Please Introduce Yourself

▸ **Name**

▸ **Role**

▸ **Organization**

Also, what do Saratoga communities aspire to accomplish using today's meeting?

As partners with FEMA, it's important we create dialogue about your needs for flood risk information.

Today's Goals

1
The value of updated flood maps for your community

2
Recap of Flood Risk Study history, including Discovery and Hudson-Hoosic Watershed study

3
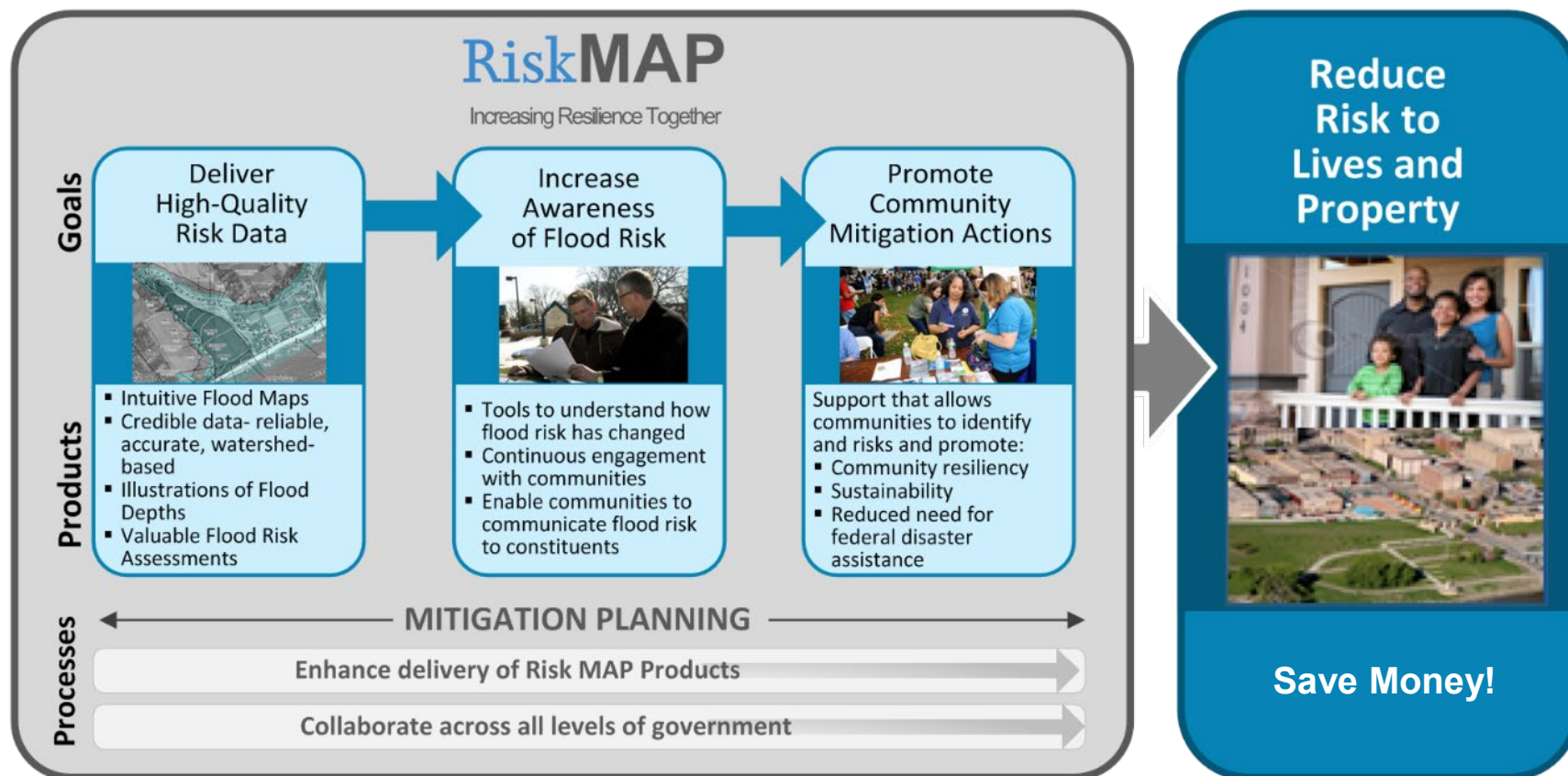Review county-wide study scope, products and outreach process

FEMA

RiskMAP
Increasing Resilience Together

FEMA Mitigation Division

Risk Analysis Branch
Goal: Stronger and Safer Communities

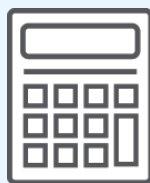# The Value of Updated Flood Maps for Local Communities

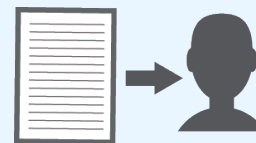# Flood Maps Guide Progress By:

Identifying and Assessing Flood Risk

Establishing Flood Insurance Rates

Determining Local Land Use

Informing Engineers and Developers

Equipping Emergency Managers

Why we are here

We want to help communities understand flood risk and take action to reduce it because…

Risk changes over time	• All floods are different. Nature and communities change.
Flooding happens	• Communities may face flooding. Is your community active or reactive to flood risk?.
Mitigation is Possible	• Proactive communities plan to reduce flood impacts and other hazards.

Why Update Flood Maps?

The Federal Emergency Management Agency (FEMA) manages the National Flood Insurance Program (NFIP)

NFIP Policies for Saratoga communities	NFIP Claims for affected communities	FEMA Insurance Claims Paid in affected communities	Hazard Mitigation Plan Status
739	491	$8,031,000	Approvable, Pending Adoption

FEMA

RiskMAP
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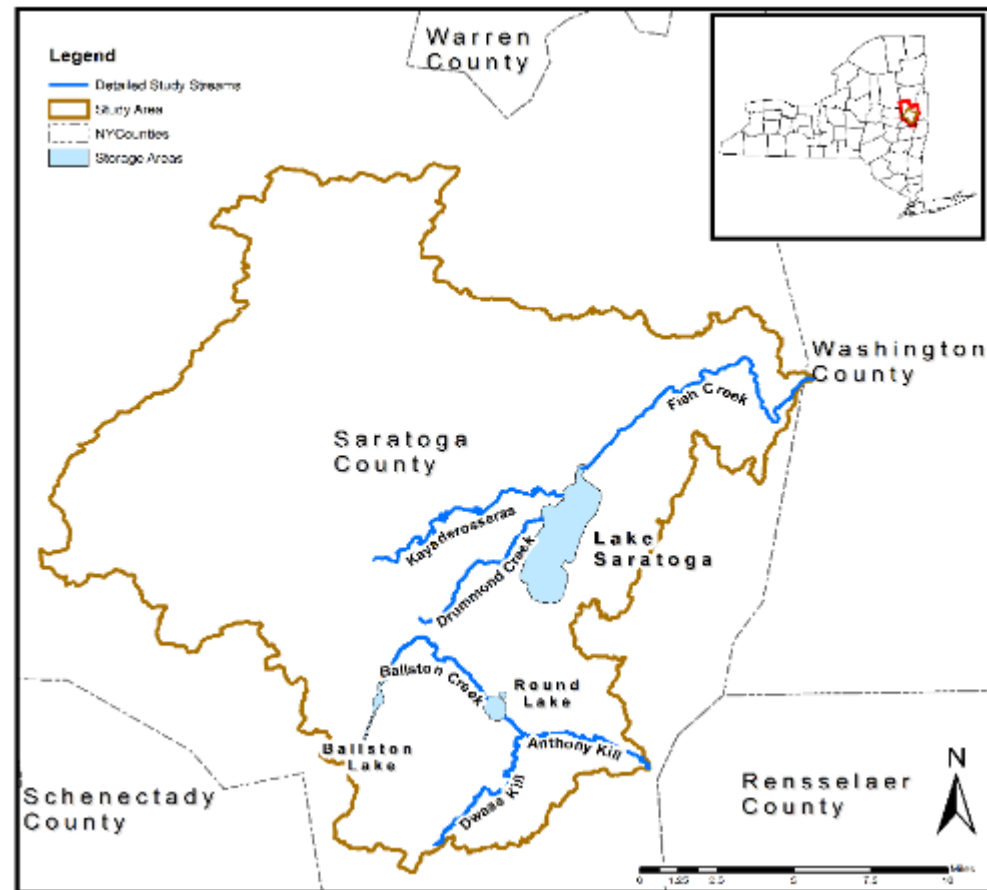
How did we get here?
Review past activities

Discovery/Post-Discovery Progress
Recap

Hudson-Hoosic Watershed

▸ Meetings held in October 2012

▸ Discovery project completed in April 2014

▸ Community input guided FEMA priorities

▸ Saratoga County's Highest Priorities included:

- Kayaderosseras Creek
- Fish Creek
- Dwass Kill
- Drummond Creek
- Anthony Kill

Discovery/Post-Discovery Progress
Recap

Sacandaga Watershed

▸ Meetings held in July 2018

▸ Discovery project completed in March 2019

▸ FEMA reviewed community input to determine priorities

▸ Saratoga County's Highest Priorities included:

  • Great Sacandaga Lake

  • South Branch of Kayaderoserras Creek

FEMA
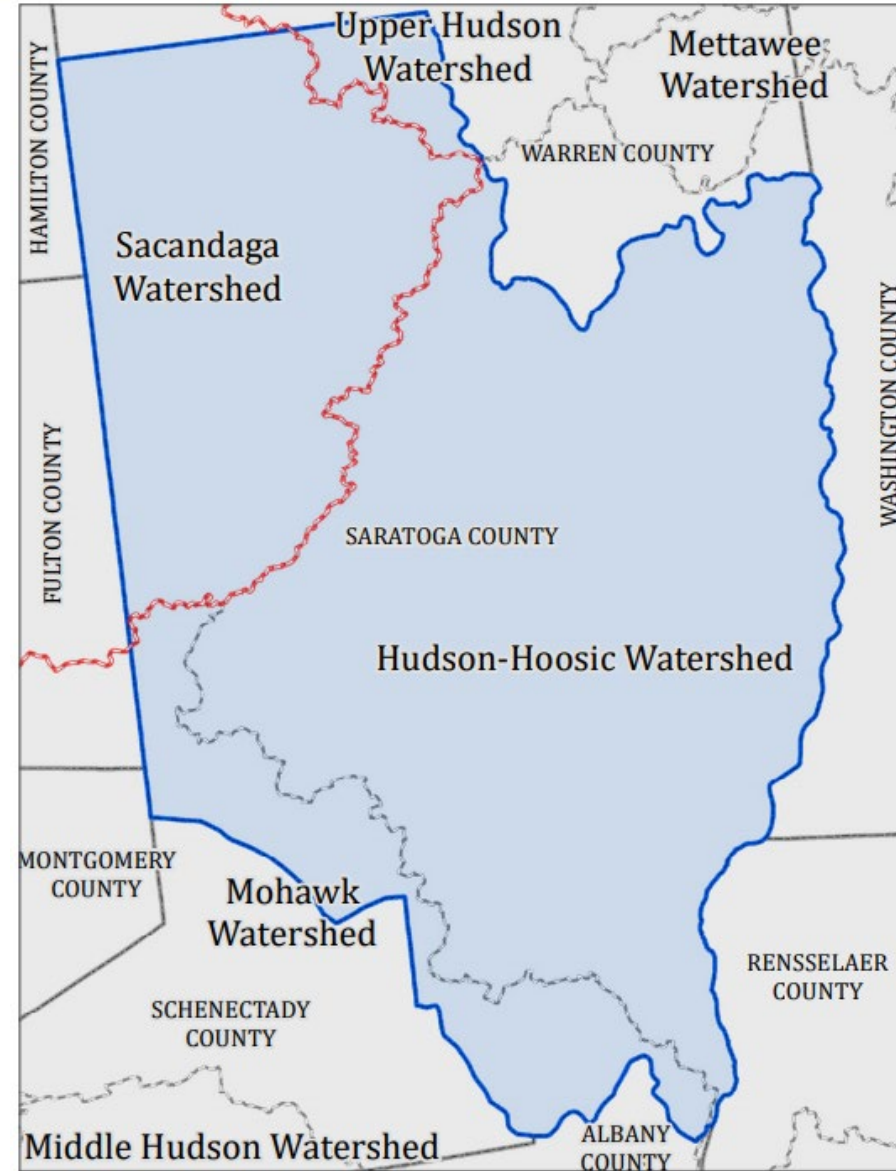
Leveraged Data
Recap

- Flood Risk Review meetings held in November 2016

- Detailed – 142 miles
  - Anthony Kill
  - Ballston Creek and Lake
  - Drummond Creek
  - Dwaas Kill
  - Fish Creek
  - Hudson River
  - Kayaderosseras Creek
  - Mohawk River
  - Round and Saratoga Lake

- Approximate – 70 miles

- Any local flood studies that FEMA should be aware of?

FEMA

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Legend

Study Type
- Detailed (AE)
- Approximate (A)
- Saratoga Communities
- Counties
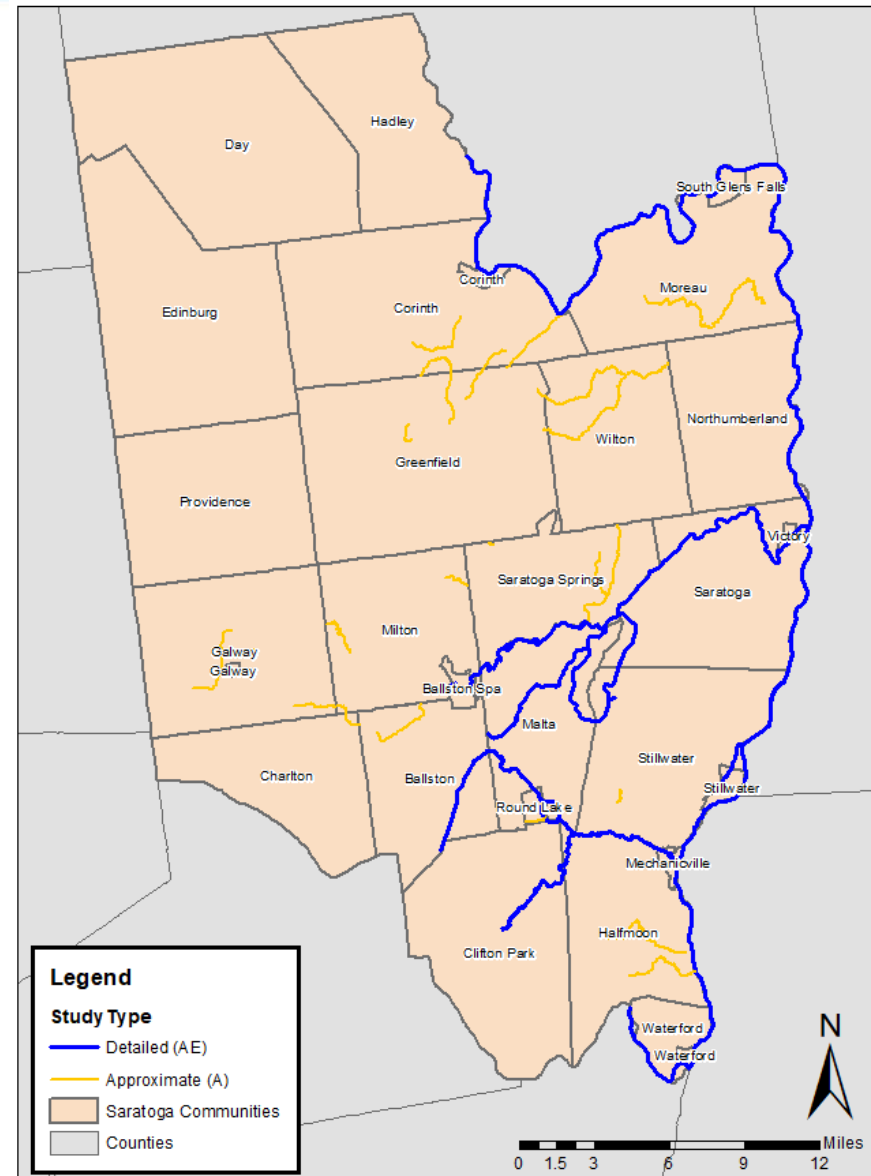
What is being studied now?
Discuss scope of new study

Saratoga County, Countywide Flood Risk Study Scope

▸ **First time digital maps**

▸ **Additional flooding sources analyzed**

- Detailed riverine studies (AE Zone) – 10 streams, 56 miles
- Detailed lake studies (AE) – 1 lake, 34 miles
- Approximate (A) studies – multiple streams, 359 miles
- Redelineation (AE) – 9 streams, 38 miles

▸ **30 updated communities**

▸ **197 map panels**

▸ **Review meetings**

- Hydrology Meeting
- Hydraulics Meeting
- Flood Risk Review Meeting

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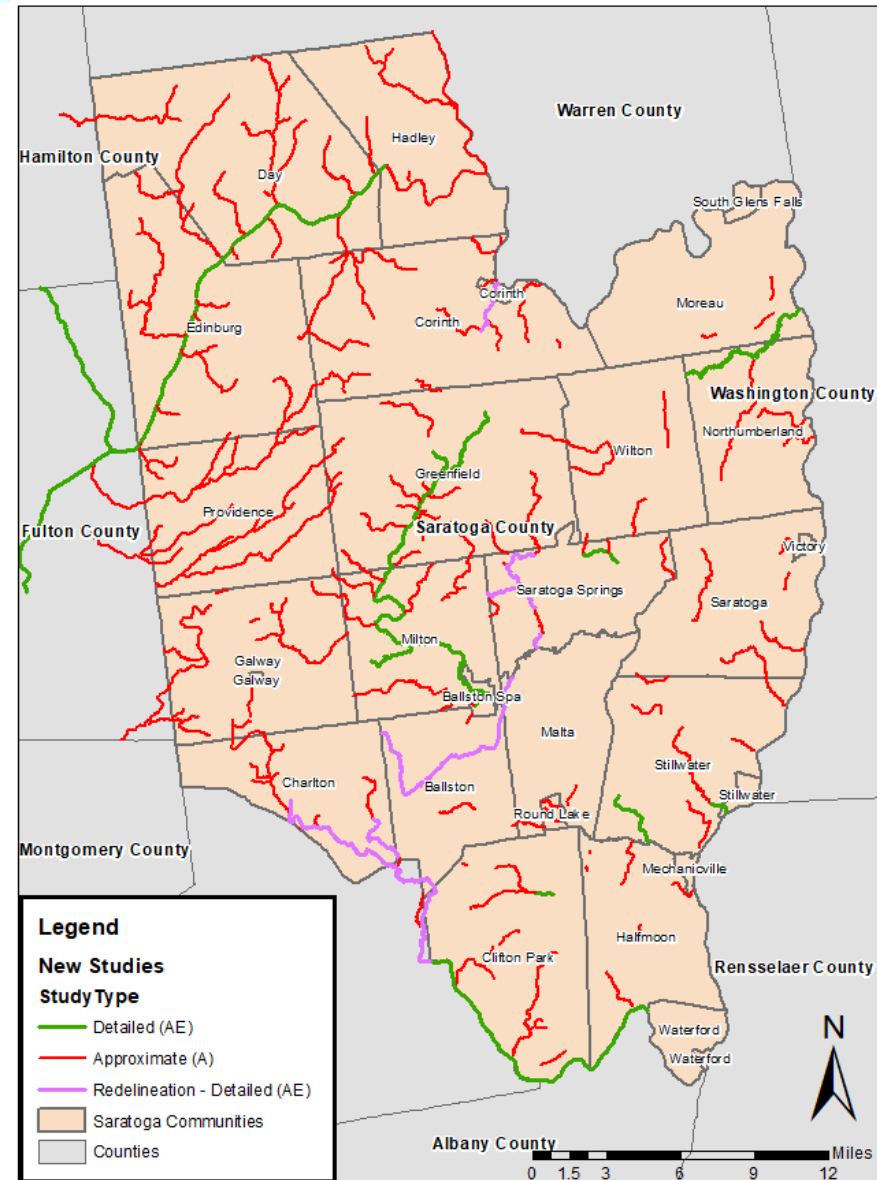
Detailed (AE Zone) Study Scope

- **11 Studied Streams – 56 miles total**
  - Cooley Kill - 0.8 miles
  - Glowegee Creek - 2.8 miles
  - Gordon Creek - 0.8 miles
  - Kayaderosseras Creek – 20.6 miles
  - Mohawk River - 13.9 miles
  - Mud Creek - 1.4 miles
  - Plum Brook - 3.1 miles
  - Schuyler Creek - 0.9 miles
  - Snook Kill - 9.5 miles
  - Spring Run - 1.8
- **1 Studied Lake – 34 miles**
  - Great Sacandaga Lake - 34.4 miles

Legend

New Studies

Study Type
- ——— Detailed (AE)
- Saratoga Communities
- Counties

FEMA

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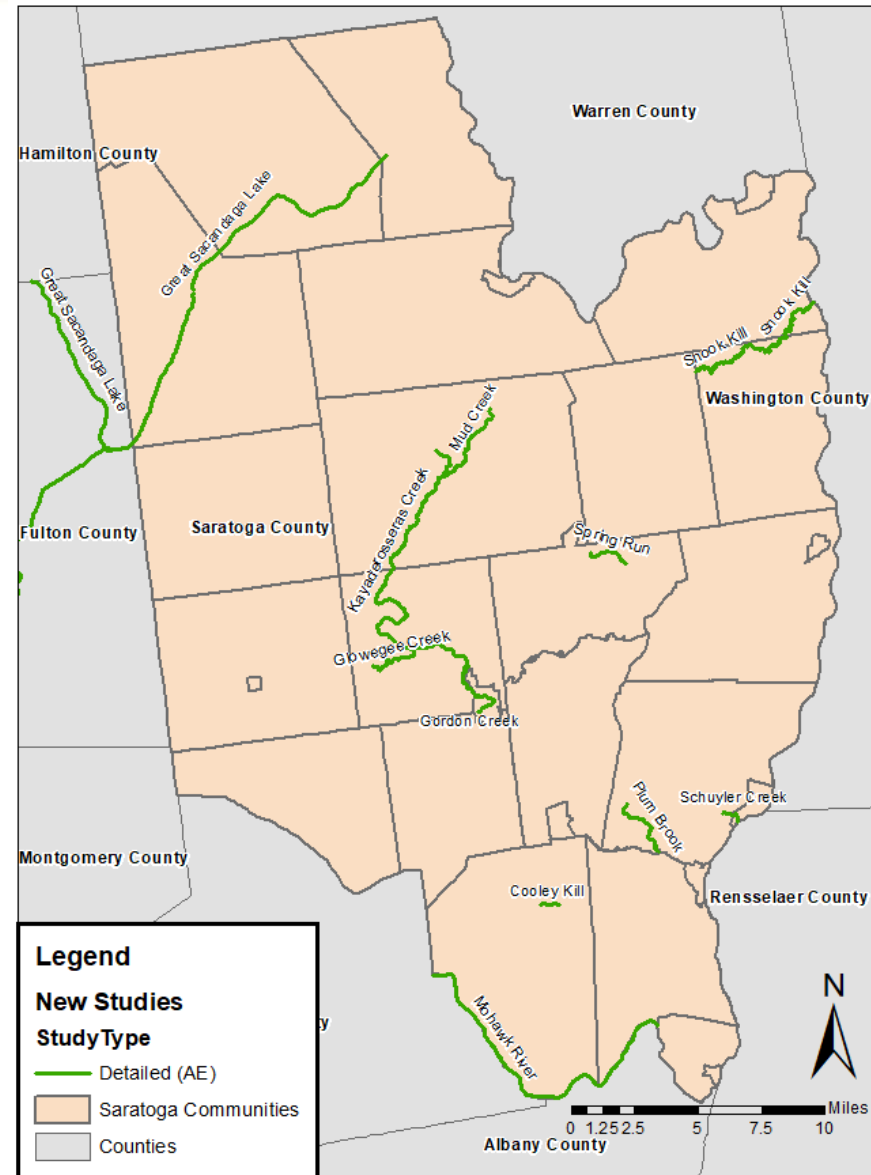
Approximate (A Zone) Study and Redelineation Scope

▸ **Completes countywide stream coverage**

▸ **Approximate Streams – 359 miles**

- Notable streams include:
  - Alplaus Kill - 3.4 miles
  - Hudson River - 7.0 miles
  - North Chuctanunda Creek - 10.7 miles
  - Sacandaga River - 6.5 miles
  - Wolf Creek - 5.2 miles

▸ **Redelineated Streams – 38 miles**

- Notable streams include:
  - Alplaus Kill - 8.3 miles
  - La Rue Creek - 3.1 miles
  - Mohawk River - 5.0 miles
  - Mourning Kill - 11.4 miles

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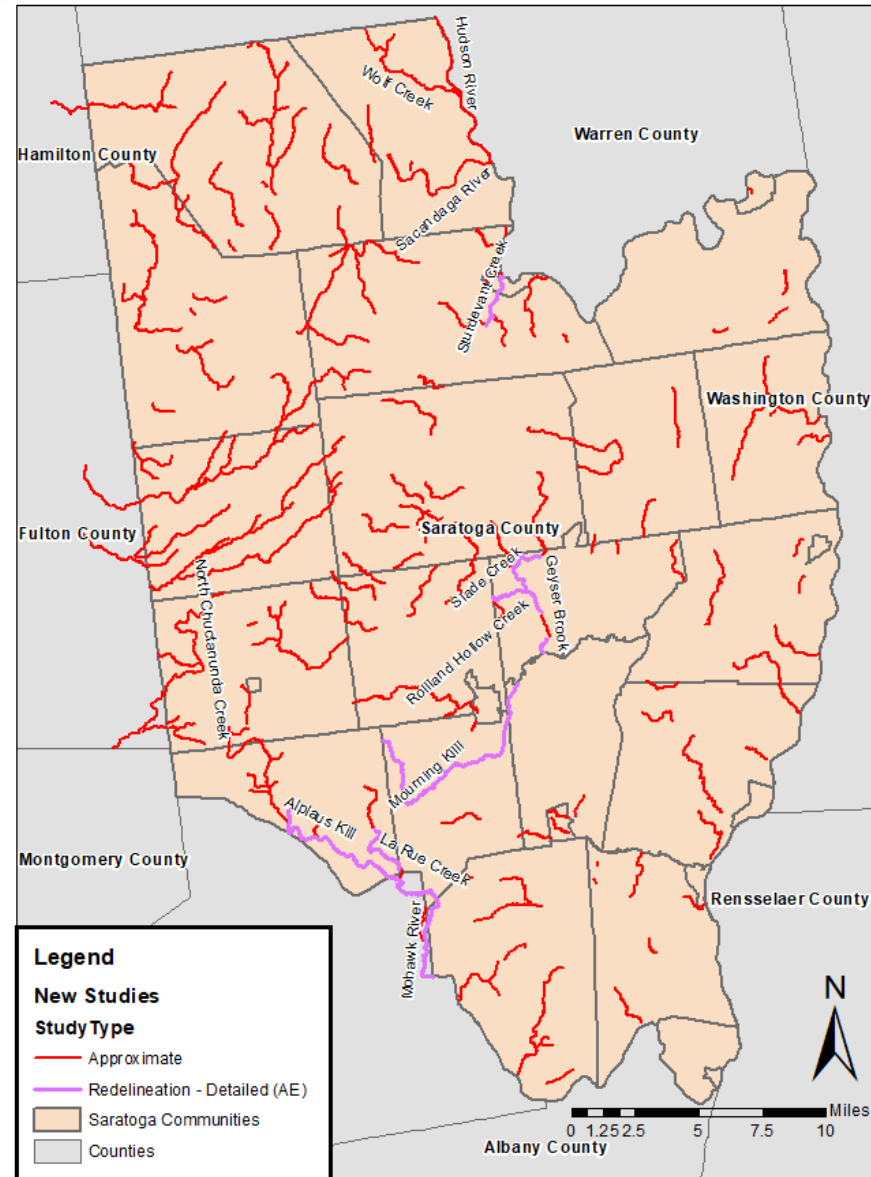
Flood Hazard Analysis
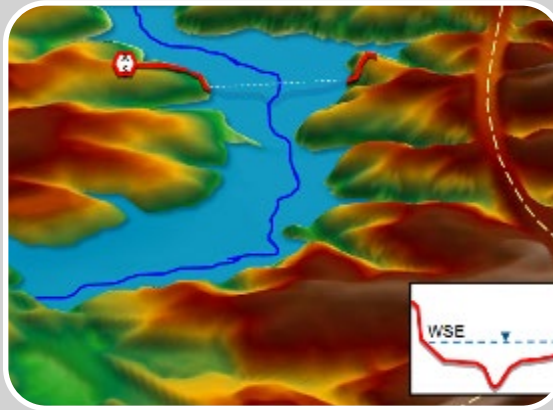
Hydrology

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?

Engineering Methods - Hydrologic Analysis

- ‣ **Typical Methods FEMA utilizes**
  - • Statistical Gage Analyses
  - • Regression Analyses
  - • Rainfall Runoff Modeling
- ‣ **Gage/Regression are based on availability stream gage data**
- ‣ **Rainfall-Runoff physical modeling chosen due to limited gage data**
  - • Leverage exiting HEC-HMS models from Hudson-Hoosic Watershed studies including Mohawk River
- ‣ **Discharges developed for**
  - ▪ 10%, 4%, 2%, 1%, 1%+, 1%-, 0.2%
  - ▪ Inputs for hydraulic analyses

HEC-HMS Model

Legend
- Streams
- Storage Areas
- Fish Creek Subbasins
- Anthony Kill Subbasins

Regression Report

Gage Analyses

Guidelines for Determining Flood Flow Frequency Bulletin 17C

Chapter 5 of
Section B, Surface Water
Book 4, Hydrologic Analysis and Interpretation

Techniques and Methods 4–B5

U.S. Department of the Interior
U.S. Geological Survey

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Engineering Methods - Hydraulic Analysis

- ▸ **Modeling developed using USACE's HEC-RAS Program**
  - One Dimensional (1D) Steady State
  - One Dimensional (1D) Unsteady State
  - Two Dimensional (2D) Unsteady State
- ▸ **Terrain Data**
  - Provides topographic elevation information
  - Supplemented by field survey
  - Data Sources:
    - 2018 FEMA Bare Earth DEM (QL2)
    - 2015 NYS Bare Earth DEM (QL2)
    - 2012 FEMA Bare Earth DEM (QL3)
    - 2012 NYS Bare Earth DEM (QL3)
- ▸ **Field Survey for Detailed only**
  - Collection underway: 70 structures and 315 under water channel sections

HEC-RAS Models

1D Steady State

2D Unsteady State
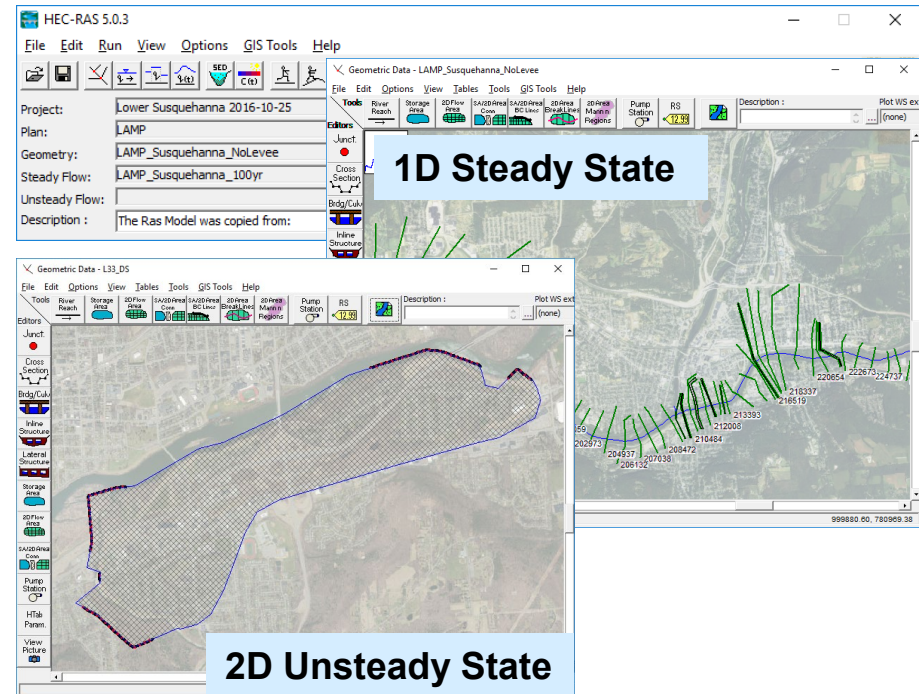
- ▸ **Flood Hazard Data Generated**
  - Elevations: 10%, 4%, 2%, 1%, 1%+, 1%-, 0.2%
  - Floodplain extents: 10%, 1%, 0.2%, Floodway

RiskMAP
Increasing Resilience Together

Engineering Methods - Detailed Streams

▸ **Hydrologic Method: HEC-HMS, rainfall-runoff model from Hudson-Hoosic Study**

- Mohawk River
- Cooley Kill
- Plum Brook

▸ **Hydrologic Method: USGS Regression Equations**

- Schuyler Creek

▸ **Hydraulic Method: HEC-RAS, 1D steady state hydraulic model**

- Mohawk River – 13.9 miles
- Cooley Kill – 0.8 miles
- Plum Brook – 3.1 miles
- Schuyler Creek – 0.9 miles
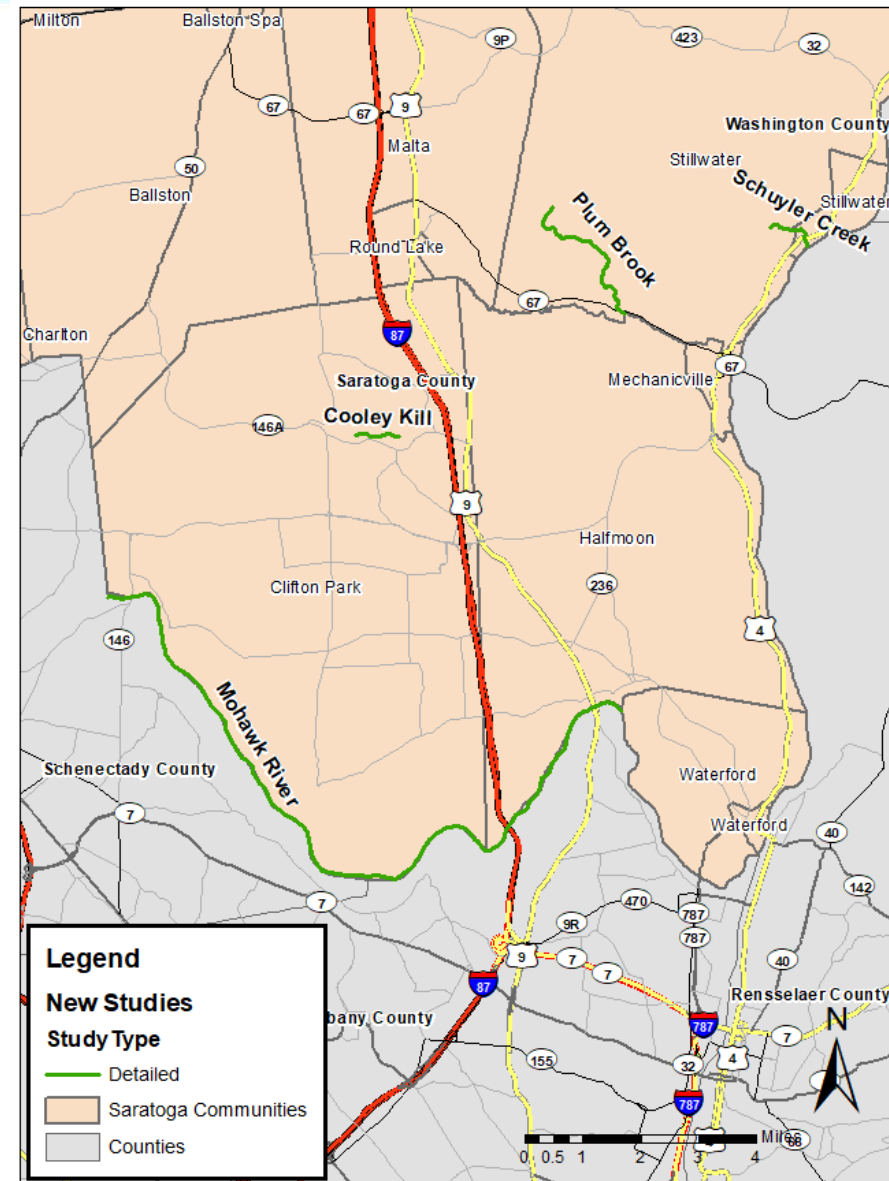
Legend

New Studies

Study Type

— Detailed

▢ Saratoga Communities

▢ Counties

Engineering Methods - Detailed Streams

▸ **Hydrologic Method: HEC-HMS, rainfall-runoff model from Hudson-Hoosic Study**

- Mud Creek
- Kayaderosseras Creek
- Glowegee Creek
- Gordon Creek
- Spring Run

▸ **Hydraulic Method: HEC-RAS, 1D steady state hydraulic model**

- Mud Creek – 1.4 miles
- Kayaderosseras Creek – 19.8 miles
- Glowegee Creek – 2.8 miles
- Spring Run – 1.8 miles

▸ **Hydraulic Method: HEC-RAS, 2D unsteady state hydraulic model**

- Kayaderosseras Creek – 0.8 miles
- Gordon Creek – 0.8 miles

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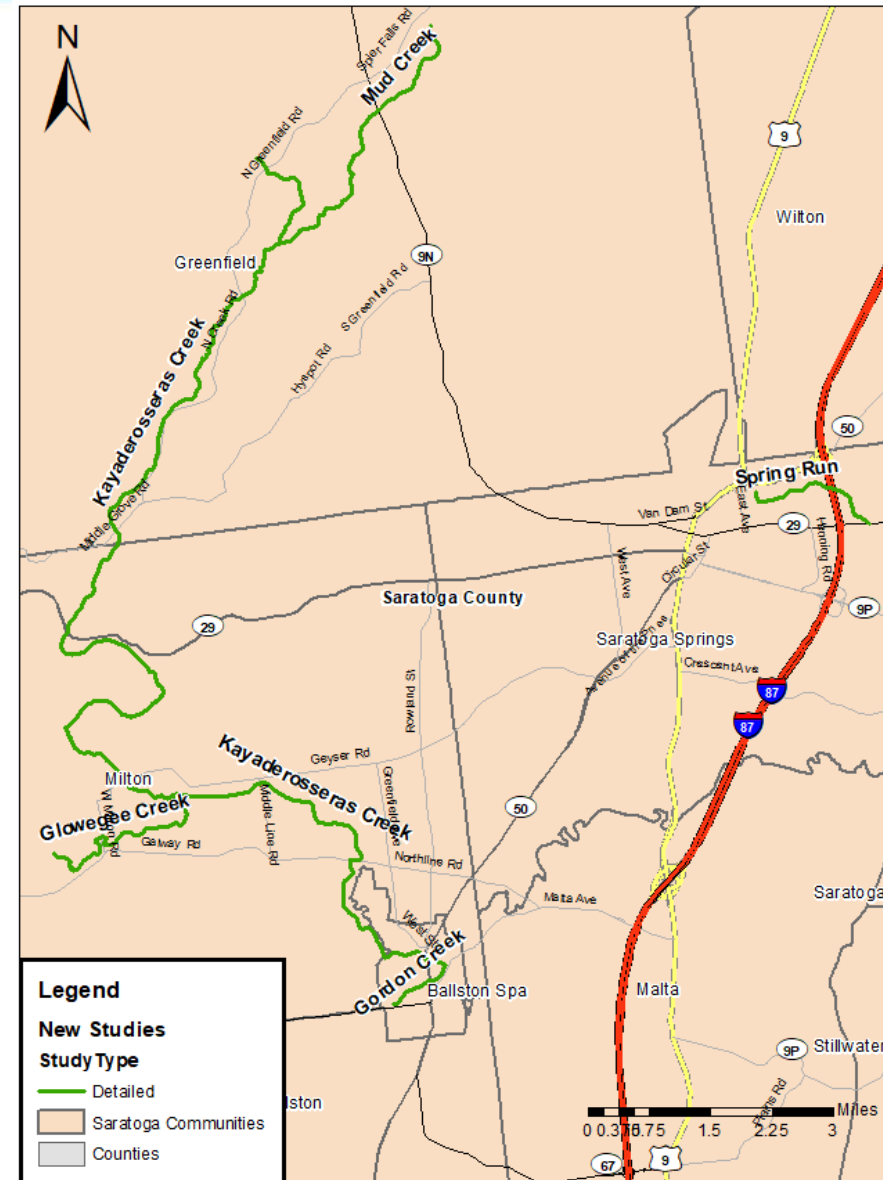
Engineering Methods - Detailed Streams

- ▸ **Hydrologic Method: USGS Regression Equations**

  - • Snook Kill

- ▸ **Hydrologic Method: Statistical gage analysis**

  - • Great Sacandaga Lake

- ▸ **Hydraulic Method: HEC-RAS, 1D steady state hydraulic model**

  - • Snook Kill – 9.5 miles

- ▸ **Hydraulic Method: Lake – Stage frequency analysis**

  - • Great Sacandaga Lake – 34.4 miles
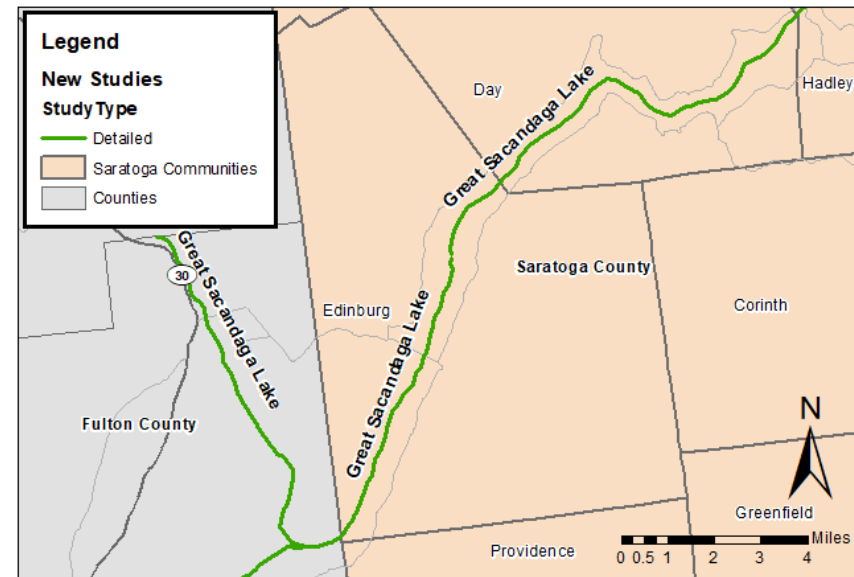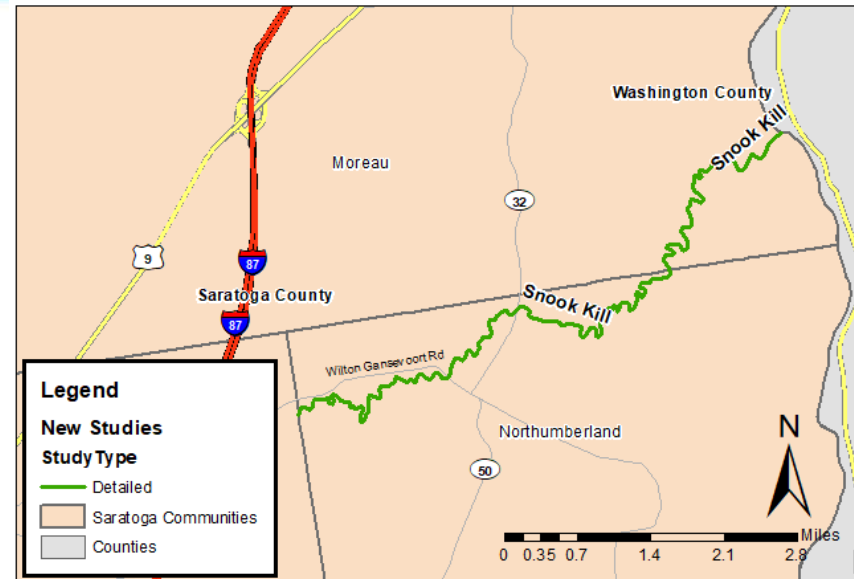
Engineering Methods - Approximate Streams

- **Approximate Streams – 359 miles**
- **Hudson River - 7.0 miles**
  - Hydrologic Method: statistical gage analysis
  - Hydraulic Method: 1D steady state hydraulic model coordinated with Warren County project
- **Sacandaga River - 6.5 miles**
  - Hydrologic Method: statistical gage analysis
  - Hydraulic Method: 1D steady state hydraulic model
- **Other notable streams**
  - Alplaus Kill - 3.4 miles
  - North Chuctanunda Creek - 10.7 miles
  - Wolf Creek - 5.2 miles
- **Floodplain extents for 10%, 1%, and 0.2%**

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Legend
New Studies
Study Type
— Approximate
Saratoga Communities
Counties
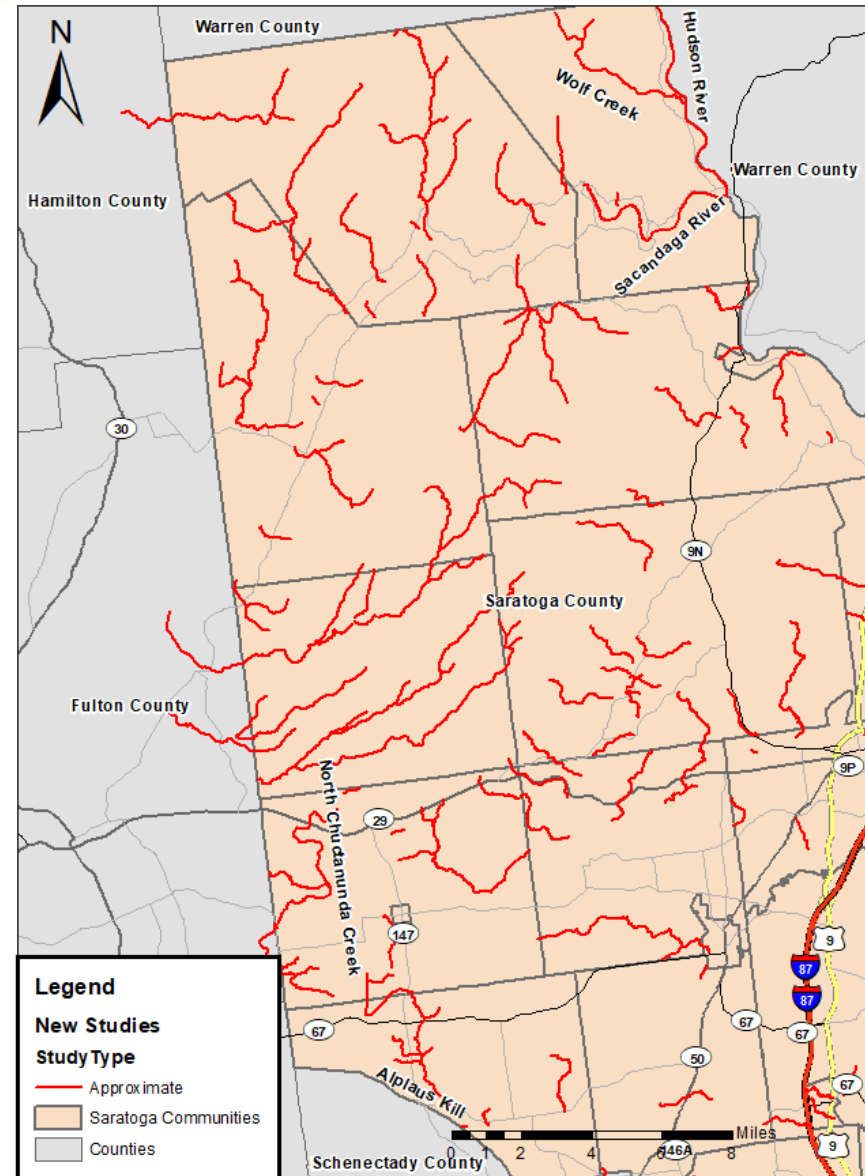
Redelineated Streams

- **Redelineated Streams (AE) – 38 miles**
  - Notable streams include:
    - Alplaus Kill - 8.3 miles
    - La Rue Creek - 3.1 miles
    - Mohawk River - 5.0 miles
    - Mourning Kill - 11.4 miles

- **No hydrology or hydraulic analyses conducted**

- **Flood extents are redelineated using the latest LiDAR topographic data**

- **Vertical Datum Conversion conducted**

- **Existing flood elevations converted from NGVD29 to NAVD88 datum**

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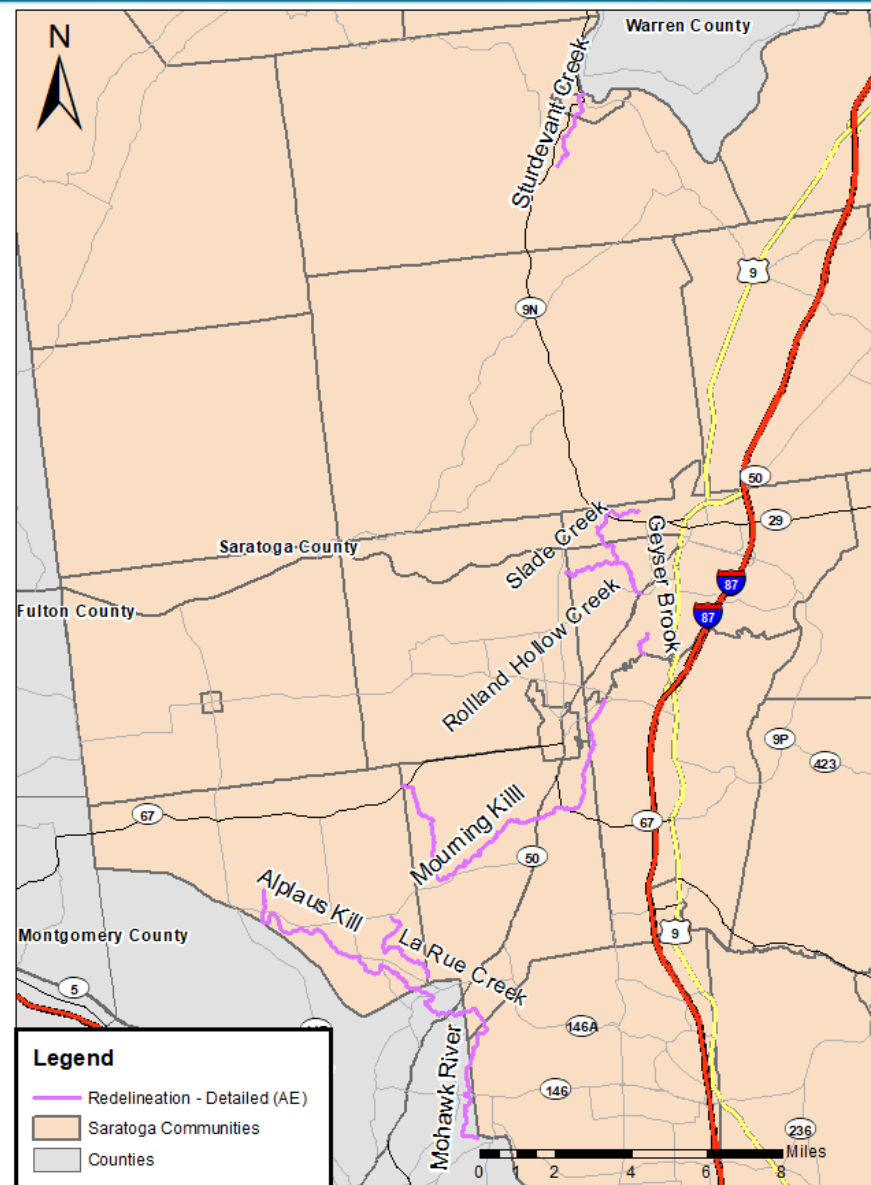
Where are we now and what is next?
Discuss next steps

Overall Flood Risk Project Timeline

The post-preliminary process to create updated regulatory products will be part of a future project.

★ Community Touchpoint

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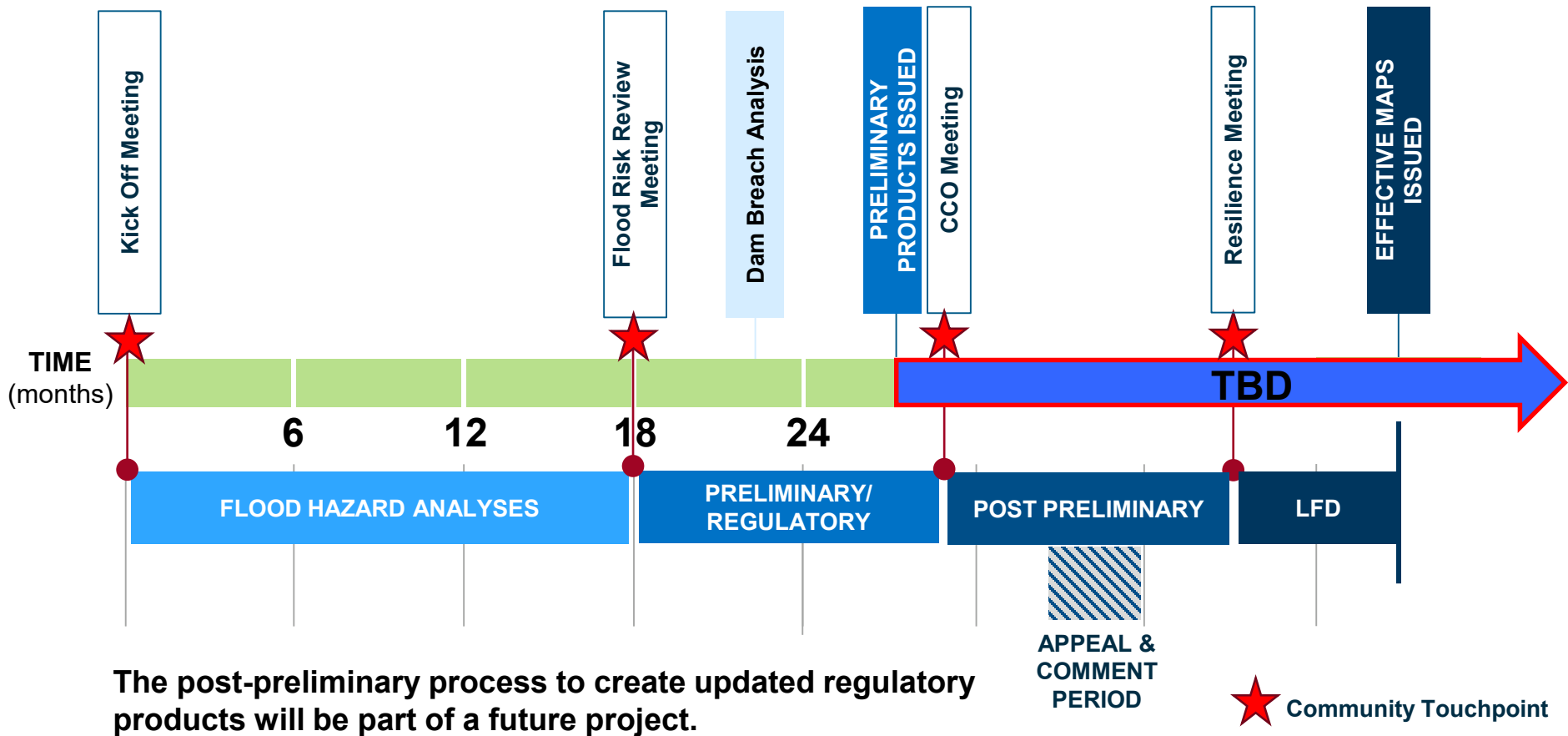
Major Study Milestones

- **Data Development (October 2021)**
  - Terrain processing
  - Engineering Methods Concurrence (620 letters)
  - Field reconnaissance and survey
  - Hydrologic modeling
  - Hydraulic modeling
  - Floodplain mapping (workmaps)

- **Flood Risk Review Meeting (December 2021)**
  - Review work map products with communities

- **Preliminary Products Update (FIRM & FIS)**
  - Preliminary Maps Issued (September 2022)

What will communities receive?
Preliminary and Planning Products

Work Maps

▸ **Draft floodplain mapping shared using work maps**

▸ **Flood Risk Review meeting provides a review of the new engineering analysis results, allowing communities to:**

- Identify potential updates for Hazard Mitigation Plans

- Provide insight and input on hydrology and hydraulic results in updated study area

- Seek local buy-in and review possible use of analysis

- Identify areas of large changes and potential opportunities for risk reduction

- Identify risk communications needs and options

Preliminary Mapping Products

▸ **Preliminary product development commences after work map comment period**

▸ **Seamless countywide mapping produced**

   • Incorporates existing Hudson-Hoosic mapping

▸ **Preliminary Digital Flood Insurance Rate Map (DFIRM) Database**

▸ **197 Preliminary FIRM Panels**

▸ **Flood Insurance Study (FIS) Report**

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Flood Insurance Rate Map (FIRM)
Example

| File	Type
L_Comm_Info.dbf	dBASE Table
L_Comm_Revis.dbf	dBASE Table
L_ManningsN.dbf	dBASE Table
L_Meetings.dbf	dBASE Table
L_Mtg_POC.dbf	dBASE Table
L_Pol_FHBM.dbf	dBASE Table
L_Source_Cit.dbf	dBASE Table
L_Summary_Discharges.dbf	dBASE Table
L_XS_Elev.dbf	dBASE Table
L_XS_Struct.dbf	dBASE Table
S_Base_Index.shp	Shapefile
S_BFE.shp	Shapefile
S_FIRM_Pan.shp	Shapefile
S_Fld_Haz_Ar.shp	Shapefile
S_Fld_Haz_Ln.shp	Shapefile
S_Gen_Struct.shp	Shapefile
S_Hydro_Reach.shp	Shapefile
S_Label_Ld.shp	Shapefile
S_Label_Pt.shp	Shapefile
S_Nodes.shp	Shapefile
S_PLSS_Ar.shp	Shapefile
S_Pol_Ar.shp	Shapefile
S_Profil_Basln.shp	Shapefile
S_Stn_Start.shp	Shapefile
S_Subbasins.shp	Shapefile
S_Submittal_Info.shp	Shapefile
S_Trnsport_Ln.shp	Shapefile
S_Wtr_Ln.shp	Shapefile
S_XS.shp	Shapefile
Study_Info.dbf	dBASE Table

FLOOD INSURANCE STUDY
FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 2

CLINTON COUNTY, NEW YORK
AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
ALTONA, TOWN OF	361379
AUSABLE, TOWN OF	360165
BEEKMANTOWN, TOWN OF	360166
BLACK BROOK, TOWN OF	361309
CHAMPLAIN, TOWN OF	361311
CHAMPLAIN, VILLAGE OF	360167
CHAZY, TOWN OF	361310
CLINTON, TOWN OF	361380
DANNEMORA, TOWN OF	361381
DANNEMORA, VILLAGE OF	360024
ELLENBURG, TOWN OF	361382
MOOERS, TOWN OF	361383
PERU, TOWN OF	361384
PLATTSBURGH, CITY OF	360168
PLATTSBURGH, TOWN OF	360169
ROUSES POINT, VILLAGE OF	360170
SARANAC, TOWN OF	360171
SCHUYLER FALLS, TOWN OF	360172

**PRELIMINARY
2/27/2020**

REVISED:

FLOOD INSURANCE STUDY NUMBER
36019CV000B
Version Number 2.6.3.0

FEMA

Dam Breach Analysis

▸ **Up to 5 Intermediate/High Hazard Dams analyzed**

  ▸ **11 Intermediate hazard class (B)**

  ▸ **7 High hazard class (C)**

▸ **Engineering analyses developed for FIRM will be leveraged**

▸ **EAP analyses could be leveraged**

  ▸ **15 out of 18 (Class B and C)**

▸ **Flood Inundation Maps will be developed**

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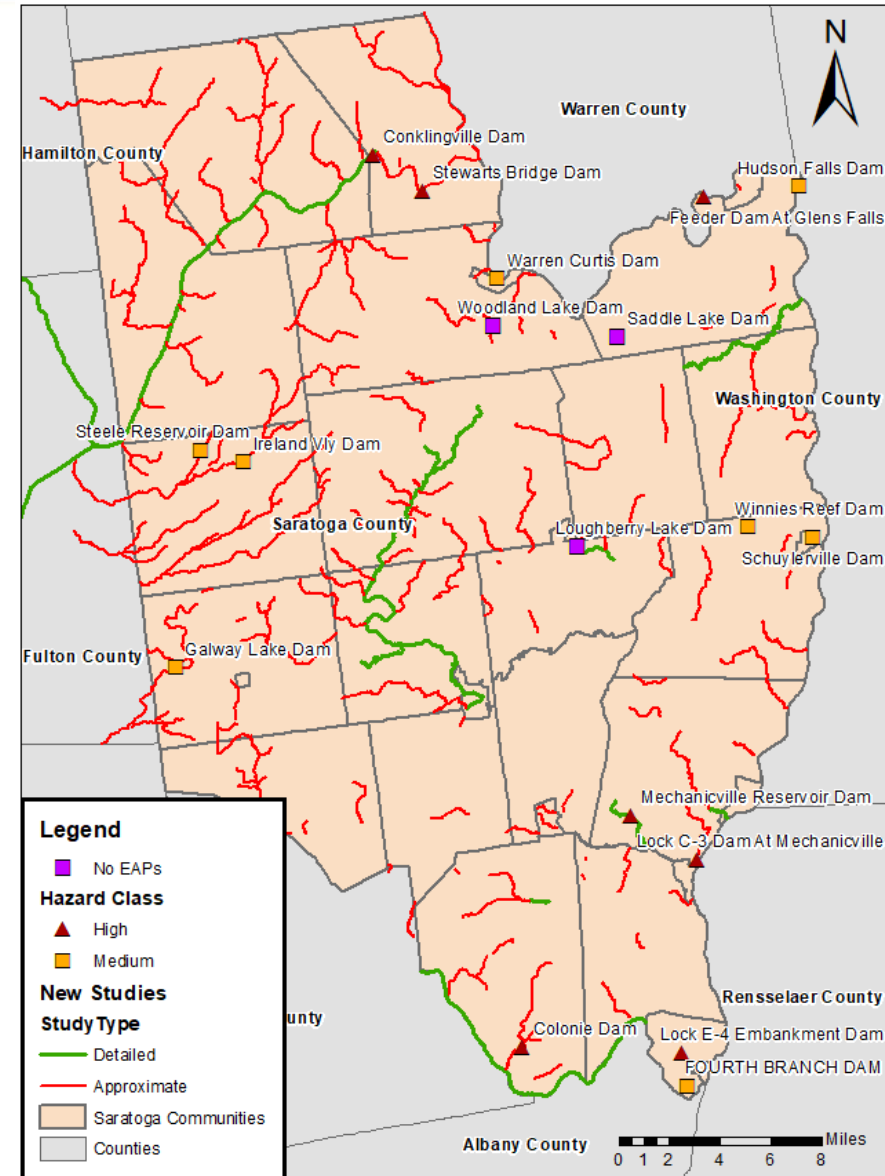
Knowing the Risk

Communities that develop a sound understanding of flood risk will be more empowered to...

‣ Effectively plan use of resources for natural hazards and potential disasters;

‣ Implement effective hazard mitigation projects;

‣ Effectively regulate current and future development without increasing risk; and/or

‣ Effectively communicate about natural hazards to its residents about personal and community mitigation projects that can reduce long-term risk.

Contacts

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- **FEMA Outreach Coordinator**
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- **STARR II Regional Support Center Lead**
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  646-490-3929
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- **NY State Department of Environmental Conservation**
  Regional Contact: Vince Spadaro
  Central Office Contact: Brad Wenskoski
  518-402-8185
  floodplain@dec.ny.gov

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Questions? Comments?

Thank you!