7.0 Hazard Mitigation and Adaptation

The 2006 HMP served as the basis for this Plan Update and all hazards, mitigation goals, objectives, and actions in that original plan were reviewed and, if they were still deemed to be relevant priorities, incorporated into the update. The planning process for the Plan Update encouraged the evaluation of new information, emerging issues, ideas, and actions to ensure that the plan is a living document that will be well-used by participants in the future.

7.1 Mitigation and Adaptation Goals

The prime objective of setting hazard mitigation and adaptation goals is to reduce or eliminate losses and damages from hazard events well in advance of hazard occurrence. It is important to create goals that are tangible. The goals identified below represent what the participants and municipalities are hoping to achieve through the implementation of this hazard mitigation plan.

- ***Goal 1: Protect Life and Property***
- ***Goal 2: Increase Public Education, Outreach, and Partnerships***
- ***Goal 3: Protect and Restore Natural Ecosystems***
- ***Goal 4: Enhance Emergency Services***

These goals were developed based on the risk assessment results, County-wide vulnerabilities, County and jurisdiction capabilities, and overall disaster preparedness. The addition of *Goal 3: Protect and Restore Natural Ecosystems* reflects the region's belief that natural systems play a critical role in increasing hazard resilience, particularly in the face of increasing climate change concerns. An example of this is the County's emphasis on advancing watershed-based approaches to flood hazard mitigation, where natural systems are utilized to build resilience in a way that protects water quality and avoids adverse impacts both up and downstream. The establishment of goals helped the jurisdictions to focus on effective and meaningful mitigation actions.

7.2 Mitigation and Adaptation Strategy

7.2.1 Mitigation and Adaptation Actions

Numerous mitigation actions were proposed by participating jurisdictions to reduce the impact of potential hazard events. These actions were evaluated in a public process and resulted in the identification of 86 actions to be taken by jurisdictions and partners to help achieve the goals outlined in the Plan Update. Of those actions there are 45 individual jurisdictional actions, 15 high priority multi-jurisdictional actions, and 26 other multi-jurisdictional actions. The proposed mitigation actions are varied, but can be grouped into six broad categories as indicated by FEMA 386-3:

- **Prevention** – Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building

codes, capital government programs, open space preservation, and storm water management regulations.

- **Property Protection** – Actions that involve the adaptation of existing buildings, infrastructure systems, or structures to protect them from a hazard, or removal from the hazard area. This includes the protection, upgrading, and/or strengthening of existing systems. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- **Public Education and Awareness** – Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate and increase resilience to them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- **Natural Resource Protection** – Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include the use of green infrastructure, sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- **Emergency Services** – Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.
- **Structural Projects** – Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

All the mitigation and adaptation actions included in this Plan Update have been reviewed by plan participants to ensure that they meet the goals of the plan. The proposed actions represent a range of projects that are well distributed throughout the six categories of mitigation. It is realized that some of the proposed actions included in this plan represent maintenance actions or post-hazard actions, which are generally not eligible for funding under FEMA's Hazard Mitigation Assistance Program. Regardless, such actions were deemed important to the community and are included in this plan. Other grants and funding sources will be sought to complete such proposed efforts.

Each participating jurisdiction proposed at least one implementable, pre-disaster mitigation activity to be included in this document. Table 29 outlines each individual jurisdiction's list of proposed mitigation measures. This table shows that all jurisdictions took an active role in the planning of this document and considered what action(s) could be implemented to minimize hazard vulnerabilities in their community. This list reflects the re-inclusion of some actions from the original plan that are still relevant, but also incorporates many new actions that would also minimize potential impacts to life and property as a result of hazard events. This list represents mitigation actions that were proposed by participating jurisdictions, agencies, and members of the public, based on need. Those actions identified as multi-jurisdictional are addressed in section 7.2.4.

7.2.2 2006 Plan Implementation

Since the adoption of the 2006 Multi-Jurisdictional All-Hazard Mitigation Plan for Tompkins County, numerous efforts have been made through the County, Town, Village, and support agencies toward reducing the impacts of disasters on the community. The 2006 HMP mitigation actions were reviewed to determine their statuses and implementation details. These actions are included in Appendix A – Table 30, along with their statuses (active (re-included), inactive (deleted), completed) and any additional details. Details associated with local mitigation activities that have been implemented over the past five years are also included as part of the 2007 and 2008 Implementation Reports, completed by the HMP Implementation Committee. These meeting notes are included in Appendix C for review.

7.2.3 Mitigation and Adaptation Strategy

There are many factors that must be considered when implementing an action or project. Table 29, below, contains specific implementation details associated with each proposed action including goals achieved, implementing agency(ies), estimated costs, possible funding sources, and implementation timeframes.

When detailed costs were not available, estimated price ranges were considered for each mitigation action. The levels for the cost estimates are as follows:

- Low: cost is estimated to be below $10,000
- Medium: cost is estimated to be between $10,000 and $100,000
- High: cost is estimated to be over $100,000

The implementation timeframes provided for each action are also estimated. Smaller, locally funded projects are easier to implement and therefore have shorter timeframes, while larger, complicated actions that involve funding applications, agency reviews, etc. will likely take five years or longer to complete. The levels for the timeframe estimates for each mitigation action are as follows:

- Short: completion anticipated within 1-2 years
- Moderate: completion anticipated within 5 years
- Long: completion anticipated in greater than 5 years
- Ongoing: action involves continued coordination or effort

For some actions, timeframe is presented as a range. This indicates that the action is currently being implemented or should be implemented as soon as possible and that it will continue for an extended period of time.

Table 29 – Individual Municipality Mitigation and Adaptation Action Strategies

#	Mitigation Action	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Cost Level	Potential Funding Sources	Implementation Timeframe	Targeted Development (new or existing)
	Tompkins County								
TC 1	Improve general outreach information through Tompkins Ready and other formats. Include in that outreach an increased awareness on what warning and advisory systems mean.	All Natural Hazards	2	DOER	Tompkins County Emergency Planning Committee	Low ($2,000)	County budget, FEMA HMGP	Short	New & Existing
TC 2	Establish and promote undeveloped buffers for streams and wetlands. This should include continuing the funding and administration of the Tompkins County Stream Restoration and Flood Hazard Mitigation Program.	Flash Flood, Landslide, Water Contamination	1, 2, 3	TCPD	TCSWCD	Medium ($25,000 per year) to High	County budget	Short	Existing
TC 3	Replacement/rehabilitation or other resilient actions for transportation infrastructure with reoccurring flooding issues (see list of specific County locations in Appendix H)	Flash Flood, Severe Storm	1	TC Highway Division	Municipalities	High	NYSDOT/FHWA funding, County budget	Long– Ongoing	Existing
TC 4	Continue supporting aquifer studies to gain better understanding of regional groundwater and to enhance their protection	Flood (Flash & Lake)	1, 3	TCPD	Municipalities	High ($4.5 million)	USGS, County, Local	Long	N/A
TC 5	Increase collaboration between government and community organizations regarding the containment and response plans for epidemic events	Epidemic	1, 2	TC Health Dept.	ARC	Low	County budget	Moderate	N/A
TC 6	Improve farm health by participating in the integrated disease prevention through the NYS Cattle Health Assurance Program and supporting agricultural agencies that assist farms in improve this health.	Epidemic	1	SWCD	NRCS, CCE	Low	County budget	Ongoing	N/A
	Town of Caroline								
C1	Continue local stream bank stabilization projects	Flood	1, 3	Town of Caroline Watershed Committee	TCSWCD, TCPD	Medium ($30,000 per year)	Local	Moderate	Existing
C2	Formalize protections and green infrastructure practices along stream banks to encourage riparian vegetation for channel and floodplain stabilization and wildlife habitat	Flash Flood	3	Town of Caroline Watershed Committee	TCSWCD, TCPD	High ($100,000)	NYSDEC, County & Municipal Budgets	Long (6 years)	New & Existing

Table 29 – Individual Municipality Mitigation and Adaptation Action Strategies

#	Mitigation Action	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Cost Level	Potential Funding Sources	Implementation Timeframe	Targeted Development (new or existing)
	Village of Cayuga Heights								
CH1	Develop strategy for mitigating drainage concerns at Winthrop Drive and Triphammer Road	Flash Flood	1, 3	Village of Cayuga Heights	NYSDEC	Medium-High	FEMA PDM and Local	Moderate	Existing
	Town of Danby								
DB1	Continue working with NSYDOT to survey West Danby fire station site distance to determine if intersection requires physical changes or additional lighting when fire station is used for other purposes	Transportation Accident	1, 4	Town of Danby	West Danby Fire, NYSDOT	Medium	State Funding, County/municipal budget	Long	Existing
DB2	Mitigate risk related to stream pipeline crossings on Buttermilk Creek, including that at Comfort Road	Landslide, Utility Failure	1, 3	Town of Danby	Utility Companies, NYSDEC	Medium	FEMA PDM, NYSDEC, Local	Long	Existing
	Town of Dryden								
DR1	Establish conservation corridors along stream banks to encourage riparian vegetation for channel and floodplain stabilization and wildlife habitat	Flash Flood	1, 3	Town of Dryden	TCPD, FLLT	High ($100,000)	NYSDEC, County & Municipal Budgets	Long (6 years)	New & Existing
DR2	Actively inventory and mitigate risk associated with pipeline stream crossings including Sixmile Creek at German Cross Road	Flash Flood	1	Town of Dryden	Utility Providers, TCPD, NYSDEC	Low	FEMA, PDM and Local	Long	Existing
	Village of Dryden								
VD1	Support dam inundation and stream corridor improvements for Virgil Creek	Flash flood	1	Village of Dryden	NYSDEC	Low-Medium	FEMA, NYSOEM, NYSDEC, Municipal budget	Moderate	Existing
	Town of Enfield								
E1	Become participating member of NFIP	Flash Flood	1	Town of Enfield	TCPD	Low	FEMA NFIP	Short	New & Existing
	Village of Freeville								
F1	Encourage Interagency collaboration in the humane management of beaver populations, particularly in Fall and Virgil Creeks	Flash Flood, Severe Storm	1, 3	Village of Freeville	NYSDEC, TCSWCD	Low	Municipal budget	Moderate	N/A

Table 29 – Individual Municipality Mitigation and Adaptation Action Strategies

#	Mitigation Action	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Cost Level	Potential Funding Sources	Implementation Timeframe	Targeted Development (new or existing)
F2	Address drainage issues near private homes along Virgil Creek	Flash flood, Severe Storm	1	Village of Freeville	NYSDEC, TCSWCD	Medium-High	FEMA PDM, Local	Moderate	Existing
	Town of Groton								
TG1	Develop Watershed Assessment for Owasco Inlet to assess priority flood hazard and stream corridor improvements	Water Contamination, Flash Flood, Severe Storm	1,2,3	Town of Groton	TCPD, TCSWCD	Low	NYSDEC, Tompkins County Flood Hazard and Stream Corridor Restoration, FLOWPA	Moderate	Existing
	Village of Groton								
VG1	Develop Watershed Assessment for Owasco Inlet to assess priority flood hazard and stream corridor improvements	Water Contamination, Flash Floods, Severe Storm	1,2,3	Village of Groton	TCPD, TCSWCD	Low	NYSDEC, Tompkins County Flood Hazard and Stream Corridor Restoration, FLOWPA	Moderate	Existing
VG2	Prohibit development within the stream corridor of Owasco Inlet and actively work to increase the resilience of structures that exist within these areas	Flash Flood	1	Village of Groton		Medium	FEMA PDM	Moderate	New & Existing
	Town of Ithaca								
TI1	Establish conservation corridors and green infrastructure along stream banks to encourage riparian vegetation for channel and floodplain stabilization and wildlife habitat. Priority focus area should be bank stabilization of the intermittent streams which flow into Sixmile Creek like those near the Six Mile Creek Vineyard.	Flash Flood, Landslide	1, 3	Town of Ithaca	TC Conservation Partners	High ($100,000)	NYSDEC, Tompkins County Flood Hazard and Stream Corridor Restoration, FLOWPA	Long (6 years)	New & Existing
TI2	Analyze drainage issues that occur post large storm events at corner of Pine Tree Road / Ellis Hollow / Mitchell Roads as well as Route 13 at Buttermilk Falls Road and implement appropriate mitigation measures.	Severe Storm	1, 3	Town of Ithaca	TC Highway Division, NYSDOT	High	NYSDOT, NYSDEC & Municipal Budgets	Moderate	Existing
TI3	Promote underground utilities on new development projects	Utility Failure, Ice Storm	1	Town of Ithaca	None	Low	Private funds	Short	New

Table 29 – Individual Municipality Mitigation and Adaptation Action Strategies

#	Mitigation Action	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Cost Level	Potential Funding Sources	Implementation Timeframe	Targeted Development (new or existing)
	City of Ithaca								
CI1	Inventory storm drains and determine where retrofits needed to prevent backflow flooding	Flash Flood, Lake Flood, Severe Storm	1	City of Ithaca	City and County GIS	Low	Local	Moderate	Existing
CI2	Encourage the retrofitting of residential basement utilities	Flash Flood, Lake Flood	1,2	City of Ithaca	CCE	Low	Local	Moderate	New & Existing
CI3	Estimate costs that may be incurred to local businesses from increased flooding, particularly in the Route 13 corridor, and work with businesses to adapt to increased risk	Lake Flood, Flash Flood	1,2	City of Ithaca GIS	None	Low	Local, private funds	Moderate	Existing
CI4	Analyze and map potential impacts of Hurricane Irene/Lee level precipitation in watersheds of City of Ithaca	Flash Flood	1,2,4	City of Ithaca GIS	Army Corps	Low	Local	Short	New & Existing
CI5	Create a rapid response unit in cooperation with the Tompkins County Sheriff's Department to assist in dealing with water borne invasives such as Hydrilla	Infestation	1,2,3	City of Ithaca	TC Sheriff's Department, TCSWCD	Low	Local	Short	N/A
CI6	Continue to advocate for funding to support eradication of Hydrilla from Cayuga Inlet	Infestation	1,2,3	City of Ithaca	TCSWCD	Low	NYSDEC	Long	N/A
CI7	Finalize plans for an emergency generator for City Hall and the Water Filtration Plant	Utility Failure	1,4	City of Ithaca	None	Medium	FEMA, Local Funds	Moderate	New and Existing
CI8	Promote underground utilities and district heating on new development projects	Ice Storm, Utility failure	1	City of Ithaca	None	Low	Private funds	Short	New
CI9	Implement the update of the Water Filtration Plant and formalize protection of the Sixmile Creek Watershed through the development of a watershed plan that includes stream corridor protections and green infrastructure recommendations	Water Contamination	1	City of Ithaca	None	High	Local Funds	Moderate	New
CI10	Address creek side erosion at City of Ithaca Raw Water Intake on Sixmile Creek	Landslide	1	City of Ithaca	TCPD, TCSWCD	Medium	FEMA PDM, TC Stream Corridor	Long	Existing
	Town of Lansing								
TL1	Finalize the Ludlowville Stormwater Control Project	Flash Flood	1,2,3	TCPD	Lansing Highway, Tompkins County Highway	Low	Local	Short	N/A
TL2	Implement stream restoration efforts on Salmon Creek at Salmon Creek Road	Flash Flood	1, 3	Town of Lansing Highway	TCPD, TCSWCD	Medium	Local, NYSDEC	Moderate	Existing

Table 29 – Individual Municipality Mitigation and Adaptation Action Strategies

#	Mitigation Action	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Cost Level	Potential Funding Sources	Implementation Timeframe	Targeted Development (new or existing)
TL3	Assist with the retrofitting or acquisition of properties with high exposure to lake flooding in and around Myers Point/Lagoda Park	Lake Flood	1	Town of Lansing	DOER, NYSOEM	High	FEMA PDM	Long	Existing
TL4	Improve communication with the Department of Environmental Conservation to assist in clarifying the need and support for the permitting of regular maintenance of the mouth of Salmon Creek to reduce flooding of residences and community infrastructure	Flash Flood, Lake Flood, Ice Jam	1, 3	Town of Lansing	NYSDEC, Army Corps of Engineers	Low	None	Short	Existing
	Village of Lansing								
VL1	Inventory business park and hazard risks, and implement retrofits as appropriate	Multi-Hazard	4	Village of Lansing	DOER	Medium	Local Funds	Long	Existing
VL2	Evaluate the intake area/building for Bolton Point since that is located in the flood area for the Village of Lansing and determine the impact if flooded	Lake Flood, Flash Flood	1	Bolton Point	Village of Lansing, DOER	Low	FEMA, Local Funds	Short	Existing
VL3	Assess the main raw water intake line for Bolton Point to determine if there needs to be additional measures implemented in the event that the current trunk line fails	Landslide, Water Contamination	1	Bolton Point	Village of Lansing, TCPD	Low	NYSDEC, Local Funds	Short	Existing
	Town of Newfield								
N1	Develop long term mitigation plans for Main Street Culvert	Flash Flood	1	Town of Newfield Highway	NYSDEC, NYSOEM, TCPD	High	FEMA PDM	Long	Existing
N2	Retrofit culvert on Douglas Road for added resilience	Flash Flood	1	Town of Newfield	NYSDEC	Medium	Local, FEMA	Moderate	Existing
	Village of Trumansburg								
VT1	Address erosion of stream bank at Village material disposal area	Landslide, Flash Flood	1, 3	Village Public Works	Town of Ulysses, TCSWCD	High	FEMA PDM, NYSDEC and Local Funds	Long	Existing
	Town of Ulysses								
U1	Appoint a contact person for lakeshore sandbagging (Maplewood Point or Willow Point) and determine how the action is coordinated.	Lake Flood	1, 4	Town of Ulysses	DOER	Low	Local	Short	New

Table 29 – Individual Municipality Mitigation and Adaptation Action Strategies

#	Mitigation Action	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Cost Level	Potential Funding Sources	Implementation Timeframe	Targeted Development (new or existing)
U2	Reduce of escarpment erosion along South Street Extension at Taughannock Creek	Landslide	1, 2, 3	Tompkins County Highway	TCPD, Town of Ulysses, TCSWCD	High	NYSDEC Grant, Capital Budget, Tompkins County Flood Hazard and Stream Corridor Restoration Program	Moderate	Existing

7.2.4 Mitigation and Adaptation Action Prioritization

A cost-benefit analysis was completed for each proposed action as a way to prioritize the many actions included in this document. The priority level indicated for each action is based on the current knowledge of the mitigation actions, including their estimated costs, timeframes, and funding availability. Prioritization criteria will continue to be reviewed and revised on an annual basis during the five-year plan update timeframe. By implementing the proposed actions as part of pre-disaster mitigation, and not as an afterthought, the implementation will be more cost effective and the incorporation of these actions into normal planning processes and operational procedures will naturally occur.

Each proposed action was evaluated against the following considerations (FEMA, 2008):

- Compatibility with goals and objectives identified in the current NYS Hazard Mitigation Plan (2006 HMP);
- Compatibility with goals of the plan update;
- Assessment of the impact of identified actions on jurisdictions within the entire planning area or region;
- Cost/benefit reviews of potential actions;
- Funding priorities identified in the current NYS Hazard Mitigation Plan; and
- Compatibility with other local and regional plans and programs.

Each participating jurisdiction evaluated the actions that applied to their jurisdiction. These evaluations considered the six elements addressed above. This exercise provided the participating jurisdictions with a way to prioritize the mitigation actions using a simple cost/benefit analysis (Table 31). Depending on the results of the action evaluations, each action is recognized as a high priority project, medium priority project, or low priority project. The results of the mitigation and adaptation action priority assessment are included in Table 32 and Appendix A – Table 33.

Table 31 – Benefit and Cost Prioritization Rankings

	Assessment Levels and Description		
	High	**Medium**	**Low**
Benefits	Action within the next five years is important and is anticipated to have a meaningful impact on reduction of losses.	A long-term impact on the reduction of losses is anticipated. Action within the next five years is anticipated, though not critical.	It is difficult to assess the benefits of an action due to its long-term timeframe. Action within the next five year is unlikely.
Costs	Existing funding sources are inadequate or are not identified to cover implementation of the action.	Funding exists, but will have to be reapportioned or budgeted over multiple years.	Funds to implement action are available in existing budget.

Actions recorded as having a benefit level equal to or higher than the cost level, were viewed as cost-beneficial actions, therefore receiving a high priority ranking. This priority ranking process should be viewed as a preliminary analysis. As the implementation of mitigation and adaptation strategies progresses, the ranking system used during this evaluation will evolve based on input from participating jurisdictions, agency representatives, and other branches of state and federal government. Additional funding sources will be required for many of the proposed actions. Coordination with agencies such as NYSOEM and FEMA will be necessary to secure funds for proposed mitigation actions, especially those with high costs and long-term implementation schedules.

Table 32 lists the 15 highest priority multi-jurisdictional actions being proposed as part of this HMP Update. The plan update project team identified these actions as those with most importance for implementation in the next five years. This list reflects the re-inclusion of some actions from the original plan that are still relevant, but also incorporates many new actions that would also minimize potential impacts to life and property as a result of hazard events. This list represents actions that were proposed by participating jurisdictions, agencies, and members of the public, based on need. Some of the proposed actions relate to a specific type of hazard event or specific jurisdiction, while others are proposed to mitigate an array of hazards or will apply to multiple jurisdictions. Appendix A – Table 33 includes the remaining list of 26 multi-jurisdictional actions identified as a part of the update process.

Table 32 – HIGH PRIORITY Multi-Jurisdictional Mitigation and Adaptation Action Strategies

#	Mitigation Action	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Cost Level	Potential Funding Sources	Implementation Timeframe	Targeted Development (new or existing)
Multi-Jurisdictional									
1	Further identify vulnerable populations, including disabled, elderly, children, non-native speakers, and the homeless and identify mitigation measures to reduce adverse impacts to these groups from hazard impacts	Multi-Hazard	1, 2, 4	County Human Services Cabinet	American Red Cross of Tompkins and Cortland Counties	Low	None	Short	New & Existing
2	Establish and implement a system for regularly collecting detailed information about structural damages, costs, injuries and other details relevant to tracking impacts of hazard events.	Multi-Hazard	1, 2	DOER	TCPD, Insurance Industry	Low	None	Short	Existing
3	Develop a County-wide debris management plan	All Natural Hazards	1, 2	County Public Works Cabinet	DOER, SWCD	Moderate	NYSDEC, Local Funds	Moderate	Existing
4	Conduct annual climate science outreach to municipalities and other large institutions and businesses to share latest climate change information for use in the design of a variety of work, including capital projects	All Natural Hazards	2	TCPD	NYSERDA, Cornell	Low	None	Short	New & Existing
5	Meet annually with utilities to discuss needs and operations to ensure preparation for increasing storm events, including tree trimming, supplies of repair materials, and backup plans for outages. The meeting should also focus on increasing communication and coordination, during, and after events.	Severe Storm	1, 2	City of Ithaca	Village of Groton, Municipalities, Others	Low	None	Short	New & Existing
6	Continue to advocate for the update of county Flood Insurance Rate Maps. In addition look for ways to map additional flood-related hazards and manage development in high risk areas. This could include the development of a pilot project with USGS to create interactive flood inundation maps for a stream corridor with regular flooding concerns, such as Fall Creek or Sixmile Creek	Flood (Flash & Lake)	1, 2, 4	TCPD	USGS, SWCD, City GIS, County GIS, Dryden GIS, Municipalities	Moderate to High	USGS Matching Funds, FEMA	Long	New & Existing

Table 32 – HIGH PRIORITY Multi-Jurisdictional Mitigation and Adaptation Action Strategies

#	Mitigation Action	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Cost Level	Potential Funding Sources	Implementation Timeframe	Targeted Development (new or existing)
7	Conduct an enhanced inventory of critical facilities in the County and share information with municipalities and other facility owners. The inventory should include facilities for water and wastewater treatment, transit operations, emergency responder operations, and culverts and bridges	Flood (Flash & Lake)	1, 4	DOER	Municipalities, CU Water	Moderate	FEMA, Local Funds	Short	Existing
8	Once critical facilities have been inventoried, perform engineering-based risk assessments that take into account projected climate change, to understand potential impacts to critical facilities and service operations under different climate change scenarios. Assessments should include complete adaptations plans that include decision making software, such as the COAST model, and include recommendations for retrofits or acquisitions based on these assessments	Flood (Flash & Lake)	1, 2, 4	Municipaliti es	TCCOG, TCPD	Moderate	FEMA	Moderate	Existing
9	Convene an annual meeting and training session for all municipal Floodplain Administrators to discuss topics of interest and address training needs	Flash Flood	2	TCPD	Municipalities	Low	None	Short	Existing
10	Develop and implement a plan to reduce flood damage in the Sixmile Creek Watershed, including specific attention to aging pipeline crossings along the Creek	Utility failure, Flash Flood	1, 3	Town of Caroline	DOER, SWCD, TCPD	High	FEMA, NYSDEC, Local Funds	Long	New & Existing
11	Support dredging in and around the Cayuga Inlet Flood Control Channel to reduce threat of flood inundation	Lake Flood	1, 2, 3, 4	City of Ithaca	Municipalities	High	NYSDEC, Army Corps of Engineers, Local Funds	Long	Existing
12	Create a database and map of fire hydrants (including dry hydrants) and water resources that can be used for fire fighting and share that information with municipalities. Based on this information develop an action plan for improving access to these resources.	Fire	1, 4	DOER	County GIS, SWCD, Highway Depts, Town of Dryden, Bolton Point	Low	Local Funds	Short	New & Existing
13	Work with local businesses to formalize continuity of operations plans	Terrorism	1, 2	DOER	Chamber of Commerce, Emergency Planning Committee	Moderate	Local Funds	Moderate	Existing

Table 32 – HIGH PRIORITY Multi-Jurisdictional Mitigation and Adaptation Action Strategies

#	Mitigation Action	Hazard(s) Mitigated	Goals Met	Lead Agency	Support Agencies	Estimated Cost Level	Potential Funding Sources	Implementation Timeframe	Targeted Development (new or existing)
14	Analyze impacts from droughts across sectors and develop more comprehensive drought management plans and management systems	Drought	1, 2, 3	DOER	TCPD	Moderate	NYSDEC, NYSERDA	Moderate	New & Existing
15	Engage the NYS Canal Corporation in proactive discussions to develop a process for regulating lake levels	Lake Flood	1, 2	City of Ithaca	Town of Lansing, Town of Ithaca, Town of Ulysses, Village of Lansing, Tompkins County	Low	None	Short	Existing