Summary at Community level

Current Study	Studied in 2018
‣ **Town of Benton**	‣ **Town of Barrington**
‣ **Town of Italy**	‣ **Town of Benton**
‣ **Town of Jerusalem**	‣ **Town of Italy**
‣ **Town of Torrey**	‣ **Town of Jerusalem**
‣ **Village of Dundee**	‣ **Town of Middlesex**
‣ **Village of Penn Yan**	‣ **Town of Milo**
	‣ **Town of Potter**
	‣ **Town of Starkey**
	‣ **Town of Torrey**
	‣ **Village of Dresden**
	‣ **Village of Dundee**
	‣ **Village of Rushville**

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Detailed Hydraulics
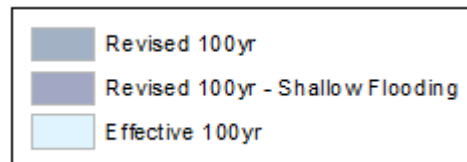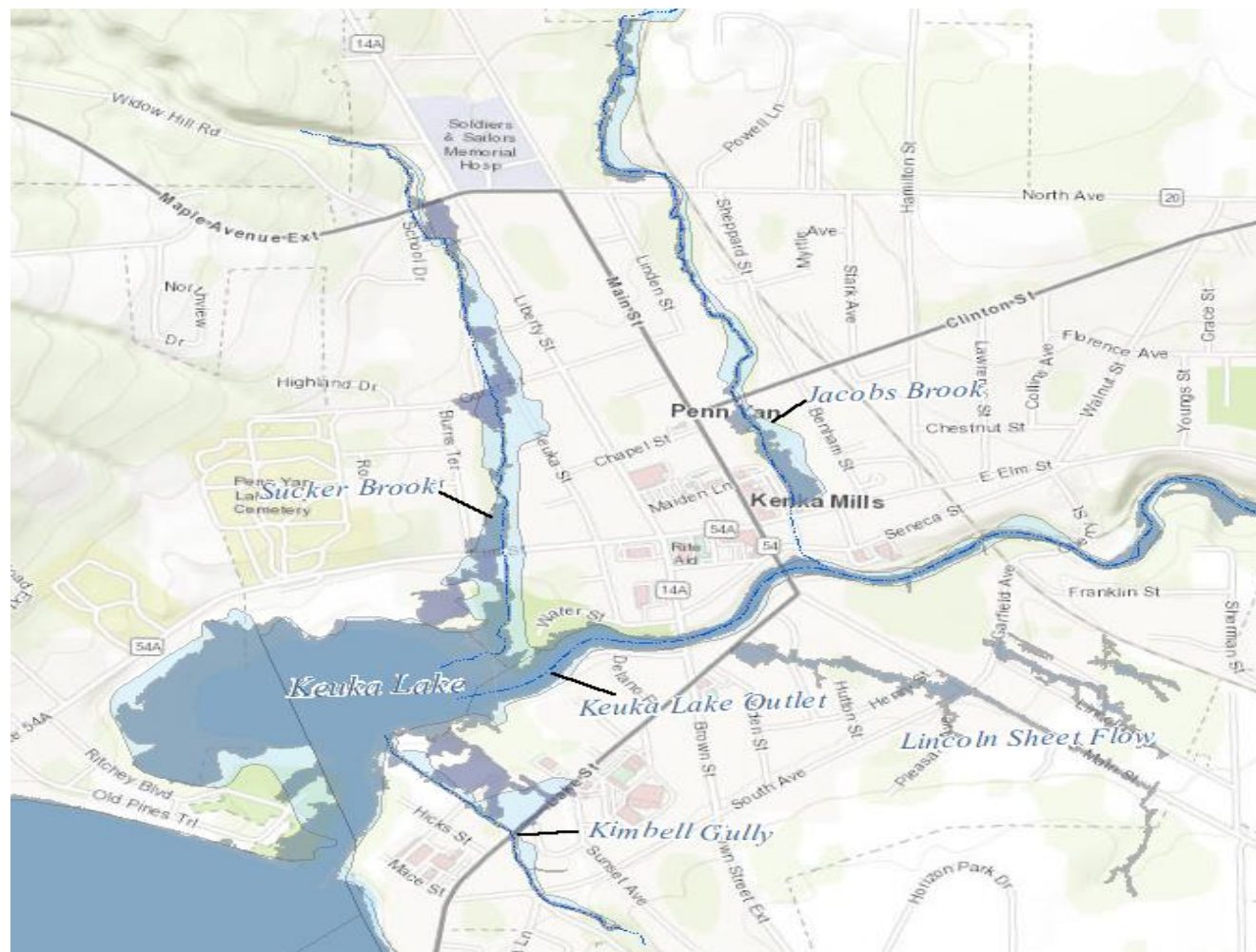
Approximate Hydraulics – Multiple Streams

Approximate Hydraulics – Multiple Streams

Segar Gully

Jacobs Brook Trib 1

Big Stream Trib 1

Fivemile Creek

Legend:
- Revised 100yr
- Effective 100yr

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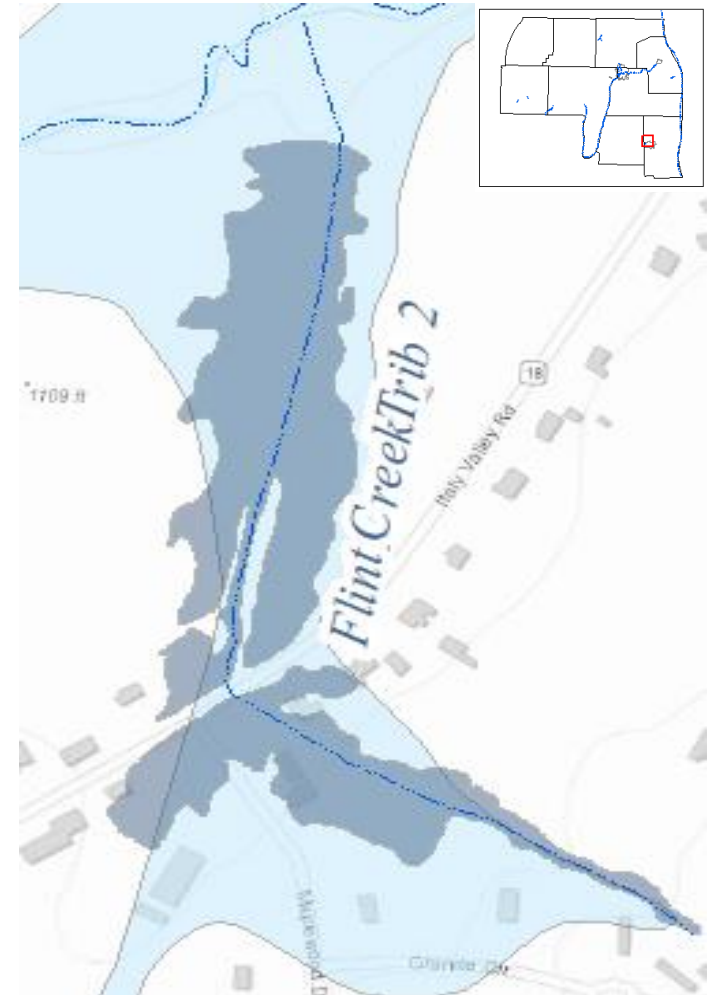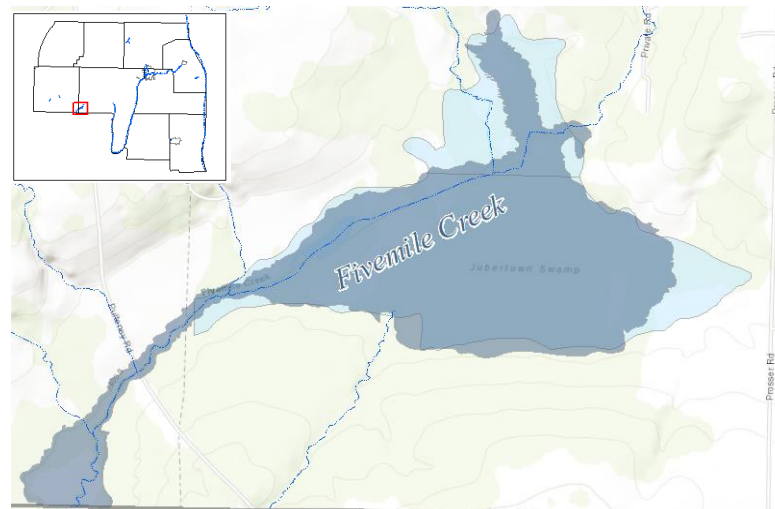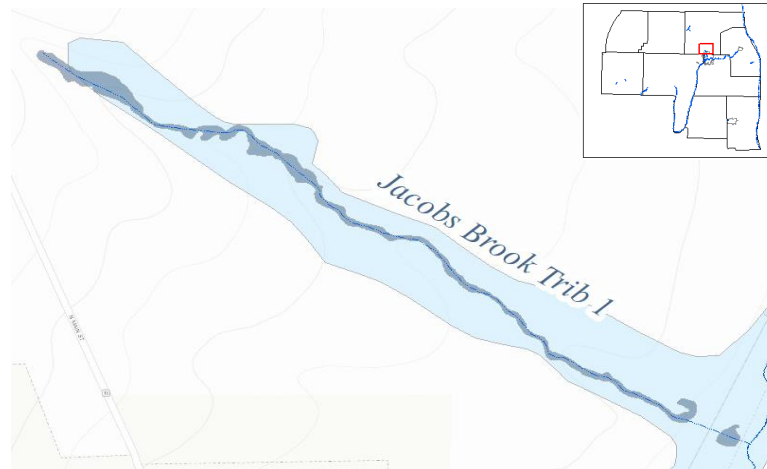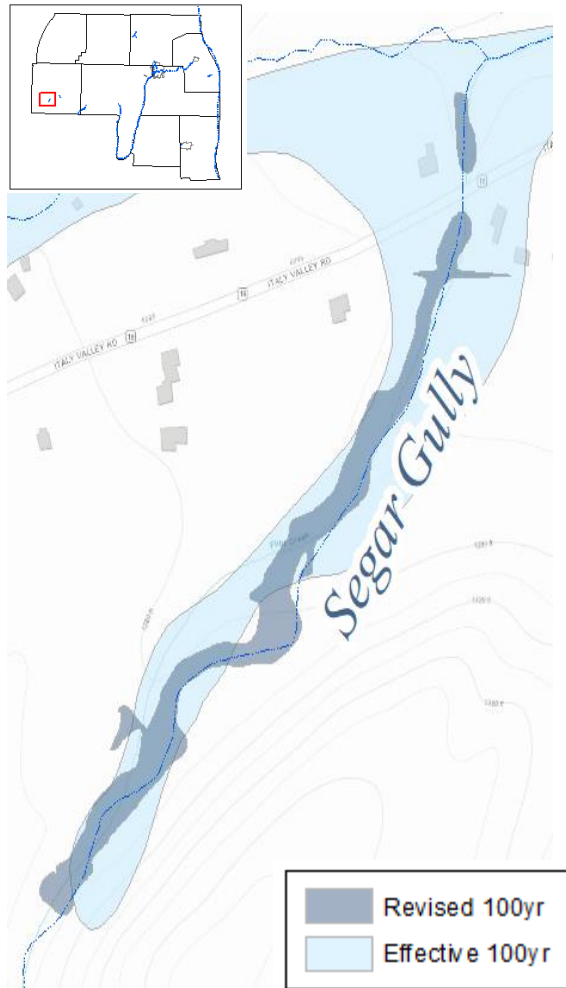
What's Next?
Path Forward

Next Steps

1 Finalizing Hydraulic Analysis

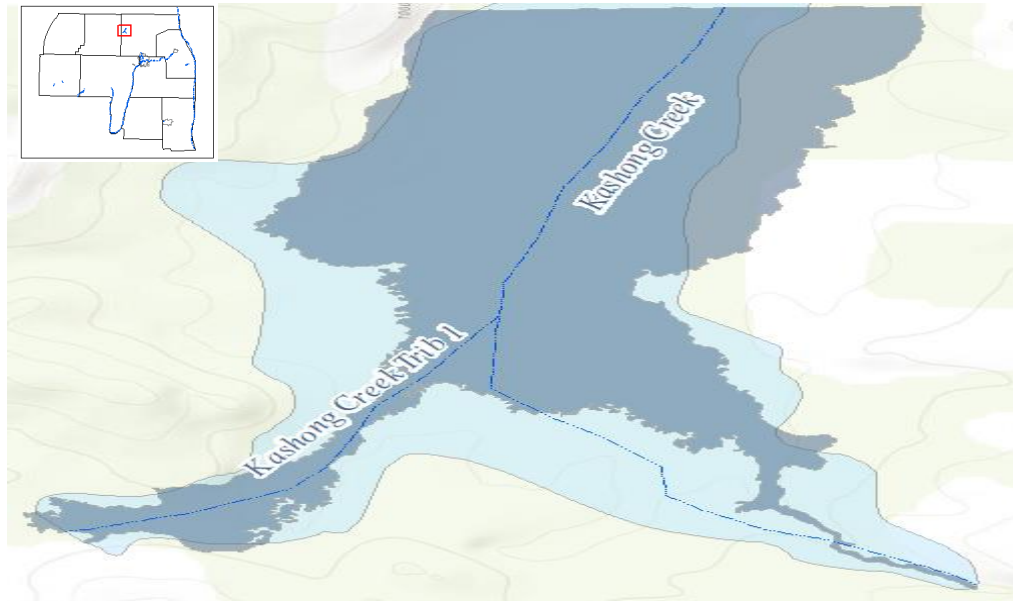**2** Development of Draft Floodplain Mapping/ Workmaps

3 Development of Additional Flood Risk Products

4 Preliminary FIRM Issuance

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Overall Flood Risk Project Timeline

WE ARE HERE

Kick Off Meeting
March 13, 2019

Hydrology Results Review
October 2019

Hydraulics Results Review
October 2020

Flood Risk Review Meeting
Spring 2021

REGULATORY PRODUCTS ISSUED

FLOOD RISK PRODUCTS ISSUED

TIME (months)

12   24   36

FLOOD HAZARD ANALYSES

PRELIMINARY/REGULATORY

FLOOD RISK PRODUCTS
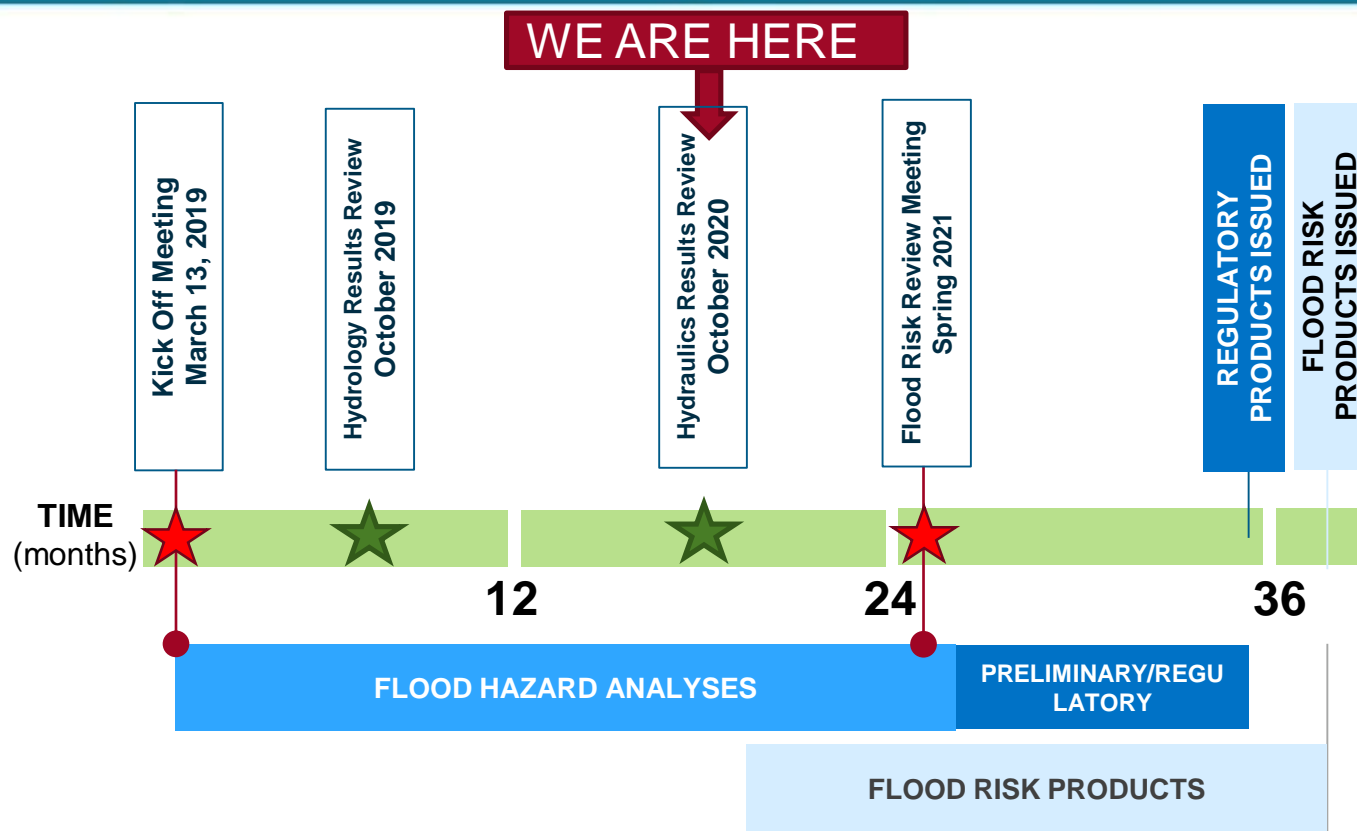
Touchpoint - Webinar

Touchpoint – In person

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FEMA

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Questions? Comments?

Thank you!