



Flood Risk Project

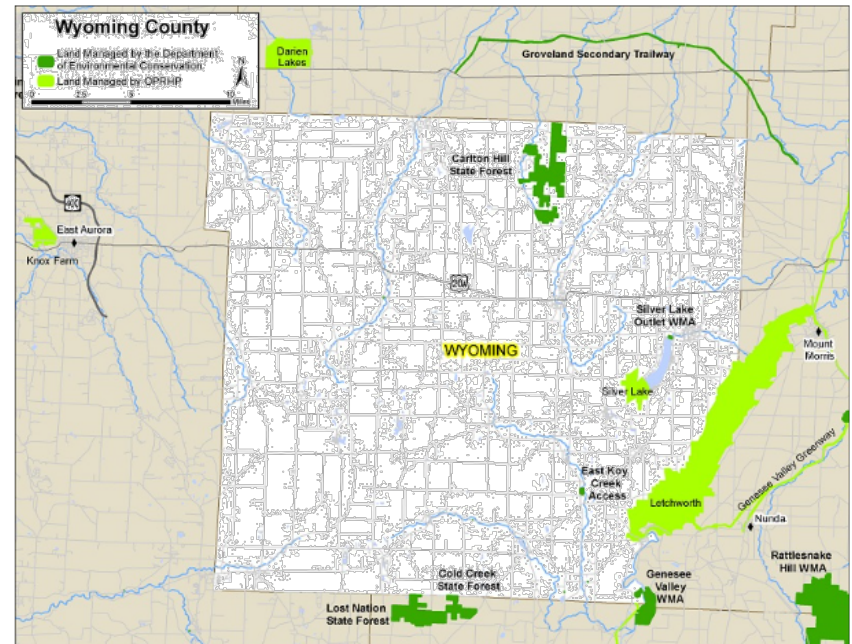
Wyoming County, NY
Project Kick Off Meeting

January 19, 2021



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Wyoming County Map



Please Introduce Yourself



- ▶ **Name**
- ▶ **Role**
- ▶ **Organization**

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

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



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Today's Goals

1

The value of updated flood maps for your community

2

Recap of Flood Risk Study history, including Scoping of Priorities and Base Level Engineering

3

Review countywide study scope, products and outreach process

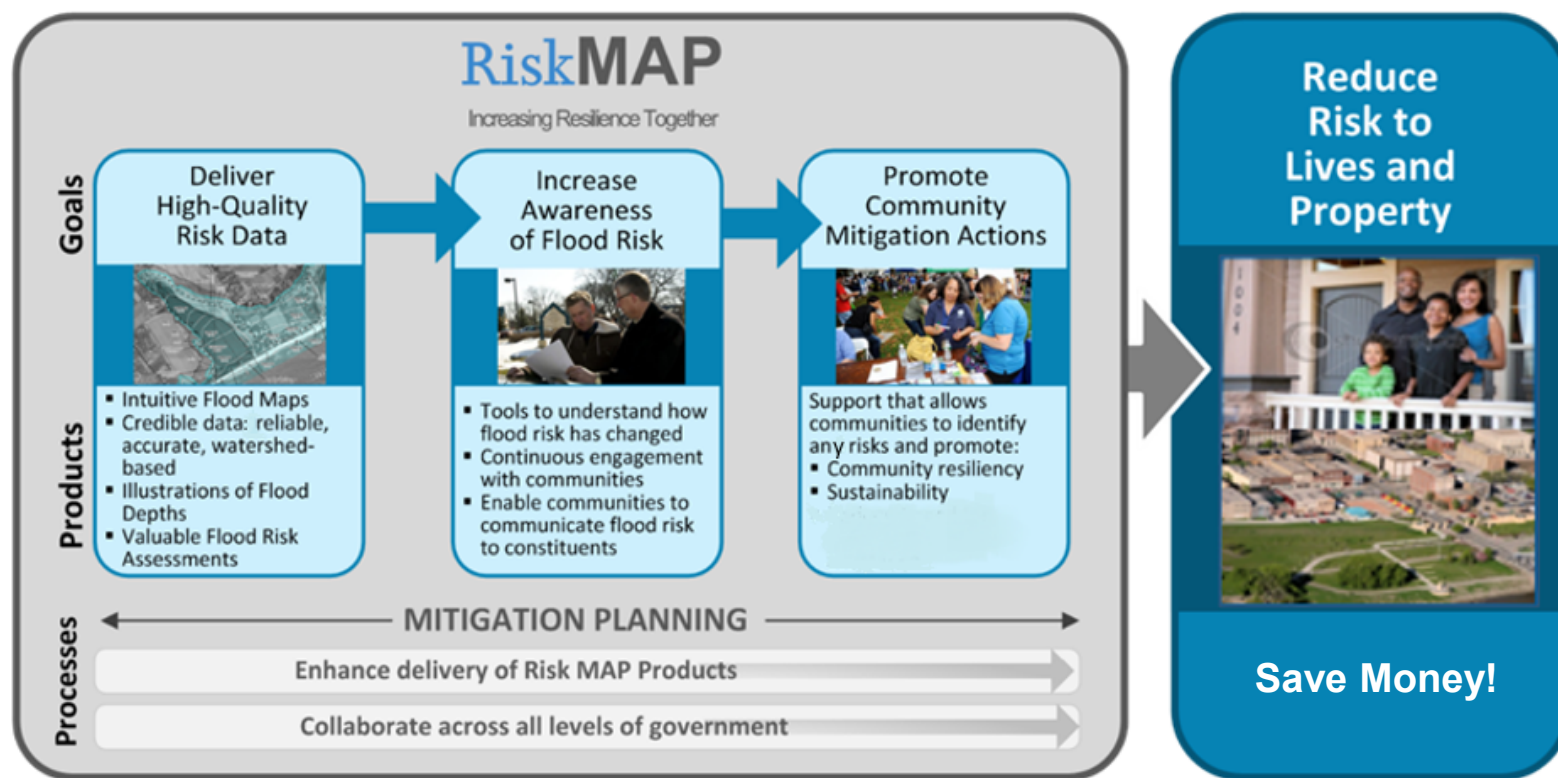


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FEMA Mitigation Division

Risk Analysis Branch

Goal: Stronger and Safer Communities



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The Value of Updated Flood Insurance Rate Maps (FIRMs) for Local Communities

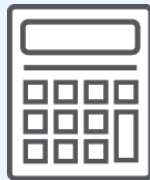


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Flood Maps Guide Progress By:



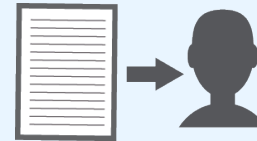
**Identifying
and
Assessing
Flood Risk**



**Establishing
Flood
Insurance
Rates**



**Determining
Local Land
Use**



**Informing
Engineers
and
Developers**



**Equipping
Emergency
Managers**



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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 Wyoming communities	NFIP Claims for affected communities	FEMA Insurance Claims Paid in affected communities	Hazard Mitigation Plan Status
100	88	\$1,035,034	Expired/Update in Progress



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How did we get here?

Review past activities

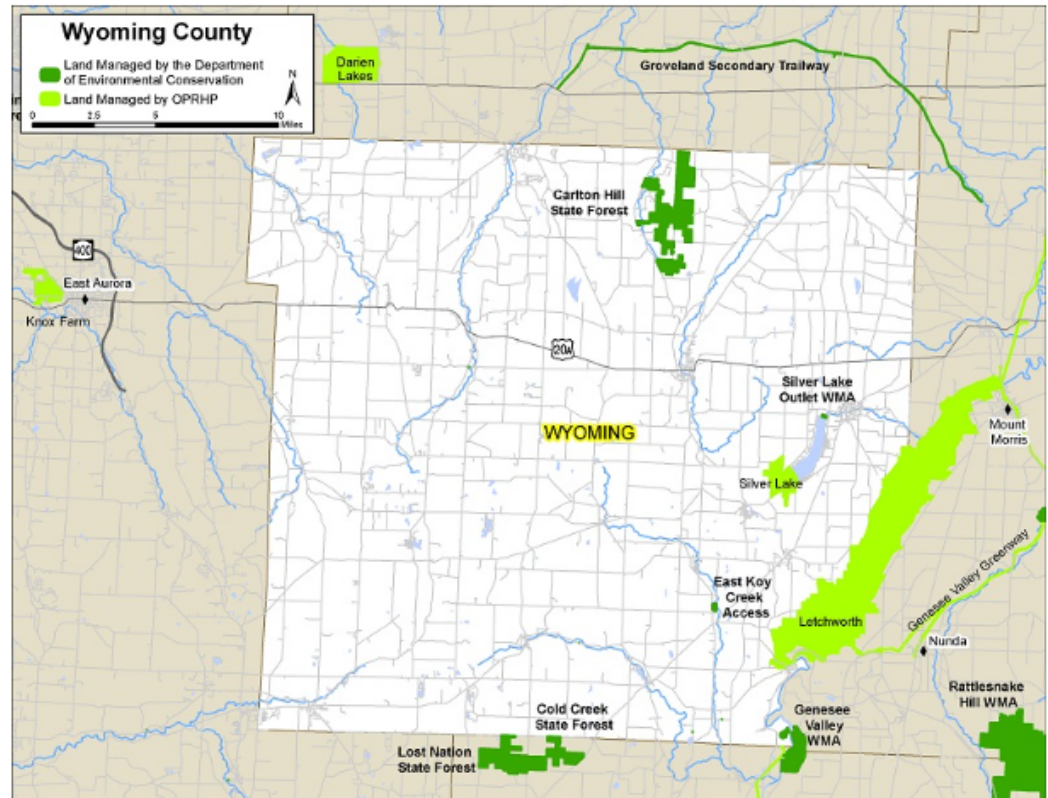


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Discovery / Post-Discovery Progress Recap

- ▶ Meetings held in November 2013
- ▶ Discovery project completed in July 2016
- ▶ Community input guided FEMA priorities
- ▶ Wyoming County's highest priorities included:
 - Oatka Creek
 - Village Brook
 - Streams in Town of Middlebury

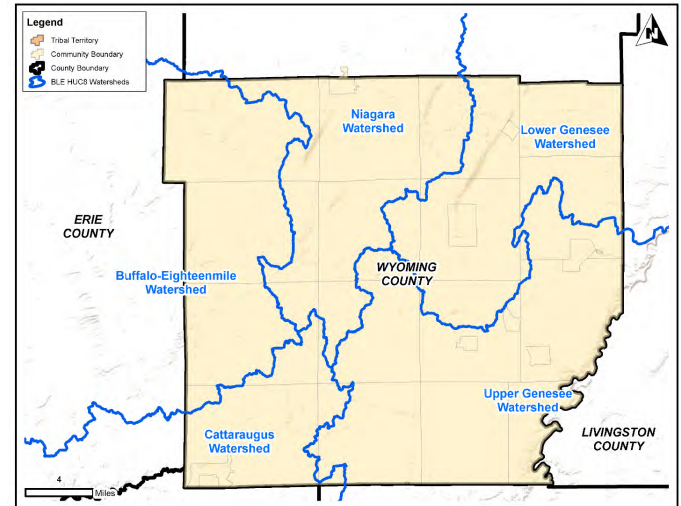
Wyoming County Map



Scoping of Priorities and BLE Recap

Wyoming County

- ▶ Scoping meetings held in November 2019
- ▶ Goal of identifying and prioritizing streams for future FEMA Flood Insurance Studies (FIS) in Western NY
- ▶ Community and county officials invited to participate
- ▶ Base Level Engineering (BLE) performed for ~661 mi. in county
 - BLE combines high-resolution ground elevation data + modeling technology to identify flood hazards at a large scale (e.g. at a watershed level)





What is being studied now?

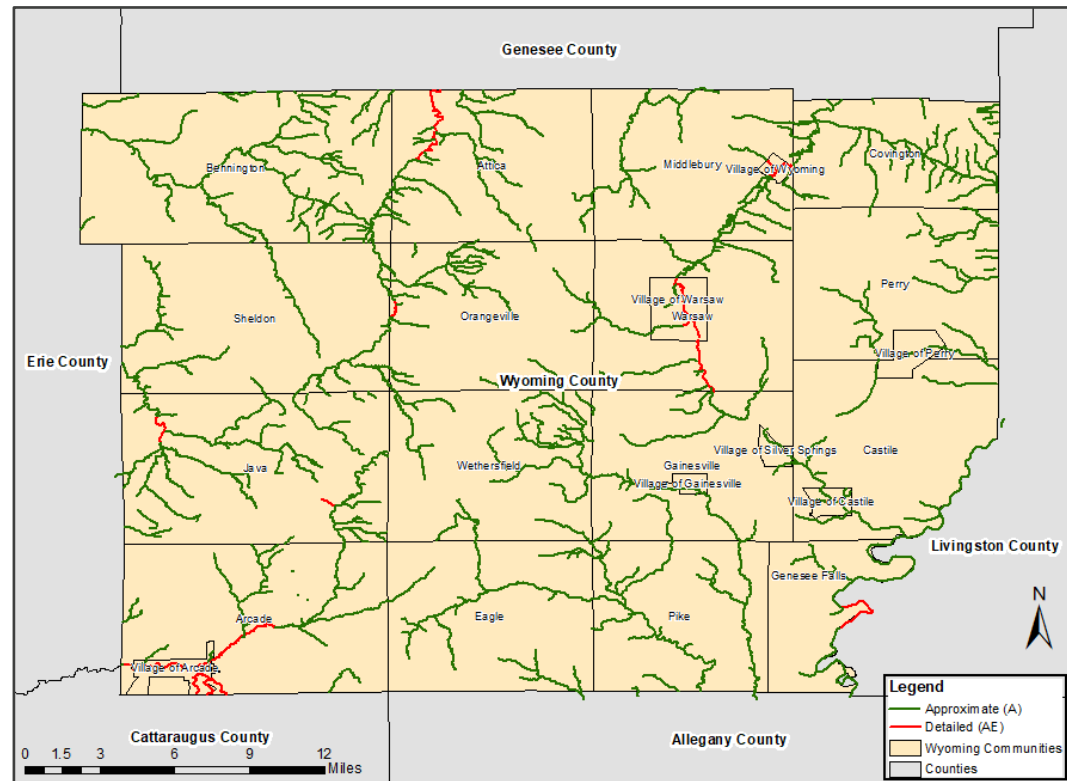
Discuss scope of new study



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Wyoming County Countywide Flood Risk Study Scope

- ▶ **First time digital maps**
- ▶ **Additional flooding sources analyzed**
 - Detailed riverine studies (AE) – 11 streams, 27.6 miles
 - Detailed lake study (AE) – 1 lake, 0.5 mile
 - Approximate (A) studies – multiple streams, 548 miles
- ▶ **25 updated communities**
- ▶ **97 map panels**
- ▶ **Review meetings**
 - Hydrology Meeting
 - Hydraulics Meeting
 - Flood Risk Review Meeting



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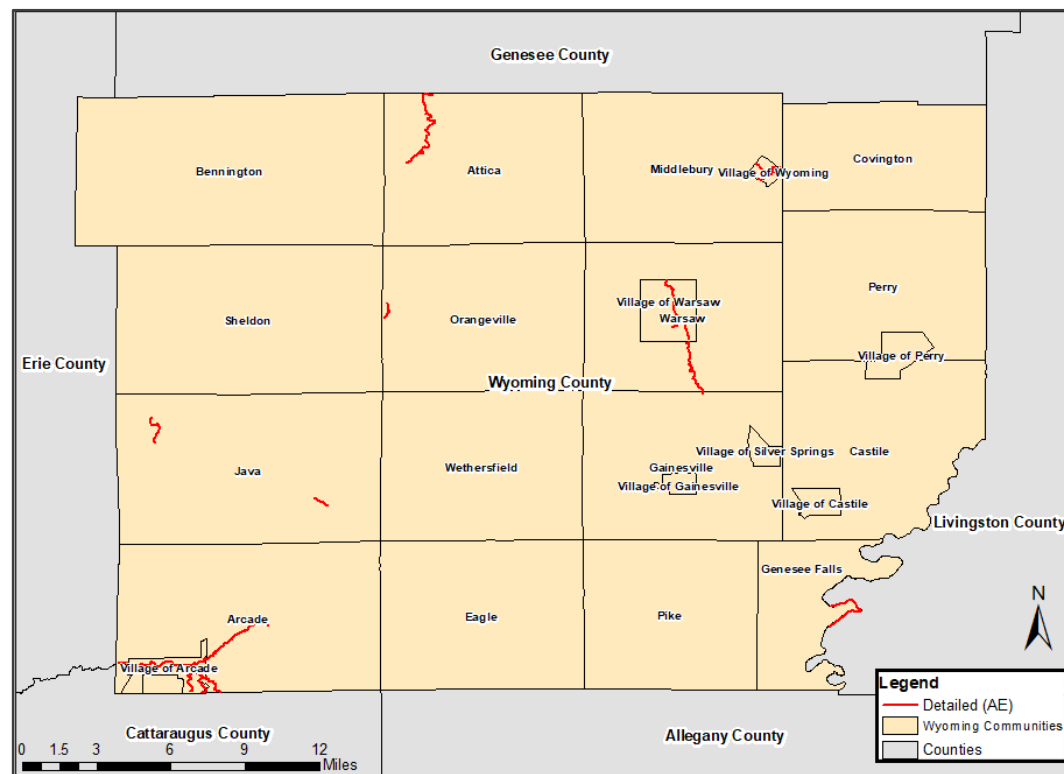
Detailed (AE Zone) Study Scope

► 11 Riverine Studies – 27.6 miles total

- Buffalo Creek – 1.4 miles
- Cattaraugus Creek – 6.5 miles
- Clear Creek – 1.9 miles
- Clear Creek Tributary – 0.9 miles
- Crystal Brook – 0.5 miles
- Genesee River – 2.5 miles
- Haskell Creek – 1.1 miles
- Oatka Creek – 7 miles
- Tonawanda Creek – 5.2 miles
- Wyoming Gulf Brook – 0.6 miles

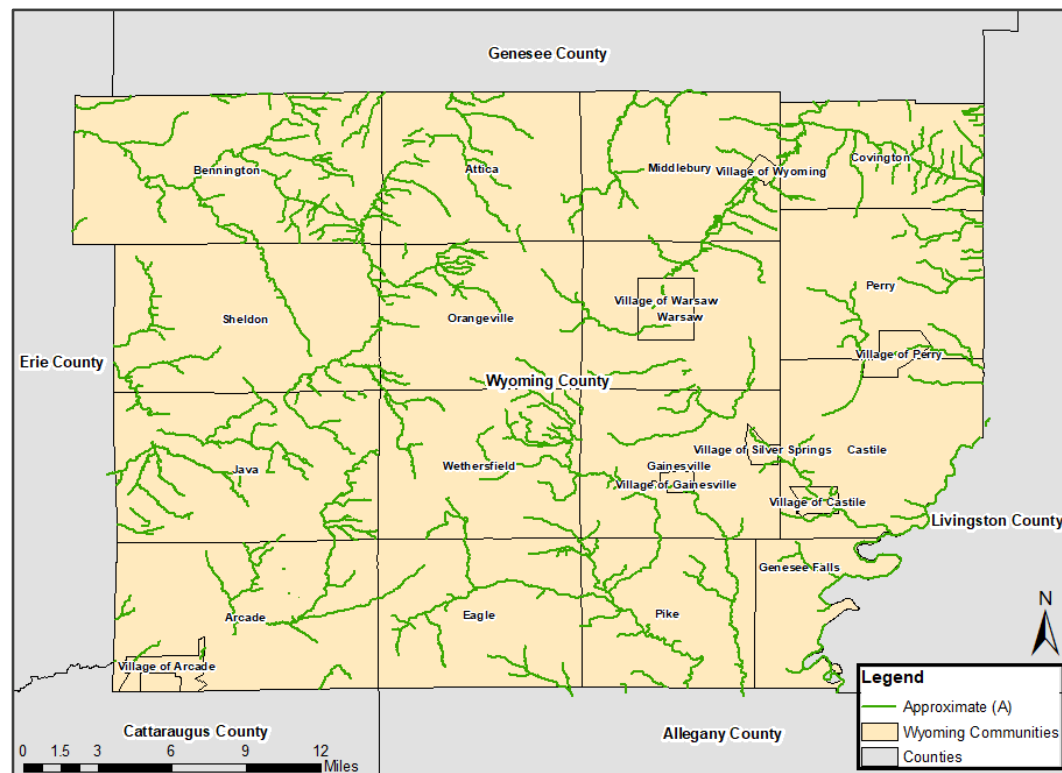
► 1 Lake Study – 0.5 mile

- Java Lake – 0.5 mile



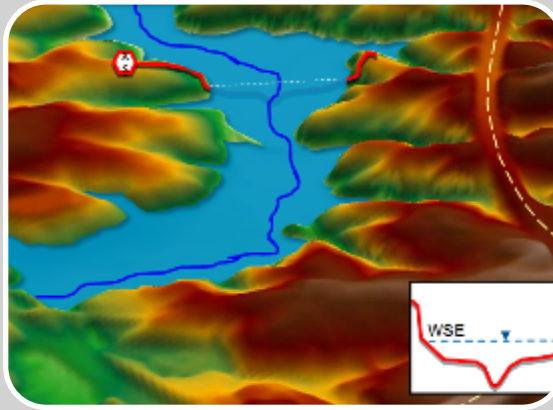
Approximate (A Zone) Study Scope

- ▶ **Completes countywide stream coverage**
- ▶ **Approximate Streams Total – 548 miles**
 - Notable streams include:
 - Genesee River - 5.5 mi
 - East Koy Creek – 15.6 mi
 - Tonawanda Creek – 11.8 mi





Flood Hazard Analysis



Hydrology

Volume of water?
Peak Flows?

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

Hydraulics

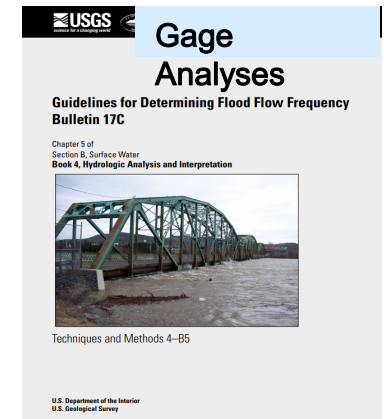
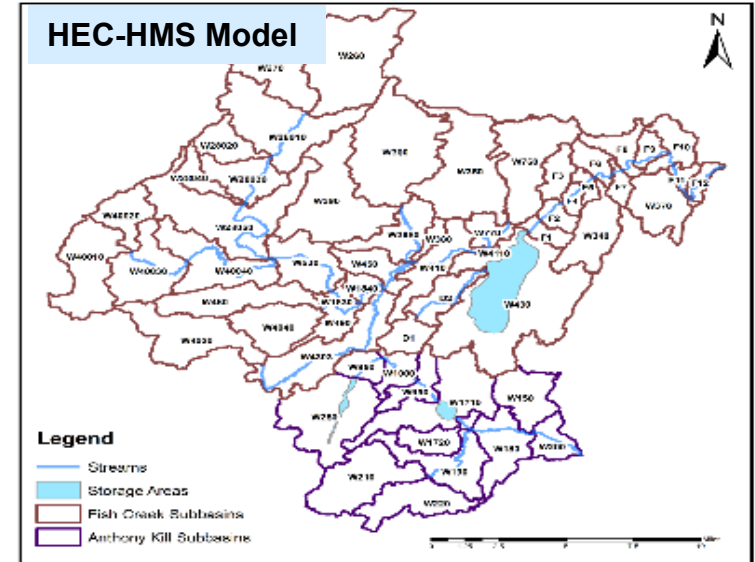
Will the stream in
question be able to
convey all storm
water or runoff that
arrives?

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 Analyses are based on availability of stream gage data**
- ▶ **Rainfall-Runoff modeling**
- ▶ **Discharges developed for**
 - 10%, 4%, 2%, 1%, 1%+, 1%-, 0.2% annual chance exceedance flood event



Engineering Methods - Hydraulic Analysis

► Modeling developed using USACE's HEC-RAS Program

- One Dimensional (1D) Steady State
- One Dimensional (1D) Unsteady State

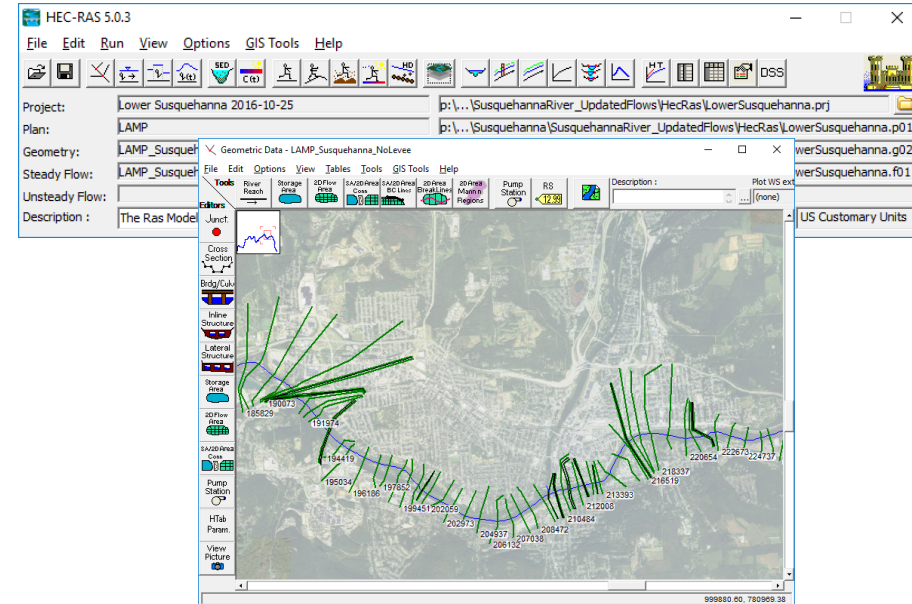
► Terrain Data

- Provides topographic elevation information
- Supplemented by field survey
- Data Source:
 - 2017 NYS Bare Earth DEM USGS Quality Level 2

► Field Survey for Detailed only

- Collection underway: 51 structures and 186 under water channel cross sections

HEC-RAS Models



► Flood Hazard Data Generated

- Water Surface Elevations for the 10%, 4%, 2%, 1%, 1%+, 1%-, 0.2% annual chance flood events
- Floodplain extents: 10%, 1%, 0.2%, Floodway

Engineering Methods – Detailed Studies

Detailed Riverine Studies

► Study Methods

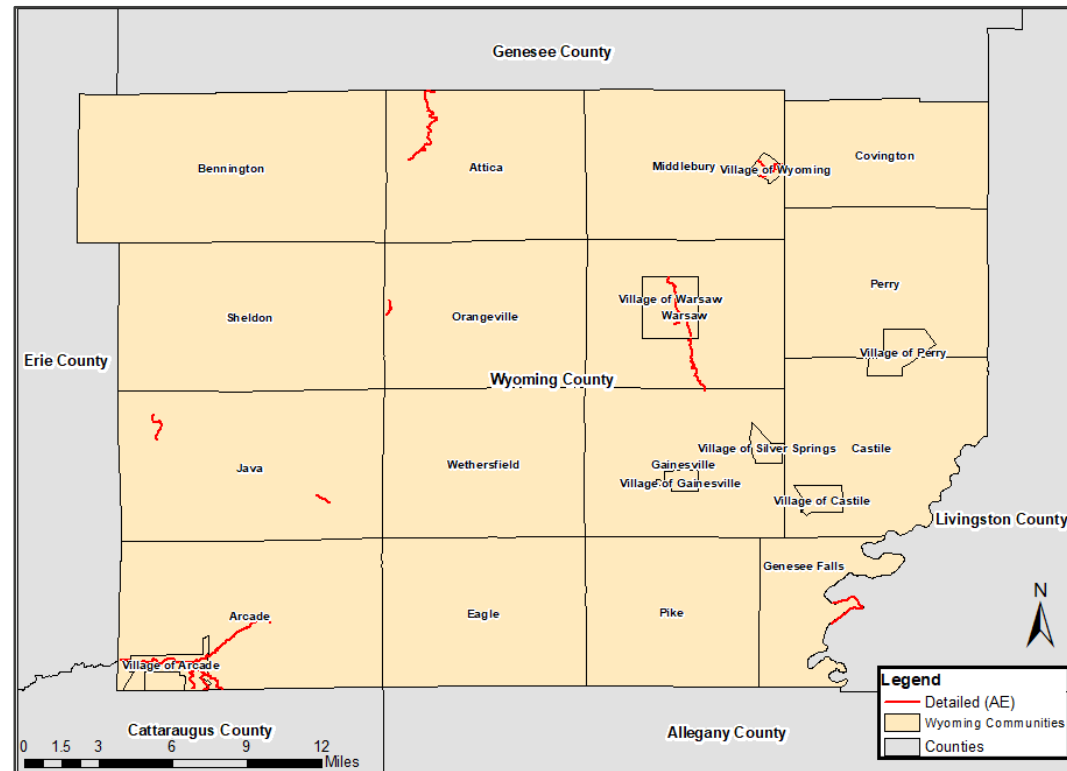
- Hydrologic Method:
 - Statistical Gage Analysis
 - USGS Regression Equations
- Hydraulic Method: HEC-RAS, 1D steady state hydraulic model

Detailed Lake Study

► Study Methods

- Hydrologic Method: Stage Frequency analysis
- Hydraulic Method: Stage Frequency analysis

- Floodplain extents for 10%, 1%, and 0.2% annual chance exceedance flood event shown on FIRM



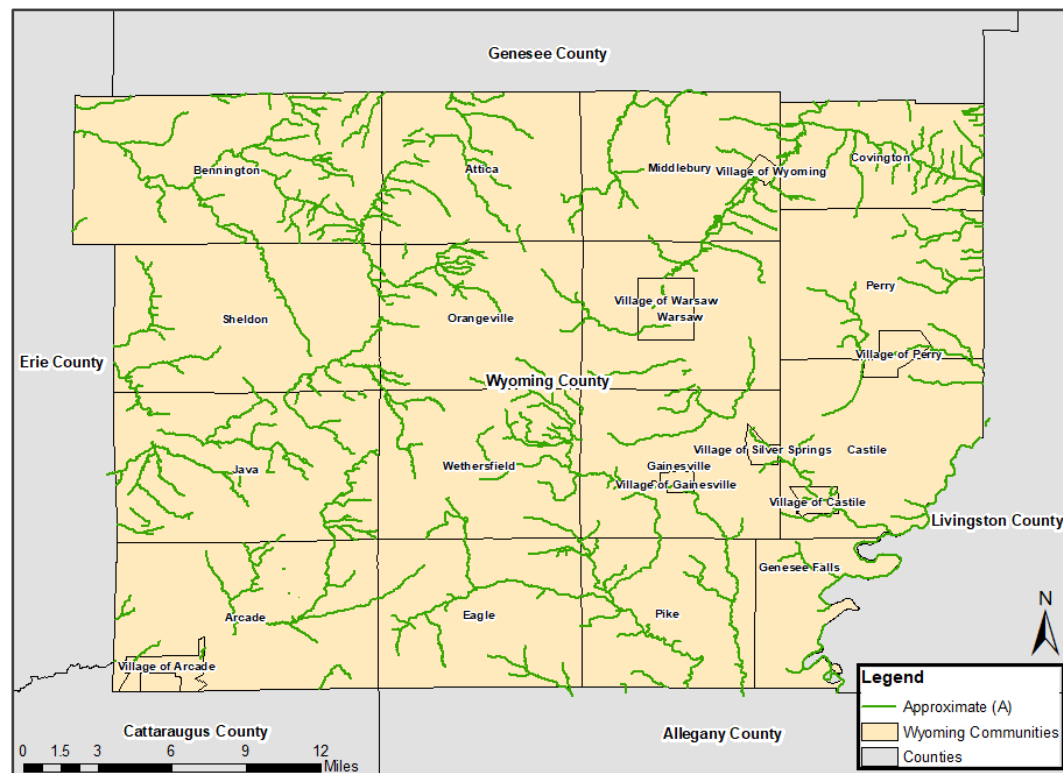
Engineering Methods - Approximate Studies

Approximate Riverine Studies

► Study Methods

- Hydrologic Method:
 - Statistical Gage Analysis
 - USGS Regression Equations
- Hydraulic Method: HEC-RAS, 1D steady state hydraulic model

- **Floodplain extents for 10% and 1% annual chance exceedance flood event shown on FIRM**



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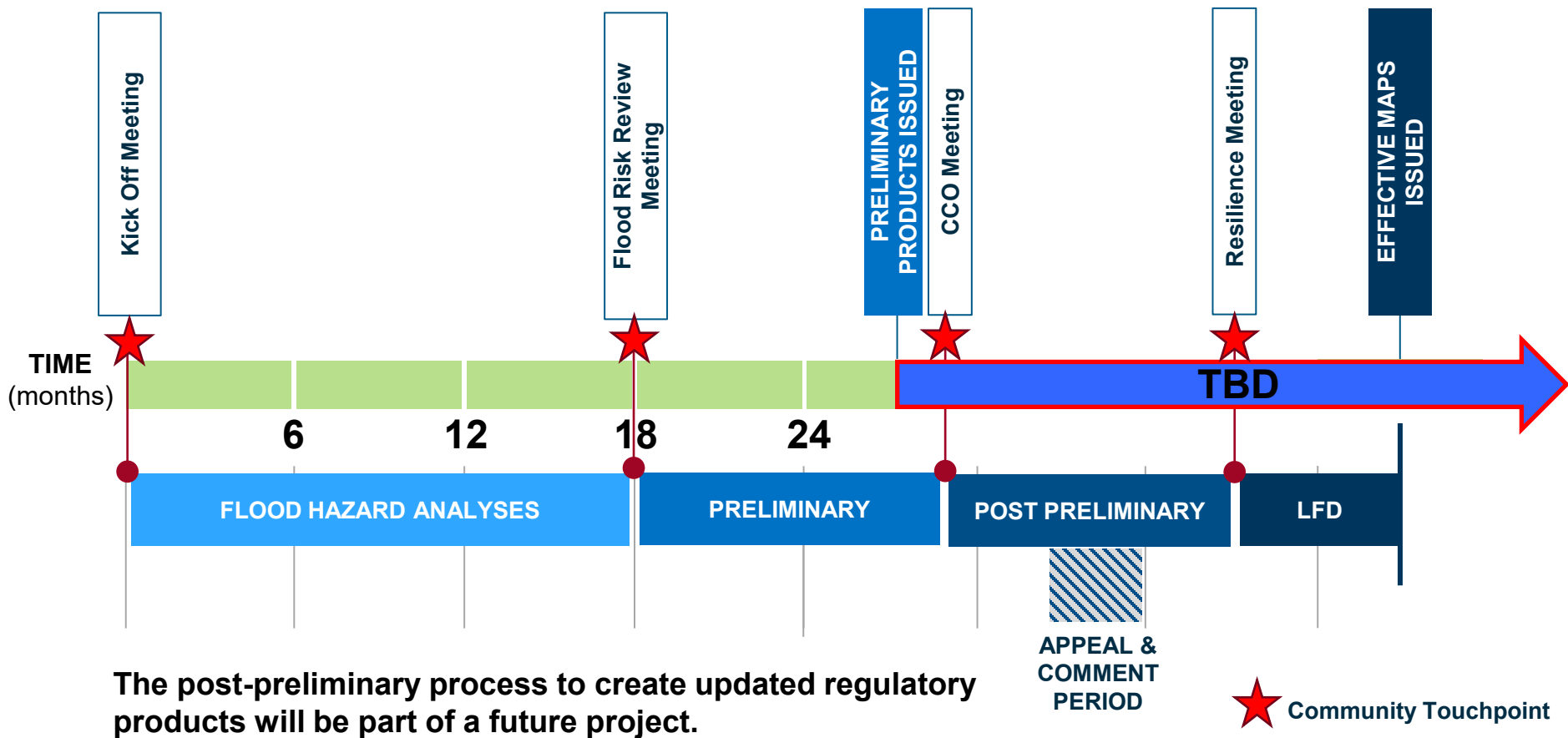
Where are we now and what is next?

Discuss next steps



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Overall Flood Risk Project Timeline



Major Study Milestones

► **Data Development (Starting January 2021)**

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

► **Flood Risk Review Meeting (Summer 2022)**

- Review work map products with communities

► **Preliminary Products Update (FIS & FIRMs)**

- Preliminary Maps Issued (Est. September 2023)



What will communities receive?

Preliminary and Planning Products



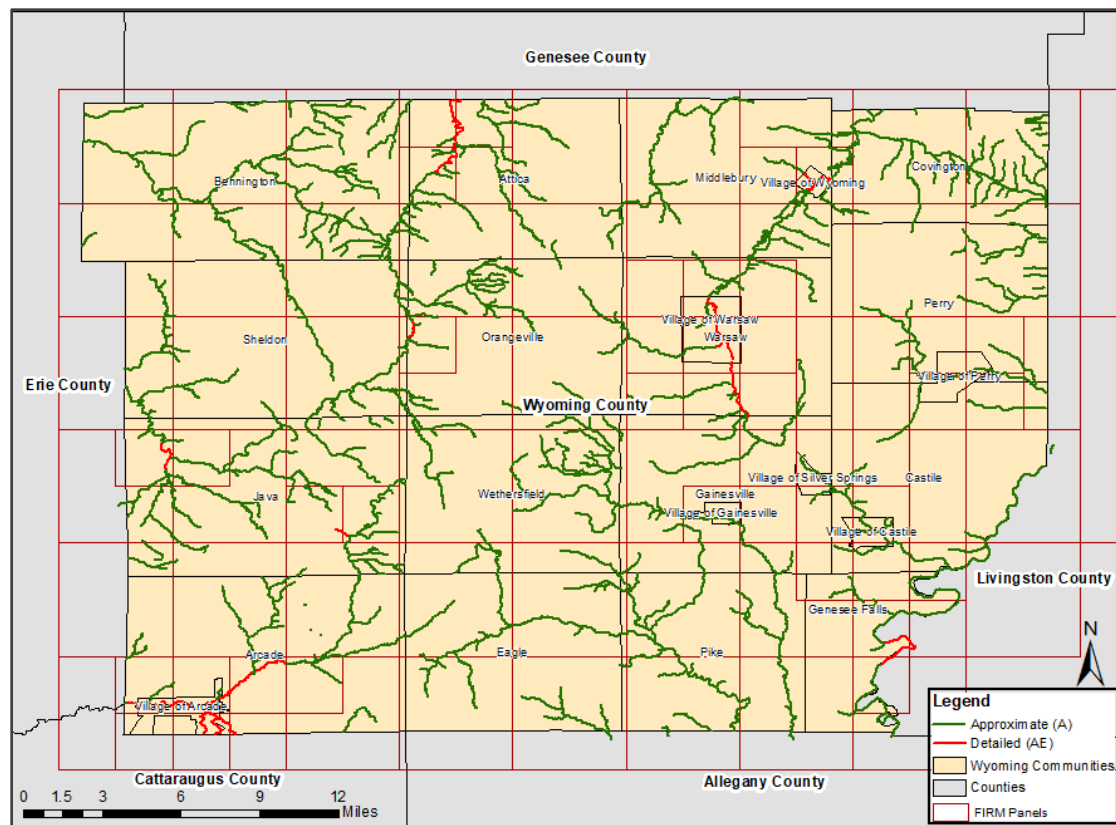
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Work Maps

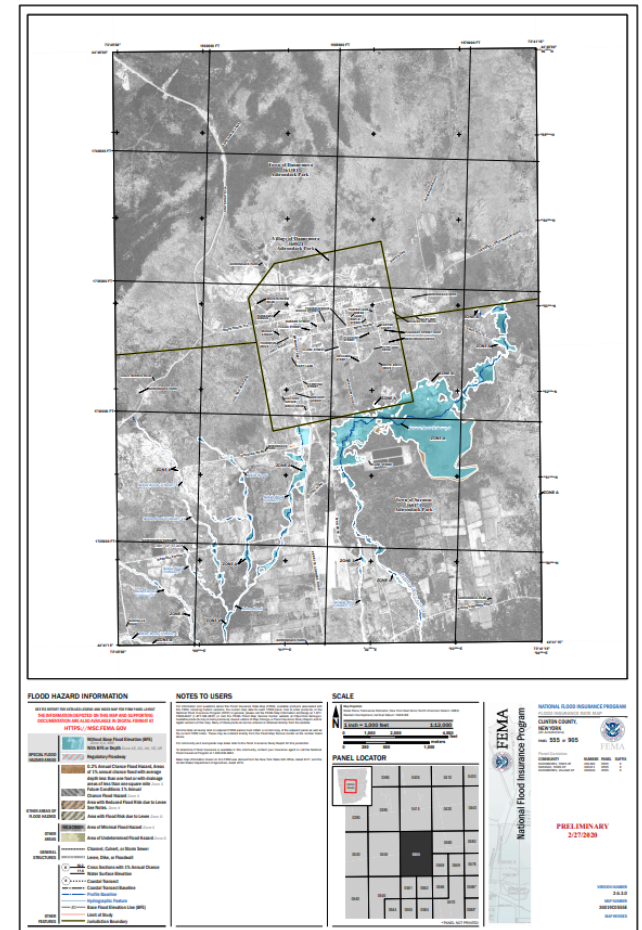
- ▶ **Draft floodplain mapping shared using work maps**
- ▶ **Flood Risk Review meeting provides a review of the new engineering analysis results, allowing communities to:**
 - Identify potential updates for Hazard Mitigation Plans
 - Provide insight and input on hydrology and hydraulic results in updated study area
 - Seek local buy-in and review possible use of analysis
 - Identify areas of large changes and potential opportunities for risk reduction
 - Source of best available information for grant applications
 - Identify risk communications needs and options

Preliminary Mapping Products

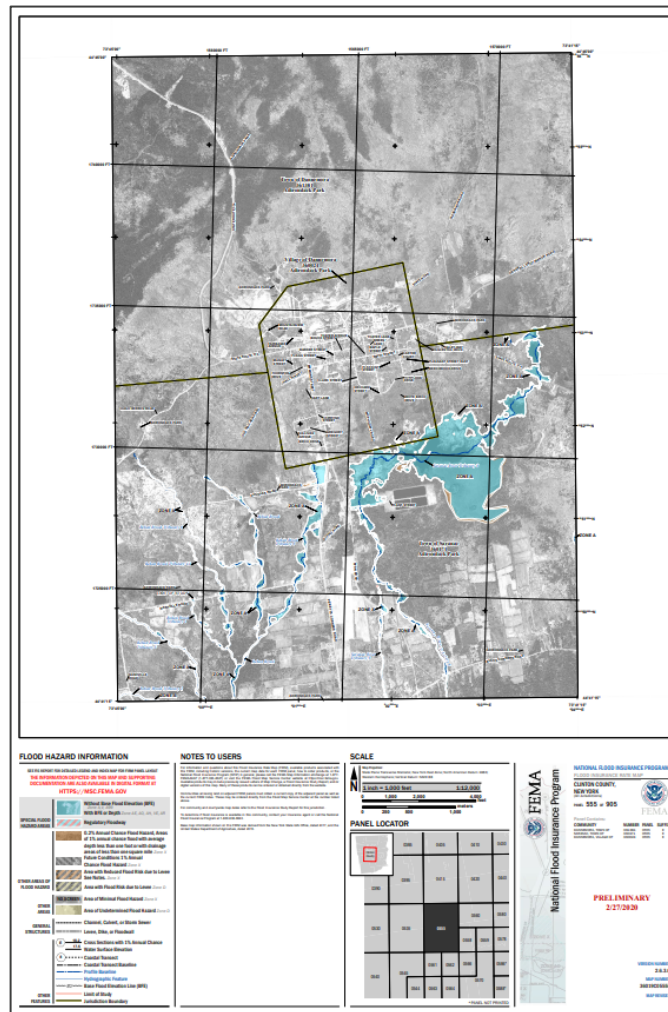
- ▶ Preliminary product development commences after work map comment period
- ▶ Seamless countywide mapping produced
- ▶ Preliminary Digital Flood Insurance Rate Map (FIRM) Database
- ▶ 97 Preliminary FIRM Panels
- ▶ Flood Insurance Study Report



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Flood Insurance Rate Map Example



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Knowing the Risk

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

- ▶ Effectively plan resource use 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 residents regarding personal and community mitigation projects to reduce long-term risk.



Contacts

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Questions? Comments?



Thank you!



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