TETRA TECH

Seneca County Multi-Jurisdictional Hazard Mitigation Plan 2025 Update

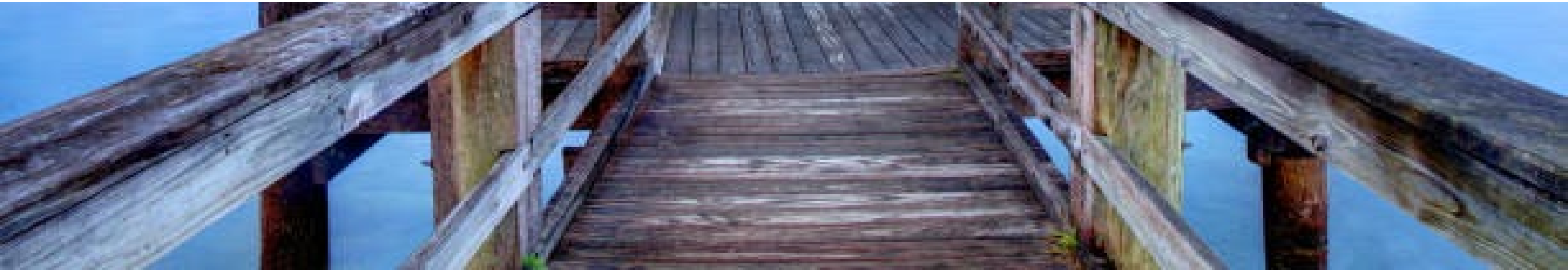
Steering Committee Risk Assessment Meeting

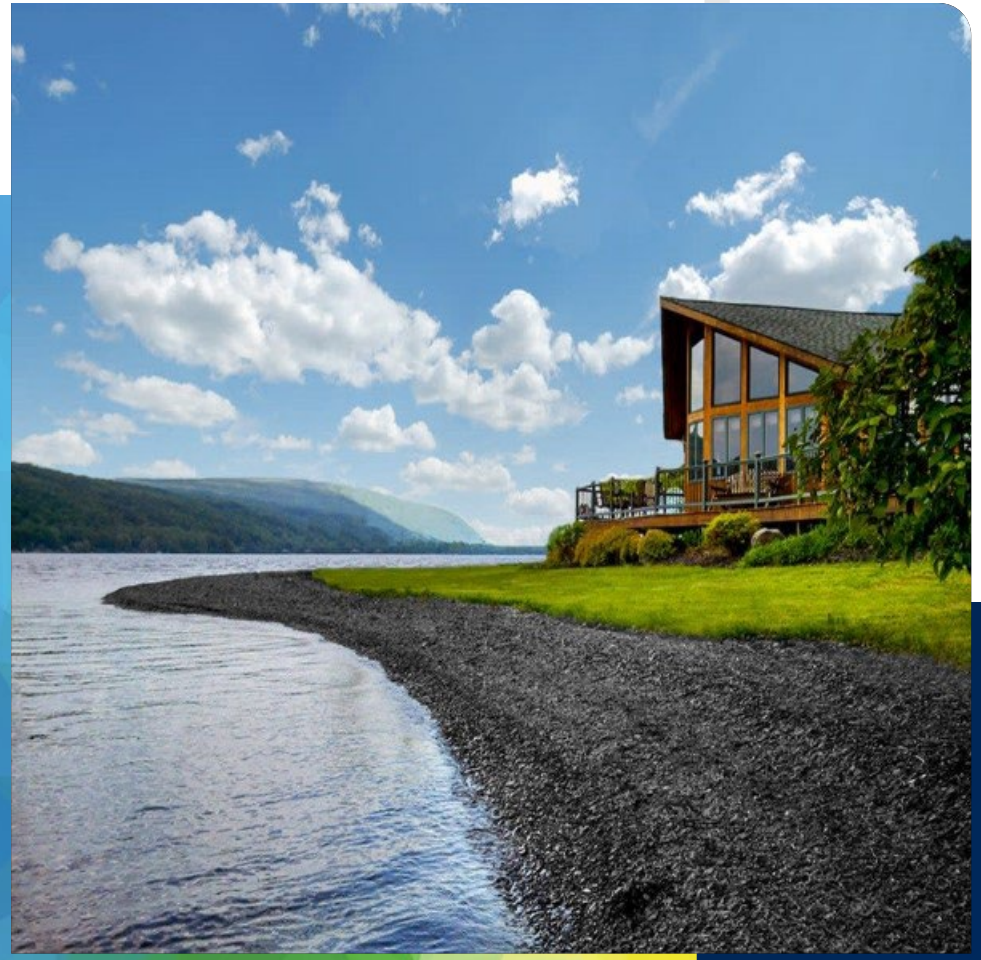
September 12, 2024

While waiting for the meeting to start, please enter your name, title, and department/agency in the chat

Today's Agenda

1. Welcome and Introductions
2. Project Status
3. Risk Assessment Overview
4. Feedback and Input
5. Next Steps
6. Questions/Wrap Up





Project Status

Municipal Participation Status

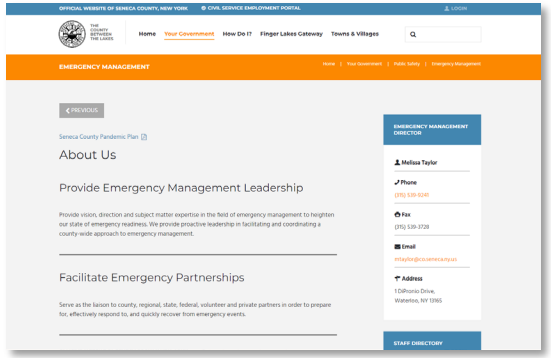
- To date, we have not received all municipal worksheets. The below jurisdictions still have outstanding worksheets to submit. Your Tetra Tech planner will be sending a summary of information needed.

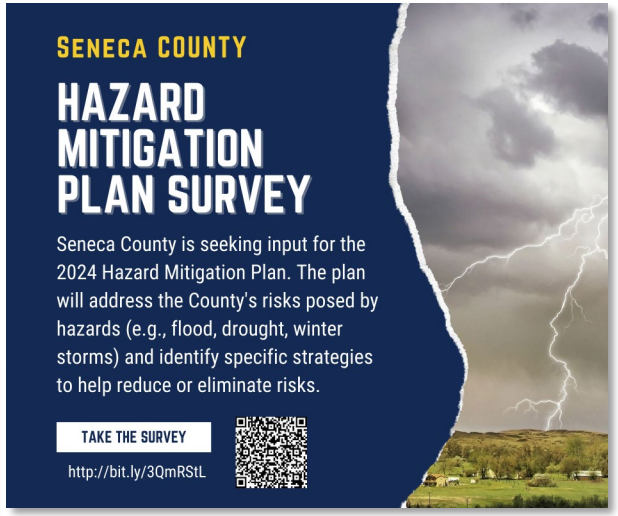
Municipality	Hazard Event History	Capability Assessment	NFIP Summary	Past Action Review	Building Permits
Town of Covert	X		X	X	
Town of Fayette	X				
Town of Junius	X	X	X	X	X
Village of Lodi					X
Town of Ovid				X	X
Town of Varick				X	
Town of Waterloo	X		X		
Village of Waterloo					X

Note: an ‘X’ indicates the worksheet has **NOT** been returned or was not returned completed

Public Outreach Strategy

- Public Outreach Toolkit
  - Social media templates and posts
  - Press release templates
  - Printable materials
- Surveys
  - Stakeholders
  - Neighboring communities
  - Public
- County Website
- StoryMap





Risk Assessment Overview

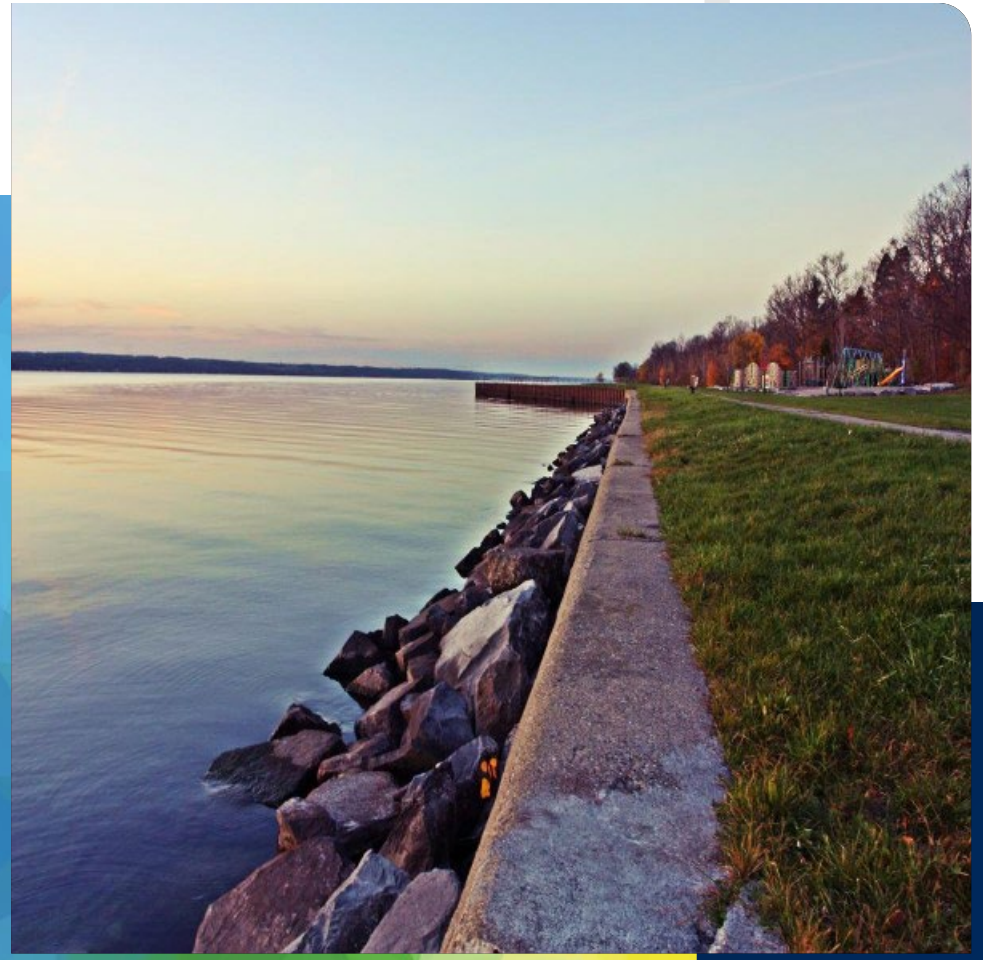
What is Risk?

Risk is defined as a function of :

- Hazard
  - Source of potential danger or adverse condition
- Exposure
  - Manmade or natural features that are exposed to the hazard
- Vulnerability
  - Damage susceptibility of the exposed features
- Adaptive Capacity (or capability)
  - Plans/policies
  - Response/recovery
  - Financial resources

Purpose of Risk Assessment

- To get a better understanding of the risks you face
- Initial results based on available data
- Quantitative data (population/structures exposed, structural damages within hazard zones) used when available
- Qualitative community input (such as unmapped flood areas) integrated to adjust results
- Local community input to adjust relative rankings



Preliminary Risk Assessment Results

Dam Failure

Dam failures in Seneca County are a low-probability and high-consequence event. A dam failure can have devastating impacts on the County. While most dams have storage volumes small enough that failures would have little or no consequences, dams with large storage amounts could cause significant flooding downstream.

Number of Dams

10

- 2 High Hazard
- 0 Significant Hazard
- 6 Low Hazard
- 2 Undesignated

Impacts

- Dam failure can cut evacuation routes, limit emergency access, and/or create isolation issues.
- Severe flooding can cause extensive structural damage and withhold essential services.
- The environmental impacts of a dam failure can include significant water-quality and debris-disposal issues or severe erosion that can impact local ecosystems.

Dam Failure in New York State

Climate Change Impacts

Seneca County is expected to experience increased precipitation and more frequent, intense storms. Excessive rainfall can cause a dam to overflow since these structures are designed partly based on assumptions about river flow and precipitation patterns. More frequent and intense precipitation leads to more intense dam overtopping, potentially affecting a larger area and producing stronger water velocities that exacerbate damages to general building stock and critical facilities.

Drought

Droughts can affect Seneca County's industries and make day to day tasks more difficult to complete when water usage must be monitored.

Population Exposed

33,814

(100%)

The entire County is susceptible

Climate Change Impacts

Short-term seasonal droughts lasting weeks or months could increase, especially in the summer. This is because of precipitation falling in more intense bursts with longer dry spells in between and higher temperatures in the summer causing more water to evaporate. The potential increase of short-term droughts may impact water systems, resulting in water shortages.

Drought Damaged Field

Hazard Types

Meteorological

Hydrological

Agricultural

Socioeconomic

Ecological

Earthquake

Earthquakes in Seneca County are a low-probability and high-consequence event. An earthquake can have devastating impacts on the County. Ground shaking can lead to the collapse of buildings and bridges and disrupt gas lines, electricity, and phone service.

Climate Change Impacts

The impacts of global climate change on earthquake probability are still being studied. Secondary impacts of earthquakes could also become magnified by climate change.

Hazard Types

- Surface Faulting
- Ground Motion
- Liquefaction
- Tectonic Deformation

Population Exposed

33,814

The entire County is susceptible

18,482

Population in NEHRP Soils Class D and E are at higher risk

Number of Buildings Exposed

10,592

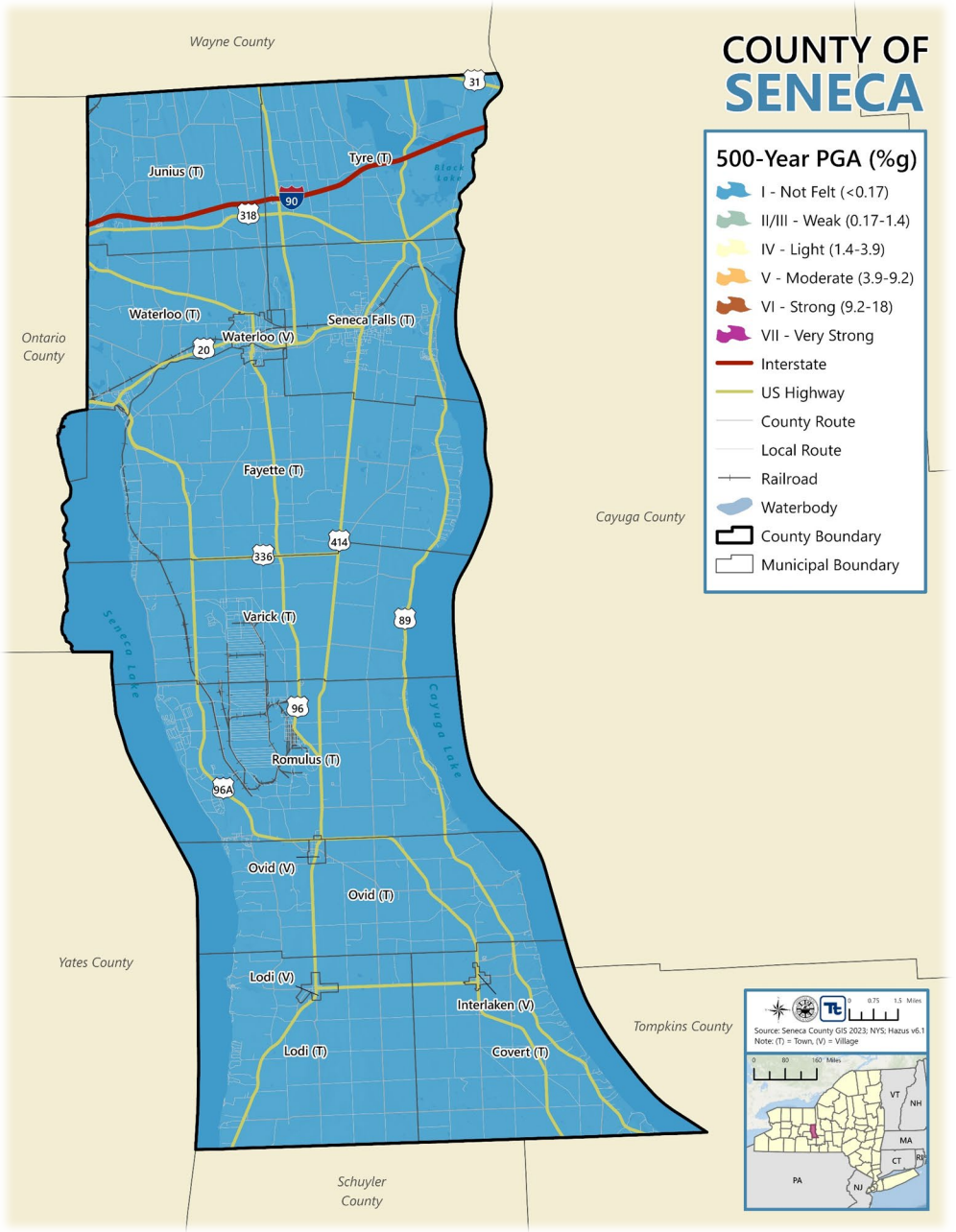
In NEHRP Soils Class D and E

Building Replacement Cost Value

$6,474,027,571

In NEHRP Soils Class D and E

500-Year Peak Ground Acceleration in Seneca County



Extreme Temperature

Extreme temperature includes both heat and cold events, which affects the entire County including, human health and commercial/agricultural businesses. Extreme temperature events can have primary and secondary effects on infrastructure.

Population Exposed

33,814

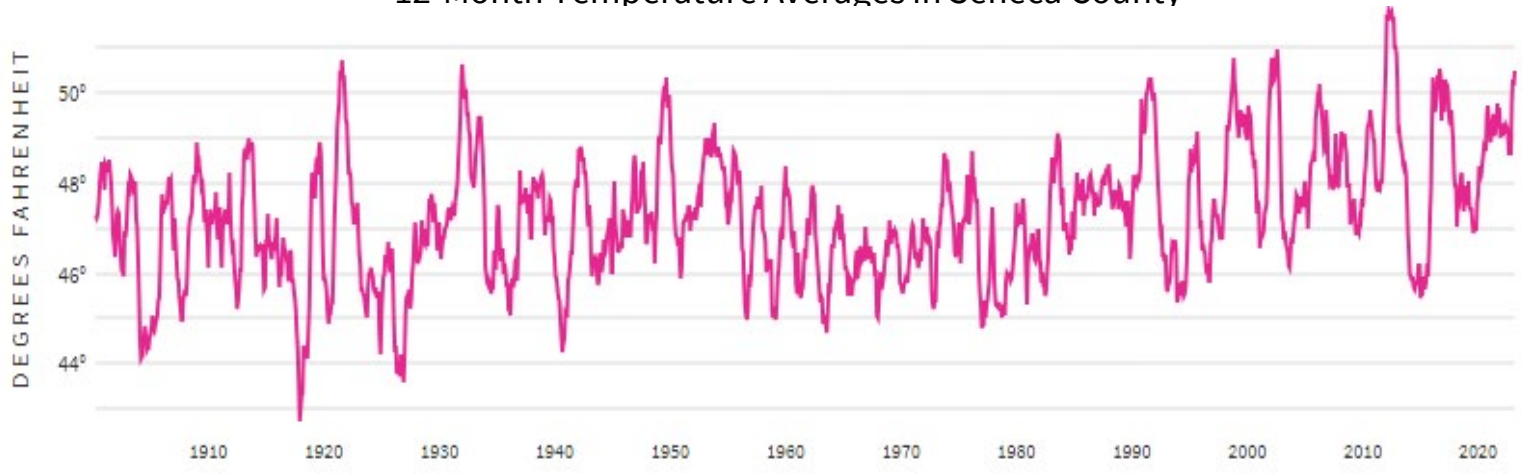
(100%)

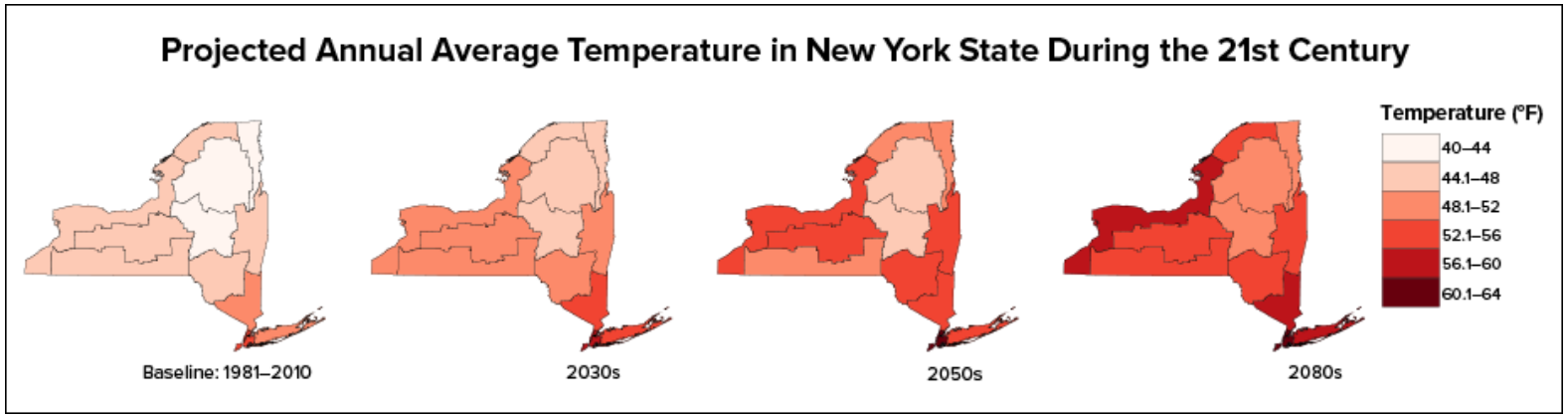
The entire County is susceptible

Climate Change Impacts

Annual average temperatures are projected to increase across New York State by 2.5°F to 4.4°F by the 2030s and 3.8°F to 6.7°F by the 2050s. The warming is projected to be the greatest in the northern regions of the state and projections suggest that each season will experience a comparable amount of warming in the future relative to the baseline period.

12-Month Temperature Averages in Seneca County





Flood

Floods can happen almost anywhere in County but tend to occur in and around areas near existing bodies of water. Sloped land in the County results in flowing water moving down steeper gradients and being naturally or artificially channelized through valleys and gullies.

Climate Change Impacts

Precipitation totals are estimated increase by zero to 11 percent by the 2050s, increase by two to 17 percent by the 2080s, and decrease by three percent or increase by up to 22 percent by 2100, relative to the 1981-2010 base period. The projected increase in precipitation is expected to fall as heavy downpours.

Hazard Types

- Riverine / Inland
- Flash Flood
- Lakeshore
- Ice Jam
- Urban/Stormwater

Number of Buildings Exposed

1,168

In 1% Annual Chance Flood Area

8,370

In 0.2% Annual Chance Flood Area

Population Exposed

1,644

In 1% Annual Chance Flood Area

9,083

In 0.2% Annual Chance Flood Area

Flood Building Replacement Cost Value

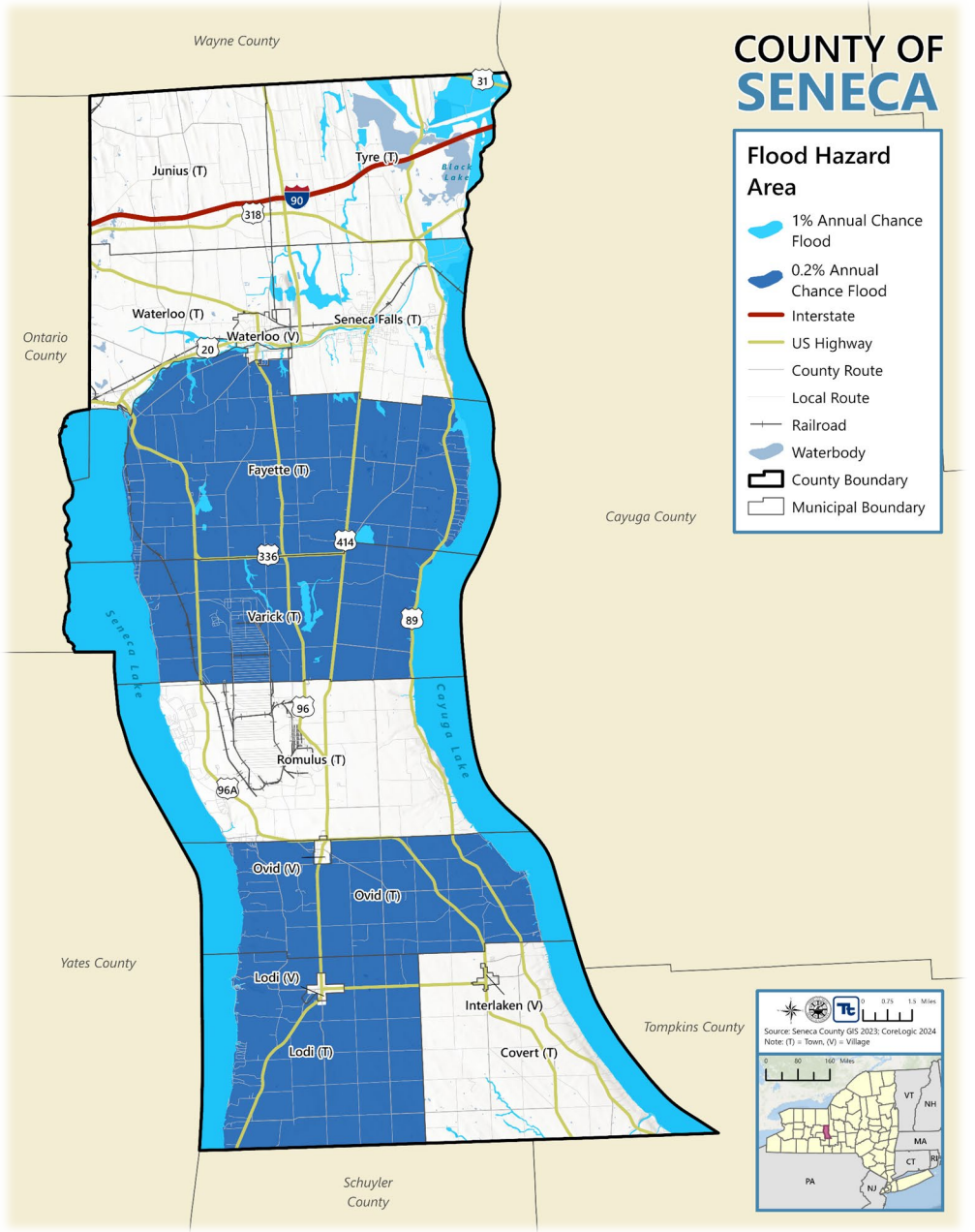
$356,056,844

In 1% Annual Chance Flood Area

$4,415,760,986

In 0.2% Annual Chance Flood Area

FEMA Flood Hazard Areas



Landslide

Landslides and subsidence sinkholes are common in the State of New York, primarily in northern regions. Expansion of urban and recreational developments into hillside areas exposes more people to the threat of landslides each year.

Climate Change Impacts

Recent studies show that climate change is impacting slow-moving landslides, which is where the land creeps downhill just inches to feet in a single year. Landslides in wet and dry regions showed similar sensitivity to extreme precipitation events, moving on average faster and farther downhill during rainy periods compared to drought years.

Number of Buildings Exposed

536

Moderate (15% - 20%) Landslide Incidence Hazard Area

668

High (> 20%) Landslide Incidence Hazard Area

Population Exposed

696

Moderate (15% - 20%) Landslide Incidence Hazard Area

841

High (> 20%) Landslide Incidence Hazard Area

Building Replacement Cost Value

$253,831,864

Moderate (15% - 20%) Landslide Incidence Hazard Area

$379,088,340

High (> 20%) Landslide Incidence Hazard Area

Geologic Hazard Area in Seneca County

Severe Weather

Severe weather can occur anywhere in the County at any time and have the potential to be life-threatening. It is critical for the community to prepare and be aware of forecasts in their local jurisdictions.

Population Exposed

33,814

(100%)

The entire County is susceptible

Notable Occurrences

On April 4, 2018 strong winds behind an intense storm system resulted in multiple reports of wind gusts of 60 mph with trees and wires down in many locations. In Seneca County $40,000 in property damage was reported.

Potential Impacts

- Power Outages
- Traffic Accidents
- Downed Trees
- Property Damage
- Personal Injury / Loss of Life

Microburst Wind Damage at Compton Farms in Ovid

Hazard Types

- High Wind
- Tornado
- Thunderstorm and Lightning
- Hailstorms
- Hurricanes and Tropical Storms

Severe Winter Weather

Severe winter weather can occur anywhere in the County and have the potential to be life-threatening. It is critical for the community to prepare and be aware of forecasts in their local jurisdictions.

Population Exposed

33,814

(100%)

The entire County is susceptible

Hazard Types

- Heavy Snow
- Sleet
- Blizzard
- Ice Storm
  - Freezing Rain

Car Left Along Highway During Snowstorm

Notable Occurrence

A winter storm in early 2021 resulted in reports of 11 inches to 24 inches of snow across Seneca County.

Climate Change Impacts

Snowfall is likely to become less frequent, with the season decreasing in length. As winters continue to warm, ice is projected to become rarer, which may lead to more snow in the short term. Over the long term, however, more of this is likely to fall as rain.

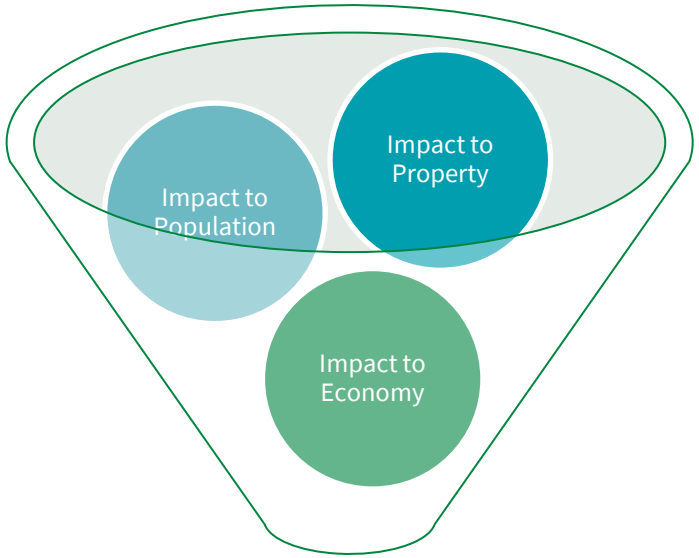
Hazard Rankings

Review the calculated hazard rankings and provide your feedback.

Preliminary Hazard Ranking Methodology

- The calculated probability of a hazard occurring based on historical data
- *Impacts to people, property, and the economy* based on GIS data and analysis of exposure.
- The degree to which *climate change* will affect future occurrences based on best available data.
- The degree to which existing *capabilities* (the ability of your community to respond to the hazard based on ordinances, mitigation strategies and procedures, and readiness) decrease overall risk.

Preliminary Hazard Ranking Formula



Local community input to adjust preliminary rankings

Probability of Occurrence (30%) + Impacts (30%) + Adaptive Capacity (30%) + Climate Change (10%) → Preliminary Hazard Ranking

Preliminary Risk Ranking (County)

High

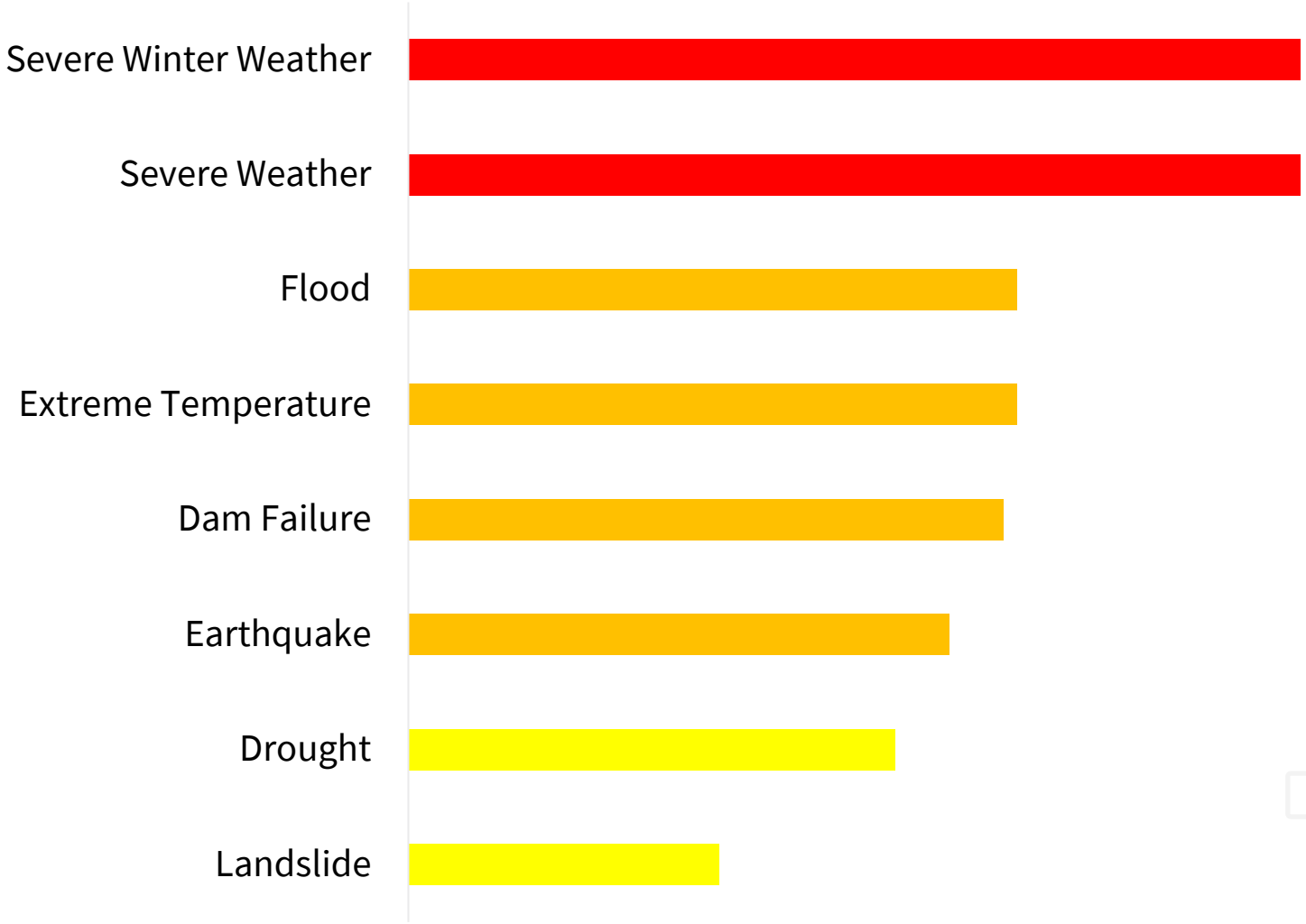
- Severe Winter Weather
- Severe Weather

Medium

- Flood
- Extreme Temperature
- Dam Failure
- Earthquake

Low

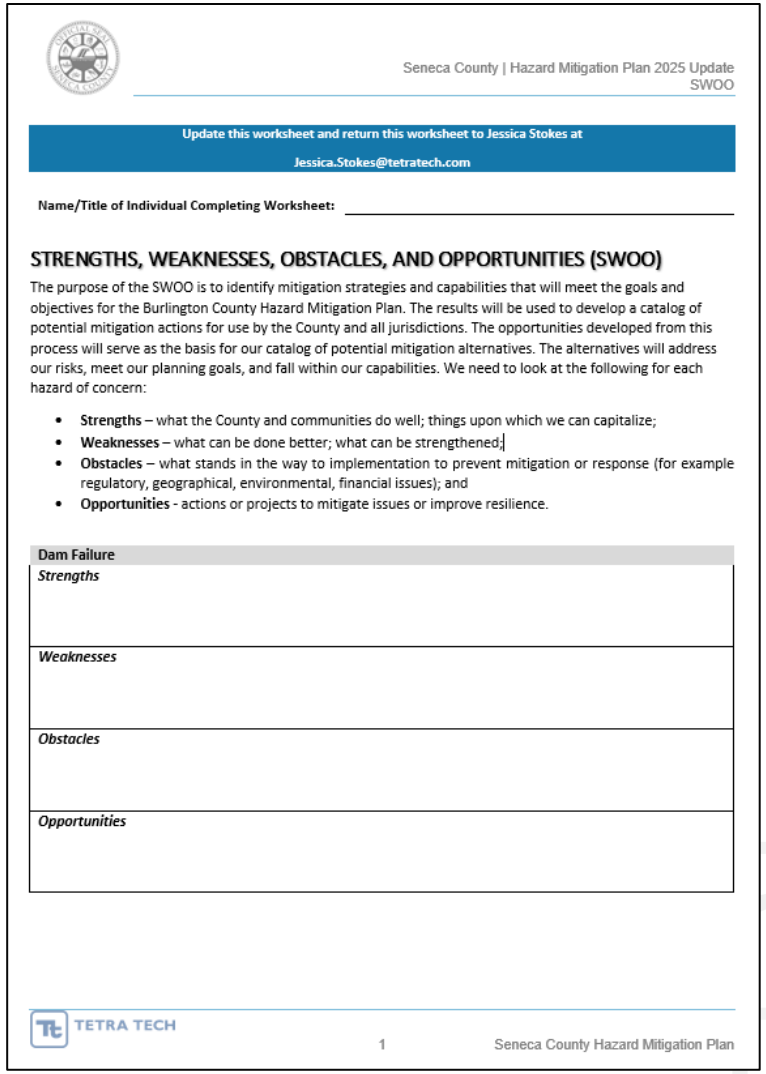
- Drought
- Landslide



Review Preliminary Rankings

Strengths, Weaknesses, Obstacles, and Opportunities (SWOO)

- The purpose of the SWOO is to identify mitigation strategies and capabilities that will meet the goals and objectives for the Seneca County HMP. The results will be used to develop a catalog of potential mitigation actions for use by the County and all jurisdictions. Look at the following for each hazard of concern:
  - Strengths – what the County and communities do well; things upon which we can capitalize;
  - Weaknesses – what can be done better; what can be strengthened;
  - Obstacles – what stands in the way to implementation to prevent mitigation or response (for example regulatory, geographical, environmental, financial issues); and
  - Opportunities - actions or projects to mitigate issues or improve resilience.
- Return this sheet to Jessica Stokes (Jessica.Stokes@tetratech.com) at Tetra Tech.



Seneca County | Hazard Mitigation Plan 2025 Update
SWOO

Update this worksheet and return this worksheet to Jessica Stokes at Jessica.Stokes@tetratech.com

Name/Title of Individual Completing Worksheet: _____

STRENGTHS, WEAKNESSES, OBSTACLES, AND OPPORTUNITIES (SWOO)

The purpose of the SWOO is to identify mitigation strategies and capabilities that will meet the goals and objectives for the Burlington County Hazard Mitigation Plan. The results will be used to develop a catalog of potential mitigation actions for use by the County and all jurisdictions. The opportunities developed from this process will serve as the basis for our catalog of potential mitigation alternatives. The alternatives will address our risks, meet our planning goals, and fall within our capabilities. We need to look at the following for each hazard of concern:

- **Strengths** – what the County and communities do well; things upon which we can capitalize;
- **Weaknesses** – what can be done better; what can be strengthened;
- **Obstacles** – what stands in the way to implementation to prevent mitigation or response (for example regulatory, geographical, environmental, financial issues); and
- **Opportunities** - actions or projects to mitigate issues or improve resilience.

Dam Failure
Strengths
Weaknesses
Obstacles
Opportunities

TETRA TECH 1 Seneca County Hazard Mitigation Plan

Review Preliminary Rankings

Complete this worksheet to and return to Jessica Stokes (Jessica.Stokes@tetratech.com)

Municipality: _____
Name/Title of Individual Completing Worksheet: _____

What is a hazard ranking?

Hazard Ranking is used to understand your community's vulnerabilities to hazards and to prioritize projects and activities for mitigation.

Hazard Ranking is determined by quantitative and qualitative factors including:

1. The calculated probability of a hazard occurring based on historical data.
2. Impacts to people, property, and the economy based on GIS data and analysis of exposure.
3. The degree to which climate change will affect future occurrences based on best available data.
4. Adaptive Capacity, which is the ability your community has to respond to the hazard based on ordinances, mitigation strategies and procedures, and readiness.

What is my hazard ranking?

The following table represent the calculated rankings for the hazards of concern for your community. Please review the calculated rankings and indicate whether or not you want to adjust the ranking. If you are changing the ranking, please provide detail as to why you are changing the ranking. *REMEMBER, for every hazard of concern, you need at least one mitigation action.*

Continued on next page.

Seneca County | Hazard Mitigation Plan 2025 Update
Hazard Ranking

What are the hazards we need to address?

FEMA requires each participating jurisdiction include at least one mitigation action for each of the hazards of concern. If your jurisdiction does have incur impacts or has determined it does not endure risks from an identifies hazard(s), please indicate so. For the Seneca County 2025 Hazard Mitigation Plan update, the hazards of concern are as follows:

Hazard	Preliminary Ranking	Agree with preliminary ranking (Y/N)? If No, indicate preferred ranking.	What local information or conditions have resulted in the adjustment in hazard ranking?
Dam Failure			
Drought			
Earthquake			
Extreme Temperature			
Flood			
Landslide			
Severe Storm			
Severe Winter Storm			

What is Adaptive Capacity?

Adaptive capacity describes a jurisdiction's current ability to protect from or withstand a hazard event.

- **Weak** adaptive capacity means the jurisdiction does not have the capability to effectively respond, which leads to an increase in vulnerability. Examples include weak/outdated/inconsistent plans, policies, codes/ordinances in place; no redundancies; limited to no deployable resources; limited capabilities to respond; long recovery.
- **Moderate** adaptive capacity means minimum requirements are in place; moderate capabilities; mitigation measures are identified but not implemented widespread; jurisdiction can recover but needs outside resources.
- **Strong** adaptive capacity means the jurisdiction does have the capability to effectively respond, plans/policies exceed minimum requirements; deployable resources all of which decreases vulnerability.

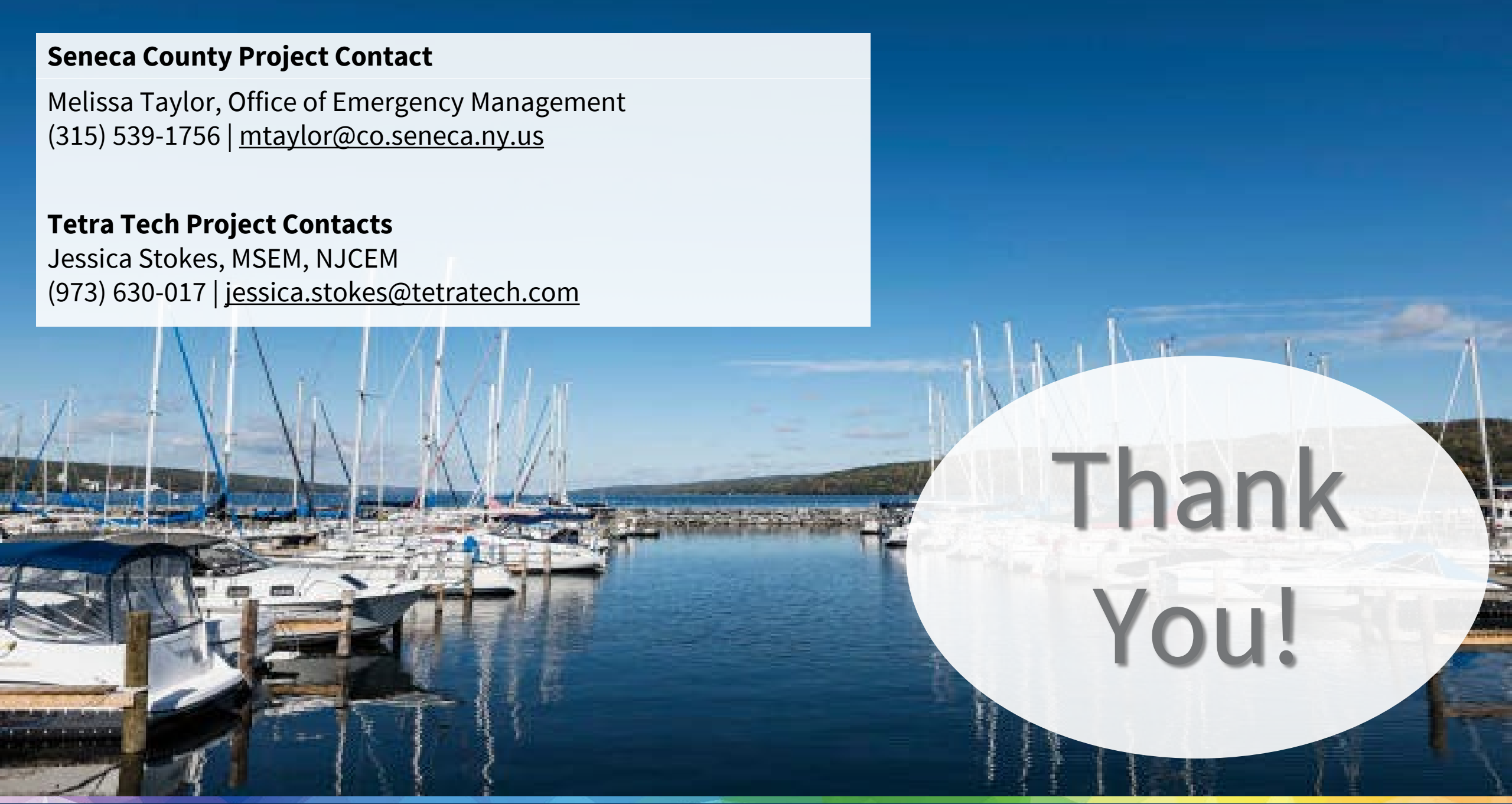
Hazard	Preliminary Ranking	What should we indicate for your community's adaptive capacity for each hazard?
Dam Failure	Moderate	
Drought	Moderate	
Earthquake	Moderate	
Extreme Temperature	Moderate	
Flood	Moderate	
Landslide	Moderate	
Severe Storm	Moderate	
Severe Winter Storm	Moderate	

*Note: *Adaptive capacity was assumed Moderate for all hazards.*

Next Steps

- Complete SWOO and Preliminary Ranking Worksheets
- Share information about the HMP Update via social media, community groups, and networks
- Planning Partnership Risk Assessment Review and Mitigation Strategy Workshop on Thursday, September 19 @ 5:30PM in person at Seneca County Emergency Management (1 DiPronio Drive, Waterloo NY 13165).

Questions?



Seneca County Project Contact

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Tetra Tech Project Contacts

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Thank You!