

# Emergency Preparedness in Rural Communities



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## Executive Summary

This report provides an analysis of the current disaster relief management systems aimed at and employed by rural municipalities in NY State. The research was undertaken to explore both best practices and problems associated with the disaster management methods used during the ice storm in the NY State Northern Country in 1998 and the flooding that took place in the New York's Southern Tier in June of 2006. The purpose of this report is to better inform USDA Rural Development of the steps that municipalities should take to improve their disaster response plans.

The main method of analysis included interviews with stakeholders in small municipality, county officials, and volunteer organization managers in the Southern Tier and the North Country of NY State. All interview sources can be found in the appendices. In-depth research of the current legislation affecting state, county, and local level disaster response and management was also conducted. All research sources are cited in the appendices.

The research reveals that there are major gaps and inconsistencies in disaster response and management for rural communities in NY State, as well as many opportunities for improvement. The following findings highlight the major needs for emergency management improvement in both the North Country and the Southern Tier. We also believe that they constitute an effective guide for pursuing better emergency management throughout USDA's jurisdiction.

- **State and Federal Regulatory Requirements combine to provide an effective emergency preparedness system at the county and local levels.** NIMS and CIS, in particular, are effective tools.
- **Maintaining effective, formalized partnerships at the state, county, and local levels is a crucial component of emergency preparedness.** Formal Mutual Aid Agreements and Memoranda of Understanding for resource sharing are necessary and effective tools for disaster response and recovery.
- **Planning for internal communications needs and insuring effective, transparent public information systems are both critically important components of emergency preparedness.** The lack of one of these systems can undermine public confidence and cripple effective emergency response.
- **Formal documentation and the development of comprehensive emergency management plans promote the development of institutional memory.** However, only through practicing plans and using the emergency management tools at community disposal on a regular basis guarantees institutionalization of these practices.
- **Limited availability of funds inhibits comprehensive emergency planning efforts.** Rural communities need assistance identifying and pursuing emergency preparedness funds, training, and technical assistance for all phases of the emergency response cycle.
- **All critical infrastructure needs to be prepared for all emergencies named in up-to-date hazard analysis reports.**

The above needs for emergency management improvement can be approached strategically. We recommend that the USDA adopt the following four priorities in order to promote more effective emergency preparedness and mitigation, response, and recovery:

- **Education:** The development of an “Emergency Preparedness Information Clearinghouse” that provides county and local governments, their nongovernmental partners, and their citizens with a comprehensive list of resources for funding, training, and technical expertise would greatly improve awareness of emergency management at the county and local government levels.
- **Cooperation and Communication:** Increasing the number and effectiveness of partnerships across local governments and with county governments will promote more effective emergency preparedness, recovery, and response.
- **Capacity Building and Institutional Knowledge:** Comprehensive emergency management systems need to be well-maintained, formalized, and rigorously documented to insure their efficacy across time. Furthermore, funding for capacity building needs to target investments in technologies and training that promote effective communication between successive local government administrations.
- **Critical Infrastructure:** Protecting critical infrastructure demands and developing a comprehensive approach to managing these assets. Not only should these capital investments be planned to mitigate vulnerability, but maps, instruction manuals, and other documents that need to be accessed during emergencies need to be kept safe from possible hazards at these sites as well.

We would like to acknowledge all of the interviewees from the Southern Tier and North County, the experts in the Environmental Finance Center of Syracuse University, and the USDA Rural Development Office for their support.

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## **Introduction**

Amongst the many responsibilities of governmental and community officials is an ability to field a swift and effective response should disaster strike. A vast array of potential situations, either natural or man-made, may contribute to or directly cause such events, necessitating that officials expect the unexpected. Given the somewhat unpredictable nature of these occurrences, thorough advance planning is crucial for communities to react in an efficient manner.

Typically, municipalities within New York State are advised to prepare themselves to function independently for 48 to 72 hours in the immediate aftermath of a disaster prior to the arrival of state or federal assistance (Mark Pacilio, North Country Chapter of the American Red Cross Former Director, 5/18/07). To do so, it is advantageous for local officials to have access to, and familiarity with, a comprehensive planning document detailing roles and responsibilities, available resources, contact information and appropriate response strategies to which they can immediately refer.

The preparedness of individual municipalities varies, both in terms of planning and resources. Assistance in the formulation of emergency response plans and resource acquisition is available from state and federal agencies, though local officials may be unaware of or have difficulty accessing these resources. This study seeks to examine the readiness of rural municipalities, the unique circumstances and challenges they face, and options for improving upon existing capabilities.

## **Statement of Need**

Throughout the past decade, numerous factors have combined to generate an increased emphasis on disaster preparedness both within and between governmental

entities on the local, state, and federal levels. While much attention has been given to the readiness of major population centers, the unique concerns and issues of rural communities have received markedly less consideration. Often lacking the financial and human capital resources available to larger cities, the emergency response capabilities of rural areas warrant further examination.

New York State boasts a mixture of urban centers and rural regions, necessitating a concerted effort to address the needs of the latter to balance the natural inclination toward prioritizing the former. As such, it is crucial that officials at all levels of government examine the preparedness of those communities that otherwise fail to attract significant attention.

### **Statement of Purpose**

Drawing upon the 1998 ice storm that crippled the North Country and the extensive flooding throughout the Southern Tier in 2006, we intend to ascertain the strengths and vulnerabilities of disaster preparations made by the State's rural communities. Research and recommendations will focus primarily on the evolution of comprehensive planning efforts and immediate response capacity since these events with the intention of identifying areas for improvement.

This report will discuss the current disaster preparedness of several rural communities representing both the North Country and the Southern Tier. Existing resources, intermunicipal cooperative arrangements, relationships with state and federal officials, and other pertinent elements will be considered in turn. A variety of options for enhancing rural emergency response capacities will be evaluated, and a list of proposals will follow at the conclusion of our findings.

## ***Methodology***

The rural disaster preparedness team divided into two sub-groups. One group was tasked with researching the ice storms of 1998 that occurred in the northern tier of the state, while the other studied the summer floods of 2006 that devastated the southern portion of the state.

Both groups conducted preliminary literature surveys analyzing news articles and other information available through the internet and found in Syracuse University's library related to the two disasters.

The groups then proceeded to conduct a series of interviews with county officials, planning officials, emergency response personnel, town and village officials and volunteer organizations including the Red Cross (see attached list of contacts interviewed). The interviews were unstructured, free flowing conversations focusing on the interviewee's experiences and roles during the crises and measures they feel could be implemented to better prepare for and respond to future disasters.

A second literature survey was later conducted evaluating best practices related to disaster preparedness and emergency response and clarifying issues raised by the interviewees. This included looking at statutes, laws and guidelines issued by both the Federal and State Governments that are pertinent to understand how disaster preparedness and emergency response is dealt with in New York State.

## ***Background***

In order to review the effectiveness of existing disaster preparedness measures and planning in practice, two particularly notable events were analyzed to serve as this report's foundation: a massive ice storm that occurred in 1998, and the recent flooding

throughout the Southern Tier. These incidents merit examination due to their unique characteristics, offering insights into the response efforts conducted by different regions to emergencies of different natures.

### **1998 Ice Storm**

The ice storm of 1998 covered the North Country of New York in ice that downed 36,000 power lines and made roads impassable. While winter storms are not new to the region, an ice storm of such magnitude was unexpected. Residents and businesses were without power for days or weeks as crews attempted to clear fallen trees and restore power. Many were forced from their homes and into shelters due to a lack of heating. Food shortages soon became an issue. Many dairy farmers within the region were unable to milk their cows or properly care for livestock. Due to the region's reliance on livestock agriculture and forestry, also badly affected by the storm, the economic consequences were quite severe.

The five involved counties and individual municipalities responded to the crisis differently. With a local retired military officer assuming a leadership role and establishing a command center, Sacket's Harbor engineered its own response and coped well independently. The Fire Department managed thirteen to fourteen days without power while responding to community needs. Concerned neighbors and emergency personnel cared for special needs residents. Local schools served as shelters for those without heat. Jefferson County as a whole, however, was accused of not performing well during the crisis. Acting independently, the Commanding General of the Tenth Mountain Division, stationed at nearby Fort Drum, dispatched personnel and resources to the region.



Military assistance to both Jefferson and Lewis Counties came in the form of providing generators and contributing to response efforts.

The ice storm provided several lessons to the North Country. First, few communities had operational emergency plans. They were forced to improvise a response instead of following a comprehensive plan. Second, emergency communications are essential. At the time, many cellular telephone towers were not equipped with back-up generators. Third, many communities were not prepared and could not mobilize resources quickly. Ice and fallen trees rendered roads impassable, complicating the delivery of supplemental resources from external sources. For example, the Red Cross was unable to respond within the first seventy-two hours. Fourth, many local communities lacked established links with county, state, and federal disaster response agencies through which external assistance would be automatically activated.

## **2006 Flooding**

Beginning June 23 and continuing through June 29, 2006, a slow moving storm system caused heavy rains in New York State. The National Weather Service estimates that between eight and fifteen inches of rain fell across the State, resulting in widespread flooding within the Susquehanna and Delaware River Basins (Susquehanna River Basin Commission Website, accessed 6/1/07).

The Susquehanna River Basin endured several waves of flooding. A flash flood hit the basin on the June 25, and was followed by a second flash flood the following day. Widespread flooding occurred on June 27 and continued until July 1 (SEMO, undated).

In the Delaware River Basin, “heavy rains resulted in the saturation of ground water bank full and minor flood conditions early morning of June 27<sup>th</sup>. Continued rains

and heavy run-off resulted in the flood crests of the main stem of the Delaware River on June 28<sup>th</sup> and 29<sup>th</sup>, 2006” (New Jersey State Delaware River Basin Flood Website, Accessed 6/1/07).

The counties of Broome, Chenango, Cortland, Delaware, Madison, Otsego and Tioga were declared Federal Disaster Areas. Flooding contributed to the collapse of Interstate 88, resulting in one death in Chenango County and two in Delaware County. The economic impact is estimated to be hundreds of millions of dollars (June 2006 Susquehanna River Basin Flood Event, Accessed 6/1/07).

## Findings

### ***Regulatory Requirements for Emergency Preparedness.***

*State and federal regulatory requirements combine to provide an effective emergency preparedness system at the county and local levels.*

County and local governments are required to comply with both federal and state legislation to ensure emergency preparedness. Here, we provide a brief narrative description and analysis of the relevant legislation. This analysis is followed by recommendations for ensuring that county and local governments comply with—and are able to implement—each law’s requirements.

## **Narrative and Analysis**

### **Federal Law**

#### ***The Stafford Act***

The Stafford Act, enacted in 1974 and reauthorized in 2001, is the foundation of federal disaster legislation. It requires states to have their own disaster management planning regimes and has the expressed intent of “encouraging the development of comprehensive disaster preparedness and assistance plans, programs, capabilities, and organizations by the States and by local governments;” (Stafford Act, section 5121). To this end, it requires that states comply with all planning provisions within the act in order to be eligible for federal disaster assistance.

#### ***The National Incident Management System***

At present, the major vehicle for the implementation of federal legislation is the National Incident Management System (NIMS). NIMS “provides a consistent nationwide template to enable Federal, State, local, and tribal governments and private-sector and

nongovernmental organizations to work together effectively and efficiently to prepare for, prevent, respond to, and recover from domestic incidents, regardless of cause, size, or complexity, including acts of catastrophic terrorism” (NIMS Document). NIMS was effectively “reverse engineered” from other emergency preparedness systems. It seeks to provide a common, national language for disaster preparedness, but does not “reinvent the wheel.”

### ***The Bioterrorism Act of 2002***

The Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (PL 107-188, referred to as the Bioterrorism Act) was signed as a public law by President G.W. Bush on June 12, 2002 and amends the Safe Drinking Water Act. The Bioterrorism Act recognizes the need for central water systems to be protected and specifies actions to be taken by central water systems and the US Environmental Protection Agency (EPA).

The Bioterrorism Act requires all community water systems serving a population of 3,300 or more to provide a vulnerability assessment of its system. This assessment should include a “review of pipes and constructed conveyances, physical barriers, water collection, pretreatment, treatment, storage and distribution facilities, electronic, computer or other automated systems which are utilized by the public water system, the use, storage, or handling of various chemicals, and the operation and maintenance of such system” (Bioterrorism Act, 2002). Aside from the vulnerability assessment, each central water system serving a population of at least 3,300 people is required to prepare or revise (whichever the case may be) an emergency response plan. The emergency response plan should address the results of the vulnerability assessment. At the same time, the

emergency response plan should include “plans, procedures, and identification of equipment that can be implemented or utilized in the event of a terrorist or other intentional attack on the public water system and should also include actions, procedures, and identification of equipment which can obviate or significantly lessen the impact of terrorist attacks or other intentional actions on the public health and the safety and supply of drinking water provided to communities and individuals” (Bioterrorism Act, 2002).

The Bioterrorism Act of 2002 also specifies that EPA will provide guidance to small communities with water systems serving a population of less than 3,300 in preparing vulnerability assessments, emergency response plans and to address threats designed to disrupt the supply of drinking water.

***State Law: The State Executive Law, Article 2B***

State Executive Law Article 2B picks up where the federal legislation leaves off.

Among its myriad requirements are:

- The requirement of plans for all three phases of the disaster cycle (planning and mitigation, response, and recovery);
- Coordination of local government plans with county plans;
- Involvement of local governmental agencies, nongovernmental organizations (such as the United Way and the Red Cross), and county agencies (such as county social services departments); and
- The maintenance of lists of those persons who would need assistance during disasters, such as the disabled.

The state also implemented an incident command system (ICS) in 1996. This predates the federal NIMS, which uses the ICS structure as its backbone for disaster response. In fact, ICS is one of the systems from which NIMS was reverse-engineered.

## Implications and Recommendations

Both New York State and the Federal Government require local agencies to comply with the legislation described above. **Meeting the mandates of these laws is an effective backbone for county and local government emergency preparedness plans.** However, compliance with the planning requirements alone does not guarantee that the county and local governments will be able to respond during a crisis. Our recommendations focus on these grounds.

Our interviews resulted in a broad consensus that **ICS and NIMS are effective and valuable tools, and local communities should take full advantage of FEMA and SEMO trainings on NIMS, ICS, and other aspects of disaster management.** Those individuals that did not find value in NIMS were already well-trained and well-versed in the nuances of ICS, and therefore found the NIMS trainings to be redundant. Those individuals who have more recently become involved in the intricacies of emergency preparedness were more likely to find NIMS (which incorporates ICS) to be useful. Also, as ICS was originally a firefighting innovation, those who have been using it throughout their career seem to prefer it to NIMS. In short, **the less experienced a local or county leader is in emergency preparedness, the more vitally important it is for him or her to take advantage of FEMA and SEMO trainings and other assistance.**

Although the law does not mandate small communities (those serving populations less than 3,300) to assess the vulnerability of their water systems and to come up with an emergency response plan, **we suggest that USDA raise awareness of the resources (e.g. technical training, free technical assistance and templates) available to small rural**

**communities through the EPA and water associations. Also, the rural communities should use these resources to prepare their own emergency response plans that will help them address water disruption issues.**

## ***Partnerships***

*Maintaining effective, formalized partnerships at the state, county, and local levels is a crucial component of emergency preparedness.*

## **Narrative and Analysis**

In the wake of the September 11, 2001 terrorist attacks, governments place renewed emphasis on formal and informal partnerships. Though such arrangements were once utilized on a relatively limited basis, their scope has since expanded to include an array of services ranging from law enforcement and emergency medical support to assistance from private firms, NGOs, and citizen groups. An independent survey conducted in 2002 indicated that 87 percent of U.S. counties had some form of mutual aid agreement in place. New York State is no exception (National Association of Counties, 2001).

### **County - Municipal Partnerships**

One of the most complex issues discovered in the research was that of the relationship between the County Emergency Management offices and the local governments. In Franklin County in the North Country, for example, some towns do not keep contact with the county government at all (Personal Communication, Malcolm Jones, Director, Franklin County Emergency Services, 6/1/07). In the Southern Tier, Brett Chellis, Broome County Emergency Manager and Nelson Delameter, Delaware County Emergency Manager, indicated that the counties demand that the villages and

towns contact the county EOC's during an emergency (05/24/2007 and 05/29/2007). In Sidney, the town leaders clearly indicated that they were waiting to hear from the county on how to respond to the disaster. While some villages are waiting, the county is busy taking calls from other villages that did know to contact the county EOC. This is a troubling discovery, found in both the Northern and Southern disaster case studies. The county system is such that it helps those on a first come, first serve basis. The villages that are not aware of this system operate on their own, possibly to their own detriment.

### **Inter-municipal Mutual Aid Agreements (MAA)**

Throughout the state, the number of formalized mutual aid agreements varies regionally. Rural communities of the Southern Tier maintain many informal partnerships within their communities and throughout their respective counties. Although these arrangements can be a great benefit in times of disaster, there are alarmingly few formal partnerships in place that can support a system of disaster response that is needed for the communities of this region. Amongst Northern municipalities, however, codified arrangements are considered a staple of efficient and effective emergency services delivery, occasionally to the extent that some administrators find them overly abundant (Glen Morrison, Jefferson County Office of Fire & Emergency Management Interim Director, 5/18/07).

The vast majority of existing formal relationships focus primarily on fire, emergency medical services, and law enforcement services between the townships and villages. Mandated by state law, these particular Mutual Aid Agreements are well understood and relied upon in times of disaster. For example, when the flooding from the Delaware River Basin hit many towns in Delaware County in the Southern Tier of New



York state, the Village of Sidney fire department was called upon to help those in need in Bainbridge and Walton.

### **Public-Private Partnerships**

Other partnerships that did not seem to exist on a formalized level were those with the private sector and volunteer organizations. Some evidence indicates the existence of relationships between municipalities and private interests or citizen groups such as HAM radio organizations, though these arrangements are largely confined to an informal level (James Martin, Lewis County Fire & Emergency Management Coordinator, 5/24/07).

### ***Private Sector Partnerships***

The Village of Sidney had a connection, through a town leader, to a contractor who was willing to help give cost estimates for free. It was pure luck that Sidney was able to use this contractor. Elsewhere, the catastrophic ice storm that rendered much of the North Country powerless highlighted the vital role of the private sector in coordinating a swift response effort. With upwards of 36,000 utility poles inoperable in the storm's aftermath, an immediate and efficient restoration effort staged by private utility firm Niagara Mohawk was of the utmost importance. Despite the lessons of these events, very few formal relationships have been adopted in the years since (Morrison, 5/24/07).

### ***Public Sector Partnerships***

Prior to the June 2006 flooding, a loosely structured group of Volunteer Organizations Active in Disaster (VOAD) was formed to review previous cases of flooding in the Southern Tier. The VOAD is a nationally recognized concept, and many counties create VOADs to help citizens in times of disaster. Typically, a VOAD consists

of local volunteer organizations that provide assistance during emergencies. The Broome County VOAD, called BAND (Broome Area Networking in Disaster), consisted of the Red Cross, the United Way, the Salvation Army, Catholic Charities, Broome County Council of Churches, Broome County Social Services, and the First Ward Action Council. BAND was tremendously useful for residents, and many villages received one or more forms of assistance from BAND-affiliated agencies such as The United Way. In addition, the citizens of Broome County called BAND directly for all information, from when they could have access to their homes to how they could secure funding from SEMO and FEMA. While BAND could not answer all questions, its high level of contact with victims makes them a natural first point of contact. (Personal Communication, Erik Jensen, Director of Allocations and Planning, United Way of Broome County, 5/29/97)

## **Implications and Recommendations**

### **County-Municipality Partnerships**

As a result of misunderstanding how to interact with the county Emergency Management offices, the rural communities, as well as the United Way and Red Cross, echoed that the counties *did not* play a crucial role in the June 2006 flood response. The county emergency management offices are not plugged in to the VOAD, and the villages are not aware that they need to plug themselves into the county. **Education on how the county-level emergency management system works is desperately needed.**

In addition, rural towns lack the human resources necessary to maintain permanent communications with the county emergency services. Without the ability to legally direct local fire departments, the county does not have the ability to mandate them to develop emergency plans, coordinate with other local departments, share inventories of

local response capacity, or implement state and federal disaster planning training programs such as NIMS. Without a mandate, some local communities will not develop emergency plans or communicate their needs with the county. County-level emergency management officials must resort to warning local officials that their failure to implement NIMS in their locality renders their municipality—and by extension their citizens—may be ineligible for disaster relief funding and support if the local agencies do not comply with the county demands (Malcolm Jones, Franklin County Emergency Management Officer, 6/1/07).

County governments cannot effectively assist local governments that have not previously networked with the county emergency preparedness system. These locals run the risk of receiving less aid than local communities that have maintained relations with the county. Because of this network failure, many municipalities feel that the county failed in helping them access much-needed resources and information. Research revealed that villages needing the most help did not have the capacity or time to contact the county and ask for resources (Personal Communication, James Martin, Lewis County Fire and Emergency Management, 5/24/07). **The county should perform greater due diligence to ensure that its emergency preparedness networks include all local governments, and that their leaders understand the complex planning needs involved.**

**Placing more legal authority in the county would allow them to offer more support to the local communities as they develop emergency plans in accordance with the existing state legislation.** However, it is important to note that partnerships should be structured so as to reduce bureaucratic burden—not add to it. In addition, a balance must be struck between the county's overarching control during a disaster, and

the control each village has over its own citizens. One of the most heavily cited concerns was that of the county stripping away control from the village leaders. If disaster plans clearly indicate how different governmental entities will work together should an emergency occur, much of this apprehensiveness can be dealt with beforehand.

In addition, an option suggested by Chellis was that each village and township establishes a communication command center in the fire department headquarters to use during an emergency (05/24/07). These would serve as local EOC's, and allow the small communities to reach out to the county, as well as other villages, quickly. Some villages already have these set up, and some do not. **In short, a formalized communication system between the county EOC's and the rural areas is needed.** Realistically, it would be difficult to establish EOC's in each small village. However, by formalizing partnerships and keeping track of which village has an EOC, all individuals in rural communities could be linked to an EOC and to the county as a whole. There must be some sharing of resources for this to happen.

**Granting the county more control could also allow for consolidation of overlapping resources.** In a county with thirty-nine fire departments, an effective and coordinated response may be difficult. Many of these fire departments do not have the ability to respond to local fires in the daytime. They are already forced to coordinate with other local fire departments. However, when fire departments that do not train together are thrown into a disaster scenario, response effectiveness may suffer (Personal Communication, Glen Morrison, Interim Director, Jefferson County Office of Fire & Emergency Management, 5/24/07; Mark Pacilio, Former Director, North Country Chapter of the American Red Cross, 5/18/07). **Running combined NIMS and ICS drills**

**is one method of correcting this coordination failure. Consolidating some of the smaller fire departments that are close in proximity could also lessen the amount of additional coordination between departments during an emergency.** Less additional coordination requirements mean quicker response times and better customer service for rural residents that fall between two local departments. **County level fire and emergency services could provide guidance during consolidation proceedings to ensure fair and effective integration.** The county could also ensure that consolidation takes place at a pace that would not lower morale among the departments and lead to a loss of volunteers.

Despite all the above advantages centralizing emergency management functions at the county level, there are disadvantages that can arise if this arrangement becomes too hierarchical. Shifting power to a county that does not maintain open partnerships with local governments can reduce both county and local response capacity by distancing empowered officials from service goals of disaster response. Counties could also develop plans for a countywide response to emergencies that are not integrated with local emergency plans (Mark Pacilio, 5/18/07). If county and local plans are not aligned, response strategies could become tangled, reducing the effectiveness of both plans. **Emergency planners need cross-agency dialogue at the county level that is integrated with dialogue between the county and local governments.**

Counties should develop an overarching emergency response strategy and work with local governments to insure that their response plans are compatible with the overarching county disaster management strategies. The county emergency leaders or community affairs officials must get out into the communities and explain how the

county should be used and what can be expected from it during a time of emergency. **In an ideal situation, a trained county representative would serve in an advisor role to keep the local governments involved with the county.** In short, the county must build a more consistent relationship with the villages. **In turn, the local governments should design their emergency management plans so that they are compatible with the county during an emergency.** This involves heavy communication with the county during disaster plan development. The county and local governments must pay particular attention to this aspect of coordinating their emergency response plans.

County level governance makes sense for emergency management because it can strike a balance between keeping government small enough to account for the differences between geographic areas yet being large enough to have an adequate resource capacity. Other larger units of government such as state legislative districts cross county lines and do not fit into the preexisting layering of government between the state government through to the local communities. The SEMO regions are also not effective as a central hub of organization due their large size. The region that encompasses the North Country is administered from Syracuse, and most of the SEMO activities consequently occur in Syracuse. Many North Country local governments resent having to travel to Syracuse for activities (fire, EMS, and disaster drills) when they could take place in Watertown or other North Country towns and villages (Mark Pacilio, 5/18/07).

In extremely rural areas such as much of the North County, the role of the county is even more important. The low population densities make central planning and resource sharing more important as some residents may live in remote areas where the local government cannot meet their needs. However, the remoteness also makes a complete

centralization of resources and planning hard on local communities. **A centralized-decentralized approach that coordinates planning activities at the county level but localizes command-and-control systems, inventories, and staging areas is optimal for maintaining high levels local response capacity in under-resourced counties.**

### **Inter-municipality Partnerships**

Political considerations and county-wide disasters can expose the limits of mutual aid agreements. Territorial disputes and resource depletion are frequently cited political obstacles, leading many aid agreements to be limited in scope and formulated with complex request and activation procedures. Once in place, the magnitude of the event triggering their implementation also impacts their efficacy. For example, while the Sidney Fire Department was out assisting neighbors in Bainbridge and Walton, the Village of Sidney experienced large amounts of flooding. The fire department of Sidney was stretched to its limit after helping both neighbors and the citizens of Sidney (Personal Communication, John Woodysheck, Village of Sidney, 05/29/07). **In such cases, the local governments need logistical strategies that can facilitate resource sharing during emergency response; mutual aid agreements are necessary for this to occur, but not sufficient to insure effective emergency response during a crisis.**

Despite these partnerships, lateral agreements between the municipalities are lacking in areas. Part of this arises from the mentality that each town will “take care of its own.” Interestingly, this is also partially attributable to differing mindsets that roughly coincide with the population densities of the counties in question: as towns and villages grow increasingly remote, mutual aid agreements assume a greater role within their preparedness plans, while more populous areas with superior infrastructural resources

perceive such arrangements to be overly burdensome (Mark Tuttle, Lewis County Fire & Emergency Management EMS Coordinator, 5/24/07; Morrison, 5/24/07). Also, **because funding for disaster mitigation is scarce, villages must rely on each other to fill in the gaps in emergency response.** Realistically, not all towns will have communication command posts or shelters during emergencies, so it is incumbent upon them to plan their resource-sharing. FEMA, SEMO, and the county are not able to reach the citizens as quickly as municipalities can reach each other. This further reinforces the fact that formal partnerships between town leaders and county emergency managers are crucial.

Communities could not access disaster mitigation resources during the June 2006 floods as a result of insufficient communication and partnerships between the local governments (Personal Communication, Nelson Delameter, Emergency Manager for Delaware County, 05/29/07). For example, small villages have put in requests to establish their own Emergency Operation Centers (EOC's), not knowing that the larger township has already requested an EOC. This slows the process of any village or township getting an EOC, as there is only a limited amount of funding for these resources. **Communication and cooperation between local governments can ensure efficient allocation of emergency management resources.**

#### **Public Partnerships**

**County VOADs and County Emergency Operation Centers (EOCs) must form official partnerships to ensure preparedness.** The EOC's manage emergencies and liaise with state and federal governments, while VOADs can access critical resources during emergencies. Therefore, town leaders and citizens need access to both the VOAD and the county EOC. Staging regular meetings between VOAD and Emergency



biggest problem, but they had no idea that the Red Cross offered this type of training (Woodysheck, 05/29/07). In addition, many village leaders are not aware that the Red Cross must be asked to come in and help; they cannot simply show up without a formal request for assistance. Because they did not know the process for bringing the organization in, they did not receive assistance (Woodysheck, 05/29/07). This contrasts sharply with Hancock, where the Red Cross presence was the most helpful resource during the first few critical days (Personal Communication, Shaun Shannon, Village of Hancock, 5/23/07).

BAND, the Broome County VOAD, does not simply provide financial assistance but also provides affected families with a case manager to help negotiate funding streams and other necessary resources during recovery. While BAND existed prior to the June 2006 flood, the magnitude of the disaster did result in capacity issues within participating organizations. Immediately following the flood, flood-related duties were simply tacked on to the normal duties, resulting in backlogs and longer turnaround times. Coalition member roles and organizing procedures had never been formalized, which delayed BAND's operations and decreased its effectiveness. **VOADs across New York State would benefit from supplemental staff during times of emergency.**

During the June 2006 floods, BAND used member organizations' resources that were already in place from its members. This seemed like a good strategy for swift action, however, BAND leaders discovered that the organizational resources provided were not an exact match for BAND's response system. For example, case management was run by mental health case managers via Catholic Charities. These staff members naturally approached disaster case management as they would approach their mental health cases,

taking a holistic approach to the situation each family was in. Unfortunately, applying mental health case management to flood victims often slowed the assistance process, as there are aspects to the former case management system (i.e. confidentiality regulations) that do not apply to families that are in need of flood relief assistance (Personal Communication, Erik Jensen, United Way of Broome County, 05/29/2007). **VOADs would benefit from a review of available resources from member organizations and planning ahead for situations where each resource might be appropriate. In addition, VOADs should employ case managers with specialized knowledge in the issues faced and assistance available after a disaster to help residents navigate their assistance options.**

Finally, there are severe misunderstandings as to what functions nonprofits actually perform and what services they provide. The municipalities need to be educated on how to use VOAD and the volunteer organizations in their counties to help during disaster, as well as what can be provided to them to help with prevention and preparation. (Erik Jensen, 5/29/07)

#### *Private Partnerships*

The villages and towns should work with the private sector ahead of an emergency to establish aid agreements. For example, the Red Cross of the Southern Tier has existing agreements with companies to sell furnaces and heaters at a discounted price following a disaster (Personal Communication, Sharon Aswad, The Red Cross–Southern Tier, 5/24/2007). In addition, the largest supermarket in the town of Deposit donated food and water to the victims during the June 2006 floods. Although it might be difficult for

smaller businesses to commit resources without knowing the scope of the disaster, it would be useful to reach out to local businesses prior to a disaster.

## ***Planning for communications***

*Planning for internal communications needs and insuring effective, transparent public information systems are both critically important components of emergency preparedness.*

Emergency preparedness systems are largely dependent upon the efficient use of communications systems to facilitate effective plans through all phases of the disaster cycle. Internal communication and public information need to be planned for separately, but the two functions are equally important.

## **Internal Communication: Narrative and Analysis**

Accurate warning and consistent coordination between government officials is critical to the ability of counties and municipalities to manage a disaster. Emergency coordinators must have formal systems in place to contact county employees, local fire departments, hospitals, community-based organizations and local, state, and federal officials. Clear and up-to-date lines of communication should be available to all key stakeholders when disaster strikes.

During the June 2006 flood, the level of warning varied throughout the Southern Tier due to differing levels of communication between the National Weather Service, counties, towns, and villages. While communication structures (i.e. phones and radios) were available throughout the flood, issues of pride and knowledge of disaster management procedures hampered communications on several occasions.

Advanced warning systems were more successful in Broome County than in Delaware County. Prior to the flood, Broome County emergency services personnel

participated in several conference calls with the National Weather Service. The county informed officials in each affected municipality within its jurisdiction to prepare for evacuations (Personal Communication, Brett Chellis, Broome County Director of Emergency Services, 5/24/07). In contrast, when asked about warning strategies, Nelson Delameter, the Director of Emergency Services for Delaware County during the floods, remarked, “It is not our job to warn the municipalities” and placed responsibility for doing so with the National Weather Service (5/29/07). As a result, municipalities within the county—in particular, the Villages of Hancock and Sidney— report having received little or no advanced warning about the flood (Personal Communication, Butch Wormuth, Village of Hancock, 5/23/07 and John Woodysheck, Engineer, Village of Sidney, 5/29/07).

Notably, there was no communication between Sidney and the Delaware County EOC once the area was flooded. Sidney officials claim “they [the county] don’t know anything about us” and did not see the utility in approaching the county for assistance. Instead, the Sidney Fire Chief managed the disaster, calling upon local residents to provide expertise where appropriate. Residents were evacuated and phone lines added to the command center “by luck, by people knowing people” (Woodysheck, 5/29/07). No formal structures were in place for internal communications during the emergency.

Internal communications were more effective in Broome County though not perfect. The County Emergency Services office conducted meetings twice a day to update municipal leaders on the storm. They also held two meetings which an executive level officer and public works official from each impacted area attended. However, it was incumbent upon the local leaders to contact the EOC. Municipalities whose leaders

contacted the county received more help, while those who did not were forgotten (Chellis, 5/24/07).

Some of the differences between Broome and Delaware Counties can be attributed to the cultural attitudes in the areas. Broome is a richer, more urban county than Delaware which is known for its very proud and individualistic rural villages. Due to a higher level of monetary resources and a more centralized approach to governing, Broome County has had more success in communicating during a crisis. A similar discrepancy appears in the North when investigating local capacity to communicate in an emergency situation.

Communication preparedness in Jefferson County clearly benefits from having greater economic resources than its poorer neighboring counties. For example, both Jefferson and Lewis Counties utilize HAM radio and a mobile communications bus but only Jefferson County is able to take advantage of the more expensive technologies such as satellite phones and reverse 911. Furthermore, Jefferson County has greater stability in its cell phone coverage with 95% of cell phone towers having generator backups as compared to Lewis County where the majority of cell towers lack generators.

Enjoying better capacity for communication is critical in a crisis as county officials must be able to communicate with one another in the event of a power failure. Despite the usefulness of HAM radio groups, emergency response officials are often forced to rely on backup power systems or cell phones. Given that satellite phones are too expensive for many rural communities and cell phone towers can be damaged or overloaded during a disaster, government officials in both the North and South should ensure that backup systems for emergency personnel are in working order.

Additional technologies such as Geographic Information Systems (GIS) and Global Positioning Systems (GPS) can be extremely helpful in disaster response and recovery. Handheld computers that utilize GPS and GIS would allow emergency response personnel to assess damage and instantly load it into a central database allowing for county, state and federal officials to access the database to assess damage in real-time. While GIS and GPS allow for accurate and timely internal communication, this technology is often prohibitively expensive.

Internal communication is dependent upon maintaining an accurate catalogue of emergency contacts. Strategies for updating such a list vary. Jefferson County maintains a database and a posted chart of current officials' home and work numbers (Personal Communication, Glen Morrison, Interim Director, Jefferson County Office of Fire & Emergency Management, 5/24/07). In Lewis County, where the Emergency Planner is hesitant to use a computer, all communication information is kept on paper and stored in a box (Personal Communication, James Martin, Lewis County Fire & Emergency Management Coordinator, 5/24/07). While this system may be efficient for the current official, it is likely difficult for him to update the information. It will certainly be difficult for his successor to decipher the contents of the "communication box."

## **Implications and Recommendations**

As illustrated above, **consistent communication is necessary between the National Weather Service, counties, and municipalities to ensure accurate and timely warnings.** In the aftermath of the flood, Sidney officials have had several meetings with National Weather Service personnel and been given access to a USGS website which tracks up-to-date water level information and predicts water levels in the

event of a flood (Woodysheck, 5/29/07). Broome County officials are considering several potential projects in order to improve town-county relations, including:

- holding daily meetings via webcast during a crisis so local officials may remain in their areas but still receive information and assistance from the county and
- designating phone lines at the EOC for municipal leaders. During a crisis, the EOC is overwhelmed with citizen phone calls so it is possible municipal leaders could not reach the EOC via phone (Chellis, 5/24/07).

In order to communicate effectively, local and county officials must take advantage of emergency communication technologies. As illustrated above, many counties cannot afford reverse 911 systems, satellite phones or GIS software. **Aid should be provided so that counties and towns can take advantage of recent developments in communications technology.**

### **External Communication: Narrative and Analysis**

In the event of an emergency, citizens must receive proper warnings and up-to-date information regarding road access, drinking water, and evacuation plans. Counties in the North and South have established relationships with local radio stations, television stations, and newspapers. For example, Tioga County has designated one radio station for emergency situations, placing billboards announcing this station throughout the county (Personal Communication, Sharon Aswad, Southern Tier American Red Cross Director, 5/24/07). In contrast, some villages in the South do not maintain local warning protocol such as the Emergency Broadcast System (Wormuth, 5/23/07). A variety of public information vehicles are available to provide citizens with timely information during an emergency.

While communication with the public could take place through county websites, counties in the North do not see this means of communication as being very important. Emergency information is not a priority on these websites, which could be a result of the counties not utilizing the technology or of a lack of internet use among residents. Government officials in the South, however, are considering designating an emergency website with which would provide maps of disaster areas and public briefings via webcast (Chellis, 5/24/07 and Steve Rafferty, Floodplain Coordinator, Town of Union, 5/22/07).

An alternative public information system is reverse 911 which can contact citizens at a moment's notice, making up to 8,000 phone calls per hour. Unfortunately, as discussed earlier, most rural communities cannot yet afford this software. Additionally, this technology would be useless if a disaster tore down phone lines. The reverse 911 example highlights the difficulties in public communication that can arise because counties and municipalities have no control over private utility companies and their ability to restore power or phone lines in a timely fashion. While some counties have formed partnerships with utility companies to prioritize areas of power restoration, these decisions ultimately lie in the hands of private companies.

While the technology used in external communications is extremely important, the form that public communication takes is also critical. Officials from all cities, towns, and counties stressed transparency in government-citizen emergency communications. Communication with citizens must be honest and frequent. To ensure the public is receiving a consistent message, disaster plans must designate a public official whose task it is to keep the public accurately informed. A Public Information Officer can be a



reassuring presence during a crisis. For example, the Village of Sacket's Harbor experienced a water contamination crisis in 2002 that rendered tap water undrinkable. The Mayor of Sacket's Harbor held frequent press conferences to update the public on the levels of contamination, the reasons for the contamination, and available assistance/resources for those who could not find bottled water (Personal Communication, John Deans, Former Mayor, Sacket's Harbor, 5/18/07). Because the public was regularly informed, local officials were able to focus on solving problems rather than addressing rumors, unnecessary panic, and confusion.

### **Implications and Recommendations**

**Municipalities should operate emergency warning systems such as designated radio stations, websites, and the Emergency Broadcast System.** Even with an effective warning system in place such as the Emergency Broadcast system, local municipalities may be disseminating inaccurate information. For example, in Broome County the National Weather Service did not predict all of the areas that were going to flood. As a result, residents in the Town of Conklin were stranded and had to be airlifted out of the flooded area in the middle of the night (Chellis, 5/24/07). The possibility of inaccurate warning information makes the presence of an emergency warning system even more critical to a community's safety.

Citizens are more likely to receive accurate and consistent information if it is coming from the same source. **Municipalities should appoint a Public Information Officer to disseminate information to the public throughout a crisis.** The public will trust the officer to the extent that information is provided honestly and frequently. **Government transparency is of utmost importance in crisis situations.**

**this report), public utilities, storm water systems, shelters, and emergency response equipment within their plans.** Communities can make better use of their human resources if they have identified them in advance and can coordinate before the onset of the disaster. Knowing who in the community is trained for emergency response and/or related professions (health care workers) will allow for better disaster preparedness and more streamlined documentation and data collection in the disaster recovery phase.

### **Threat Analysis**

Counties in both the North and South are composed of municipalities that vary widely in terms of size, demographics, and economic viability. As a result, hazard analysis must always be done at the local level. While municipalities in a county or region may face similar threats, each locale is unique in its ability to plan for a disaster and access resources in its wake. For example, Jefferson County includes the more resourceful Watertown and Sacket's Harbor, while rural towns such as Champion, Wilma, West Carthage, and Carthage are not nearly as economically viable. The governments of smaller, more rural towns are comprised of part-time or volunteer employees who do not have the time or the resources to focus on emergency preparedness (Morrison, 5/24/07).

While federal law mandates that municipalities with populations greater than 10,000 have emergency response plans, it is also important that smaller communities develop plans of their own. With the help of County Emergency Management Offices, municipalities have been able to develop formal emergency response plans. Jefferson County recently received a grant that will allow county officials to conduct hazard mitigation planning on a town by town basis (Morrison, 5/24/07). Delaware, Broome, and

Franklin Counties have also conducted risk analyses on the local level. **A large aspect of this planning involves the use of HAZNY (Hazards New York).** HAZNY is an automated, interactive spreadsheet that asks specific questions about potential hazards in a community and evaluates responses to these questions (State Emergency Management Office, Planning Section, Accessed 6/4/07). HAZNY takes into account population, general building stock (residential and commercial), critical facilities (hospitals, schools, and police and fire stations), and infrastructure (transportation and utility systems). The background of a municipality (frequency and types of disasters) and local conditions (recovery time after disasters) are also evaluated. HAZNY then assigns a numerical value to potential hazards so that they may be ranked and classified as “High Hazard,” “Moderately High Hazard,” “Moderately Low Hazard,” and “Low Hazard.” The program is especially useful to smaller municipalities, as it is able to both identify and prioritize potential disasters. Once potential disasters are prioritized, county officials are able to train local personnel.

Local governments in the same geographic region that face similar conditions are often trained at the same time; this process allows for resource sharing, economies of scale, and increased communication between smaller, more vulnerable, local governments. On the whole, local officials in the North Country understood the importance of emergency planning and were satisfied with the help offered by their respective county governments. At the same time, they expressed that rural towns are often able to take care of their own populations, and that the County need only intervene in the event of a biological attack or pandemic flu event (James Martin, Coordinator, Lewis County Fire & Emergency Management, 5/27/07). While this may be true to an

extent, the training and planning assistance provided by county governments are invaluable. In the South, the New York State Department of Health has consulted with a number of communities with populations of 3,300 or less to develop emergency response plans that pertain to water systems (Dale Albeck, 5/30/07).

### **Utilities and Storm Water Systems**

**Formal documentation of critical utility maintenance procedures is essential if personnel from nearby communities are to be of any assistance during an emergency.** Many rural public facilities employ small staffs that may be stretched during an emergency. Some municipalities find it beneficial to establish formal mutual aid agreements. In the case of utilities, arrangements may permit personnel from nearby utility or water systems to supplement the staff of the affected systems. Arrangements can also be made to contribute parts and equipment as needed. This enables continuity of service and can speed repair processes, as tracking down and transporting replacement parts and equipment can be complicated and costly.

**Maps must be maintained, as they are essential for locating critical infrastructure during an emergency.** During the floods, Broome County found that flood maps were outdated. There is an initiative on the federal level to update and modernize these maps through use of improved technology (Personal Communication, Frank Evangelista, Broome County Planning, 5/22/07). Southern tier communities have been prioritized since the flood event. In addition to floodplain maps, the Bureau of Water Assessment and Management compiles tools such as aerial photos, agricultural district maps, hydrologic soils data and information on training resources and useful Internet links.

## **Shelters**

**Local communities should have shelter and equipment staging areas pre-selected for use in an emergency.** Planning shelter and staging areas in advance will reduce the set-up time for a disaster response team. Local municipalities and counties should maintain formal agreements with organizations, such as fire halls and schools, for use of their facilities. They should also ensure that these facilities are equipped with generators and additional communications equipment.

## **Response Capacity**

**Local governments should maintain a central inventory of all of their resources for both their own use and for the use of partnering communities.** Counties should maintain inventories of larger sources of support such as Fort Drum. A disaster response will not be effective if local governments cannot access key resources. Road closures and lack of real-time information about road conditions present a major logistical challenge. We found that this had an impact on Red Cross operations and complicated their ability to deliver supplies and open shelters. Volunteers were unable to reach areas in need. Broome County hopes to resolve some of these problems through maintaining websites with real-time road closure information (Sharon Aswad, 5/24/07). Communities need to establish primary and backup locations from which they can obtain supplies in the event of logistical challenges.

There are only two State Emergency Management Office (SEMO) equipment stockpiles in New York, and local communities must make resource requests through county emergency management offices (SEMO website, Accessed 6/1/07). State- or county-wide emergencies may reduce the availability of equipment and supplies, and SEMO provides only equipment and operating instructions; borrowing communities must

arrange for transportation. If communities do not have a transportation arrangements worked out ahead of time, they may not receive the resources they need until it is too late. **Therefore, it is important for municipalities to formally document an equipment request and transport procedure in their emergency management plans.**

### **Response Logistics**

**During a response effort, municipalities should maintain accurate records of what supplies are used and who performs each task.** This will make the reimbursement process easier when SEMO and FEMA arrive to relieve the financial burden shouldered by local governments. After power was restored to municipalities in the wake of the ice storm, local officials in the North had trouble tracking down generators that had been loaned out to area residents (Morrison, 5/24/07). Municipalities were unable to recover the equipment due to a lack of accurate documentation.

**An effective emergency management plan should seek to overcome logistical issues by formally documenting alternative methods of communication.** Fire departments from various locales and counties often communicate over different radio frequencies. For example, fire departments in Franklin County have difficulties communicating with fire departments in neighboring counties because they operate on different radio frequencies (Buckley, 5/29/07). As noted by the Susquehanna River Basin Commission Flood Analysis, even when information is well disseminated, local government authorities who are responsible for making time-sensitive decisions would like personal contact in addition to graphic or text notification. This provides an opportunity for clarification and can increase their confidence about predicted outcomes

(SRBC website, Accessed 5/31/07). Local decision-makers need to establish a protocol for making these interpersonal contacts to avoid conflicting or deficient responses.

## ***Limited Funding***

*State and local governments constantly struggle with the limited availability of funds that inhibits comprehensive emergency planning, response, and recovery efforts.*

One of the consequences of the rigorous legislative and policy mandates that county and local governments face is the burden of complying with the demands. The communities in our study all reported the need for more funding. Some of the major cost drivers are described below.

## **Narrative and Analysis**

### **Limited Local Budgets**

Most rural areas lack the resources to provide for any large-scale recovery efforts, further underscoring the need for swift and efficient processes for securing aid. According to several emergency planners, SEMO and FEMA representatives have routinely proven themselves to be helpful and accommodating following disasters of varying magnitudes. Support personnel were dispatched immediately, and remained on site for extended periods of time as necessary. Assistance was readily available for completing complex paperwork for requesting reimbursements or seeking grants (Mark Tuttle, 5/24/07).

Despite the ability of state and federal representatives to provide essential support following a major event, a common concern amongst community managers and emergency personnel in rural areas is fluctuations in available funding. Though acknowledging the vital role of the Department of Homeland Security and the logic of

prioritizing densely populated urban areas, officials in rural areas fear that resources available to their communities will continue to diminish, in turn jeopardizing their ability to serve their constituencies throughout often prolonged recovery processes.

### **Upgrades for Facilities**

Through the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Section 404, 42 U.S.C. 5170c, the Department of Homeland Security is authorized to “[P]rovide States and local governments financial assistance to implement measures that will permanently reduce or eliminate future damages and losses from natural hazards through safer building practices and improving existing structures and supporting infrastructure. Assistance can be used for the acquisition of real property, relocation, demolition of structures, seismic rehabilitation or retrofitting of existing structures; strengthening of existing structures, initial implementation of vegetation management programs, initial training of architects, engineers, building officials, and other professionals to facilitate the implementation of newly adopted State or local mitigation standards and codes; elevation of residential structures; elevation or dry flood- proofing of non-residential structures in accordance with 44 CFR 60.3, and other activities that bring a structure into compliance with the floodplain management requirements at 44 CFR 60.3, et al.” (HMGP Text). Municipalities considering applying for this grant need to know that FEMA will be using mitigation and other plans submitted to them as a basis to determine the eligibility of a local government unit to obtain this grant. It is also important to note that FEMA will only fund 75% of the total eligible cost and will require local government units to pay 25% of the total eligible cost.



The Stafford Act also authorizes the Public Assistance Disaster Grant. However, this grant is restricted to areas presidentially-declared as disasters and emergencies. Under this program, FEMA “assist[s] State and local governments in recovering from the devastating effects of disasters by providing assistance for debris removal, emergency protective measures and the repair, restoration, reconstruction or replacement of public facilities or infrastructure damaged or destroyed. Funds are allocated from the President's Disaster Relief Fund for use in a designated emergency or major disaster area. The FEMA Regional Director approves grants from this allocation on the basis of project applications for eligible applicants. States are responsible for distributing funds to applicants. As a condition of receiving assistance under the Stafford Act, applicants are encouraged to take mitigation measures to reduce future losses from natural hazards” (Program text).

Other funding opportunities available include the Drinking Water State Revolving Fund established through the Safe Drinking Water Act of 1996. This program, administered by EPA, provides funds to finance infrastructural improvements to drinking water systems and provides a special allotment to small and disadvantaged communities.

### **Redirection of funds**

Prior to the creation of the Department of Homeland Security, there was, according to our interviewees, a more diverse group of agencies that awarded disaster management funding assistance to the local governments. For example, more funding used to be available to fire departments than appears to be the case now. There is some thought that the incorporation of many agencies into DHS has resulted in a privileging of some agencies over others—locals speculate that law enforcement may be receiving

terrorism prevention funding. However, this money may be misallocated in the sense that while adding terrorism fighting capacity may be of use in stopping a criminally caused disaster, there is less money available for responding to more likely disasters, such as an Adirondack wildfire, pandemic flu, or a chemical spill on an interstate.

### **Technical assistance**

All communities expressed a need for more funding to provide personnel to meet all of the mandates required by state and federal legislation. The burdens of preparing the plans often fall on one disaster coordinator and perhaps an assistant. Because the disaster planning function incorporates a sophisticated intra- and inter-governmental network of agencies, it requires numerous meetings and constant creation and revision of policies and procedures. This time- and labor-intensive task adds significant burdens to local agencies that are often already operating with less than optimal staffing capacity.

### **Supplies**

Many of the mandates for disaster preparedness require the local governments to procure supplies. For example, Lewis County is required to buy supplies, including vaccinations, for pandemic flu, bird flu, and chemical incidents. These resources, while necessary for high-priority disasters, are taxing on the local budget.

### **Implications and Recommendations**

Many of the grants/funds available for communities to improve and/or help them recover after an emergency or disaster have restrictions and limitations in terms of what can be purchased or reimbursed to local governments and who can benefit. **Therefore, it is necessary that when applying for grants, limitations and restrictions are taken into consideration to prevent communities from ending up having to pay for services**

**and/or equipment which a particular grant will not cover.** At the same time, local government officials need to remember that it takes at least 6 months after an application has been sent before one learns if the application for a grant has been approved. In the case of the Southern Tier, it is only now that they are finding out whether or not their applications for grants have been approved (Frank Evangelista, 5/22/07) .

Most of these grants and funding opportunities are administered at the state level, and federal agencies authorized to implement these grant programs will not talk to individual communities but will only transact business with a designated coordinator at a state level. **Therefore, communities need to know who has been delegated by the State as the contact person and establish communication lines with the designated contact, not only to find out the requirements for these grants and to determine deadlines, but also to seek advice in preparing the application forms.** Aside from determining whom to contact for funding, we also recommend that counties provide a one-stop-shop to which rural communities can turn to (during the preparation of emergency plans and/or after a disaster or emergency) determine which grants or funds are available and how can these grants be utilized by local governments.

**Local governments should also take advantage of resources available through rural associations and federal and state agencies.** For instance, the New York Rural Water Association provides not only technical training to water operators, but also free technical assistance to rural water systems in preparing vulnerability assessments and emergency response plans which are mandated by law. The Broome County Department of Health provides advice to water operators not only in their day-to-day operation, but

also in the interpretation of drinking water monitoring results and vulnerability assessments and emergency response plans.

**Local communities need support securing funding for the period between the initial disaster response and the arrival of private, state, and federal relief funds.** In the Southern Tier, recovering from the June 2006 has been a long and difficult process. In Broome County, thirty families remain in FEMA trailers, having lived there throughout the winter. In the Village of Sidney, families have been frustrated for months by confusing applications to claim insurance money. As Broome County official Frank Evangelista asserts, “there seems to be no mechanism for that interim response—that three to six months to get people to temporary housing and then get them back out of the temporary housing....The programs that are out there are not set-up for flood response.” (Personal Communication, 5/22/07)

**Local networks of governmental and nongovernmental agencies can mitigate the post-disaster funding challenges in the short-term.** Broome Area Networking in Disaster (BAND), a coalition of nonprofit and government organizations which originated during the floods of 2004 and 2005 in the Southern Tier, has attempted to lessen this problem of slow transfers of funds to local communities. Because BAND had operated during the two previous smaller floods, they were able to meet within the first week of the June 2006 flooding. Of these organizations, only the Red Cross had immediate responsibilities during the crisis: establishing emergency shelters and providing initial emergency funds to families in need. While the rest of the organizations had no initial duties, United Way official Erik Jensen explains that many families

contacted these organizations for support (or to offer their support) because the individuals and organizations had previous relationships.

Initially, BAND attempted to meet basic needs (e.g. funds for hotel stays, repairing hot water heaters). Recovery centers were set up in impacted communities, most often in churches, so that people could easily access opportunities for assistance. Grants were generally less than \$3,000 and were often provided by one agency. Due to the severity of the winter, these kinds of grants were available for much longer than originally thought necessary. BAND is now funding more long-term rebuilding projects. Funding these often involves packaging support from multiple sources.

**Local officials need to inform citizens that families can access federal and state grants.** These funds were also minimal (\$5,000 from FEMA and \$5,000 in state funds) and could be used for smaller needs such as furnace replacements or basement clean-ups. Representatives from BAND as well as the Village of Sidney in Delaware County both indicate that the federal funds arrived earlier than state money which came with several confusing requirements. According to a Sidney official, many residents still have not received funds from the state. However, it is notable that New York State's individual grant program marked the first time a state had offered money to its residents during a time of disaster. This is a positive step, even with the associated problems (Personal Communications, Jensen and Woodysheck, 5/29/07).

## **Critical Infrastructure**

*Creating detailed, thorough emergency preparedness plans that address hazard mitigation, emergency response, and recovery of critical infrastructure will prevent disasters and emergencies from debilitating local communities.*

### **Narrative and Analysis**

The US PATRIOT Act of 2001 defined critical infrastructure as “systems and assets, whether physical or virtual, so vital to the United States that the incapacity or destruction of such systems and assets would have a debilitating impact on security, national economic security, national public health or safety, or any combination of those matters” (Sec. 1016(e)). At the same time, President Bush’s National Strategy for Homeland Security listed the following sectors as critical infrastructure: Agriculture, Food, Water, Public Health, Emergency Services, Government, Defense Industrial Base, Information and Telecommunications, Energy, Transportation, Banking and Finance, Chemical Industry, and Postal and Shipping (U.S. Office of Homeland Security, 2002).

For this research, we focus primarily on water infrastructure, specifically drinking and waste water systems as these were the critical infrastructure we have information on. At the same time, most of the villages we interviewed were too small to have their own public transport and/or energy and telecommunication systems as well as their own hospital and health services.

Here in the United States, the Safe Drinking Water Act (SDWA) defines the standards that need to be followed by all water utilities to ensure the safety of all consumers. One of the amendments of the SDWA (through the Bioterrorism Act of 2001) requires that all communities with water systems serving populations of 3,300 or more to

assess the vulnerability of said systems and prepare an emergency response plan addressing these concerns in relation to both natural and man made disasters.

A vulnerability assessment includes an inventory of the source, storage and treatment of water and the power source, distribution facilities, communications and pertinent offices in a given location. The vulnerability assessment also includes the likelihood that the water system will be affected by different disasters, either man made or natural (New York Rural Water Association, June 5, 2007). While a typical emergency response plan would list all contact information of town/village officials, water and waste water operators, town engineers, fire department(s), police & other emergency response personnel, water system contractors and potential “partners” who can deliver particular equipment or supplies immediately. Additionally, the emergency response plan for water systems includes a summary of the system itself, including locations of pertinent documents (leases, service agreements, etc.), maps identifying where key water system components are located, including the physical layout of pipes and other distribution lines, as well as an inventory (including locations) of available supplies/equipment that can be used to fix a particular problem. Likewise, the plan should contain step-by-step procedures on what to do for various disaster scenarios. The NY Rural Water Association lists these disasters as: power outages, prolonged water outages, transmission and/or distribution system failure or disruption, treatment equipment failure, source pump failure, loss of SCADA (a program used for transmission and dispatch) or other automated controls, contamination of supply, chemical incident at the facility, drought, flood, severe weather, earthquake, fire at the water supply system facility, fire in the community, hazardous material release and terrorism or vandalism. Aside from step-by-step

procedures to address a particular disaster, the plan should also include the various water conservation techniques that should be followed during an emergency. This includes when to issue “boil water advisories” and/or water use restrictions. The plan should also include a section on communications, including both internal communication among water operators, contractors, engineers and both town, county, state and federal officials and a means by which to inform consumers (New York Rural Water Association Website, accessed June 5, 2007). Typically, an emergency response plan for water systems is updated annually to verify contact information and every five years to revisit policies and procedures (Personal communication, Dale Albeck, Public Health Engineer, 5/29/07).

In the case of the village of Hancock, when the floods of June 2006 struck, the waste water system facility did not have a written procedure on how the water system operators should handle floods at the sites. What they had was a procedure that has been handed down orally from one operator to next (Personal Communication, Bernard Wormouth, Foreman of Streets & Water, 5/23/07). In the aftermath of the floods, the Village of Hancock is in the process of writing detailed procedures on how to respond to floods and is in the process of flood-proofing their facilities. Likewise, as a result of the summer 2006 floods, the Village of Hancock’s only drinking water source was flooded. The water operator, Butch Wormuth, had to issue “boil water advisories” to local residents. The advisory lasted for several days and was only lifted after the well tested negative for total coliform (Personal Communication, Butch Wormuth, Licensed Water Operator, Village of Hancock, 5/23/07).

Aside from the Village of Hancock, the Village of Deposit’s water system was also severely impacted as a result of the June 2006 floods. Unlike Hancock, Deposit has



several wells used as a source of water. Thus when two of their wells were inundated in June 2006, they had a third water source used to provide water for the Village. As a result of having multiple water sources, Deposit did not have to issue “boil water advisories” to residents during the summer floods of 2006. As with Hancock, the Village of Deposit’s waste water treatment plant suffered damages as a result of the floods. Both municipalities are in the process of retrofitting and waterproofing their facilities. Likewise, they have realized the need to have an emergency response plan and are in the process of finalizing such a plan for their water systems to address the problems they have encountered during the floods (Personal Communication, John Romanoski & Scott Conklin, Water Operators, 5/23/07).

## **Implications and Recommendations**

In spite of the fact that we only looked at water systems as an element of critical infrastructure, we believe that our recommendations can also be used for other infrastructural aspects in minimizing the impacts of disasters, especially in rural areas.

**Although community water systems serving populations of less than 3,300 are not required by law to have an emergency response plan or a vulnerability assessment, we recommend that these local governments should at least have one or the other.** Both the vulnerability assessment and the emergency response plan can be valuable tools for local governments to identify what systems they have and to create an inventory of the supplies and equipment they possess, as well as a list of important contacts whom they can call upon in the event of a disaster. We understand that creating vulnerability assessments and/or an emergency response plan can be overwhelming for local governments, so we encourage local governments to seek free resources (free

training and free technical assistance/guidance) available through the U.S. Environmental Protection Agency, Department of Health or non-profit organizations such as Rural Water Associations and other similar organizations. From our interview with Mr. Dale G. Albeck, Public Health Engineer for the Broome County Health Department, it was learned that the “Village of Deposit used NYWRA’s template on vulnerability assessment and water systems emergency response plan as a basis for the town’s own vulnerability assessment and emergency response plan” (Personal Communication, 5/29/07). We are assuming that some towns are familiar with these resources, however, **USDA, EPA and other organizations should also actively promote these resources which rural committees can access. At the same time, counties should also be responsive enough to offer training and/or financial or technical expertise to smaller municipalities to come up with individual vulnerability assessments and/or emergency response plans** as Broome County is currently doing.

From our interviews, we also inferred **the importance of having weather-proof water facilities. Existing and future water systems should be designed to withstand extreme weather conditions such as severe rains, floods and winter weather often found in New York State** (John Romanoski & Scott Conklin, 5/23/07). These retrofits can be as simple as having elevated water tanks, submersible pumps, pipes located below the frost zone, installing flood gates, having weather proof generators, strengthened foundations of buildings and/or strict implementation of building codes.

The location of critical infrastructure should be considered with the most detail. For the Village of Hancock, we were told that the location of their drinking water well is inherently vulnerable to floods (Personal Communication, Bernard Wormouth, 5/23/07).

Therefore, critical infrastructure should be located in areas that are within a 100 year flood zone, and they should not be built in earthquake zones or other areas that are easily compromised. In the event that a suitable location cannot be located within a village or town's boundaries, provisions should be made for neighboring towns to share facilities.

We also inferred from our interviews that **there is a need for multiple water sources**. Having multiple water sources would make towns somewhat less vulnerable to disasters. Should this prove impossible, towns need a back-up plan ensuring that their constituents will have continued water supply. This can be as simple as having an agreement with a neighboring town to lend them supplies and equipment to fix the problem, or as involved as having neighboring facilities provide the needed water demand, or even simply having an extra tank large enough to supply the daily water demand until wells are operational again.

Most of the water facility operators we interviewed informed us that they lost years of water system-related records due to the floods of 2006 (Personal Communication, John Romanoski & Steve Conklin, 5/23/07). **Therefore, we also recommend backing-up (having multiple copies) important records and storing these records in several locations—preferably in weather proof containers—to avoid the loss of important documents in the future.**

**State agencies should monitor weather related threats to infrastructure along with relevant national and regional authorities.** As noted in the Susquehanna River Basin Flood Analysis issued by SEMO, improved measuring systems led to more accurate forecasting and modeling (undated material from SEMO). As a result, the

county was able to alert communities as conditions worsened and were able to carry out evacuations before floodwaters reached city streets.

The template from the New York Rural Water Association on water system emergency response plan lists several disasters with which water operators should familiarize themselves. Most of these disasters are difficult to fathom without having first hand knowledge. **Therefore, we recommend having simulations or mock emergencies to train personnel. At the same time, these simulations can be a venue for local governments to interact with each other.** The simulations can be coordinated or initiated by the county in order to emphasize the need for municipalities and counties to work together, particularly during disasters.

## **Limitations, Recommendations, and Conclusions**

### ***Limitations***

The major limitation of our study is that it is based upon self-report. It may prove necessary to utilize more rigorous investigative measures to accurately assess whether or not the level of compliance with these regulations is sufficient to actually allow the plans to be implemented in a disaster.

In addition, there was a disproportionate amount of information from both of the regions studied. Specifically, the lack of a recent precipitating incident in the North limited the response and recovery data available to us in the interviews.

More generally, the investigation group faced a lack of documentation from both regions. For example, municipality emergency preparedness plans were not yet drafted, or in draft stages and not yet ready for release.

Lastly, while we believe that our recommendations are valid, this is by no means a comprehensive report; it is a sample. More time would be necessary to produce a comprehensive report.

## ***Recommendations***

While recommendations specific to each theme are included in the appropriate section, we recommend that USDA adopt the following four strategic priorities to help rural communities prepare for disaster:

### **Education**

- Develop an “Emergency Preparedness Clearinghouse” that informs communities not only of available funding, but also of free training (i.e. ICS, NIMS, Red Cross) and other forms of assistance provided by state and local agencies. This clearinghouse would serve to educate small communities on funding resources, state and county mandates, and opportunities to receive training from the government as well as volunteer organizations.

### **Cooperation and Communication**

- Foster communication both between towns and with the county on a regular basis to promote the coordination of disaster planning.
- Make sure that towns integrate the county in their disaster management plans.
- Insist upon consistent communication between the National Weather Service, counties, and municipalities to ensure accurate and timely warnings.
- Municipalities should appoint a Public Information Officer to disseminate information to the public throughout a crisis. Governmental transparency is necessary in crisis situations.

### **Capacity-building and Institutional Knowledge**

- While formal documentation and the development of comprehensive emergency management plans promote the development of institutional memory, plans alone are not a guarantee of effective emergency response. USDA should take measures to ensure that these plans do not just live on office shelves, but that they become part of county and local government standard operating procedure through coordinated drills, partnerships, and other activities.

- Counties and towns need the financial means to take advantage of recent developments in communications technology (satellite phones, GIS/GPS).

### **Critical Infrastructure**

- Insist upon the maintenance of updated records and map of public utilities and other assets
- Each municipality is unique. HAZNY should be used in the development of local emergency plans, because of the diverse needs of localities.
- USDA should promote or mandate the development of detailed, thorough emergency preparedness plans that address hazard mitigation, emergency response, and recovery of critical infrastructure. This will prevent disasters and emergencies from debilitating local communities.

### **Conclusion**

New York State's rural communities have a proud tradition of independence and self-reliance that, most of the time, serves them well during the course of ordinary events. However, when extraordinary events occur, such as natural or man-made disasters, effective management of these crises will depend on an ever-increasing level of cooperation and coordination. We believe that, with the help of our findings and recommendations, the USDA is well-placed to help New York State's rural communities to further develop the capabilities and capacity to respond in emergency situations.

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## **Appendices**

### ***Contacts List***

#### **North Country Contacts**

Terry Buckley, Supervisor  
Town of Champion  
(315) 493-3240  
5/29/07

John Deans, Former Mayor  
Village of Sacket's Harbor  
(315) 785-2757  
5/18/07

Malcolm Jones, Director  
Franklin County Emergency Services  
(518) 483-2580  
6/1/07

James Martin, Coordinator  
Lewis County Fire & Emergency Management  
(315) 376-5234  
5/24/07

Glen Morrison, Interim Director  
Jefferson County Office of Fire & Emergency Management  
(315) 786-2654  
5/24/07

Mark Pacilio, Former Director  
North Country Chapter of the American Red Cross  
(315) 771-9180  
5/18/07



Kevin Smith, Director of Community & Economic Development  
Tug Hill Commission  
(315) 778-7652  
5/18/07

Mark Tuttle, EMS Coordinator  
Lewis County Fire & Emergency Management  
(315) 376-5303  
5/24/07

### **Southern Tier Contacts**

Robert Augenstern, Director  
Southern Tier Regional Planning Board  
(607) 724-1327  
5/22/07

Dale Albeck, Public Health Engineer  
New York State Department of Health  
(607) 778-2834  
5/30/07

Sharon Aswad, Director of Emergency of Services  
Red Cross- Southern Tier  
(607) 785-7207  
5/24/07

Brett Chellis, Director  
Broome County Emergency Services  
(607) 778-1208  
5/24/07

Scott Conklin  
Village of Deposit  
607-467-3956  
5/23/07

Nelson Delameter  
Delaware County Emergency Services (former)  
(518)292-2420  
5/29/07

Frank Evangelista, Chief Planner  
Broome County Department of Planning  
(607) 778-2114, ext. 2  
5/22/07

Erik Jensen, Director of Allocations and Planning  
United Way of Broome County  
(607) 729-2592  
5/29/07

Sandy Lizlovs, Environmental Engineer II  
NYSDEC, Region 7, Water Division  
(315) 426-7511  
5/29/07

Stephen A. Rafferty, Building Official/ Flood Coordinator  
Town of Union  
(607) 786-2921  
5/22/07

Shaun Shannon  
Village of Hancock  
607.637.3654  
5/23/07

John Woodysheck, Village Engineer  
Village of Sidney  
(607) 561-2324  
5/29/07

Butch Wormuth  
Town of Hancock  
607.637.3654  
5/23/07

## ***Demographic Appendices***

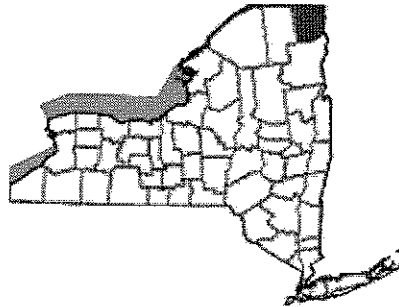
### **North Country**

#### **Town of Champion**

Population: 4,361  
Number of Households: 1,675  
Median Household Income: \$34,875  
Per Capita Income: \$15,951  
County: Jefferson

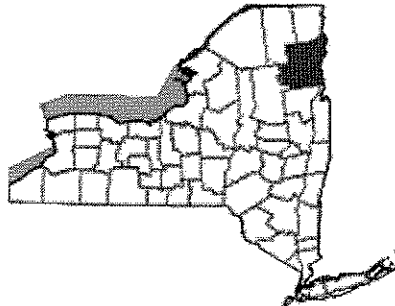
#### **Clinton County**

Population: 79,894  
Population Density: 77 per square mile  
Number of Households: 29,423  
Median Household Income: \$37,028  
Per Capita Income: \$17,946  
Major Cities: Plattsburgh  
Total Area: 1,118 square miles



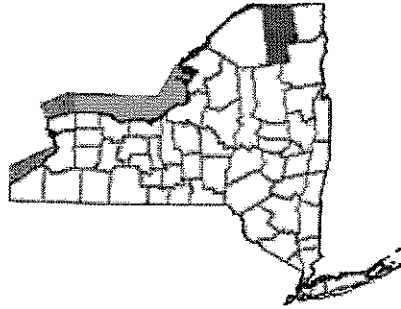
#### **Essex County**

Population: 38,851  
Population Density: 22 per square mile  
Number of Households: 15,028  
Median Household Income: \$34,823  
Per Capita Income: \$18,194  
Major Cities: none  
Total Area: 1,916 square miles

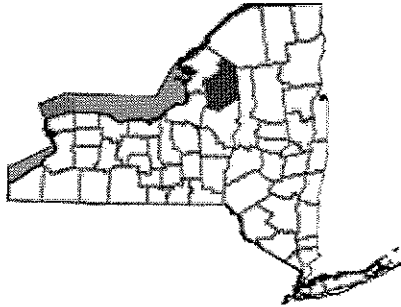


**Franklin County**

Population: 51,134  
Population Density: 31 per square mile  
Number of Households: 17,931  
Median Household Income: \$31,517  
Per Capita Income: \$15,888  
Major Cities: none  
Total Area: 1,697 square miles

**Lewis County**

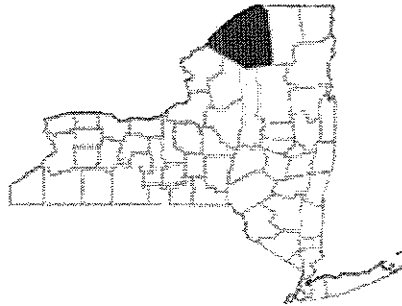
Population: 26,944  
Population Density: 21 per square mile  
Number of Households: 10,040  
Median Household Income: \$34,361  
Per Capita Income: \$14,971  
Major Cities: none  
Total Area: 1,290 square miles

**Sacket's Harbor**

Population: 1,386  
Number of Households: 653  
Median Household Income: \$42,629  
Per Capita Income: \$23,269  
County: Jefferson

**St. Lawrence County**

Population: 111,931  
Population Density: 42 per square mile  
Number of Households: 40,506  
Median Household Income: \$32,356  
Per Capita Income: \$17,728  
Major Cities: Ogdensburg  
Total Area: 2,821 square miles



**Watertown**

Population: 26,705

Number of Households: 11,036

Median Household Income: \$28,429

Per Capita Income: \$16,354

County: Jefferson

**Southern Tier****Broome County**

Population: 200,536

Population Density: 284 per square mile

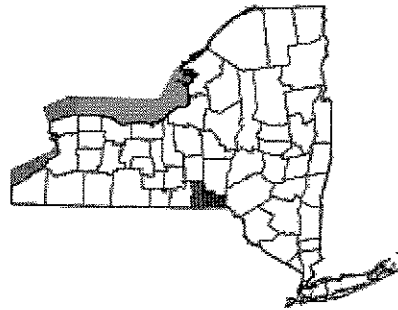
Number of Households: 200,536

Median Household Income: \$35,347

Per Capita Income: \$19,168

Major Cities: Binghamton

Total Area: 715 square miles

**Chenango County**

Population: 51,401

Population Density: 58 per square mile

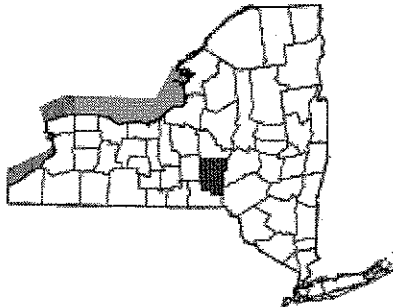
Number of Households: 19,926

Median Household Income: \$33,679

Per Capita Income: \$16,427

Major Cities: none

Total Area: 894.6 square miles



**Town of Colesville**

Population: 5,441

Number of Households: 1,944

Median Household Income: \$38,444

Per Capita Income: \$15,816

County: Broome

**Delaware County**

Population: 48,055

Population Density: 284 per square mile

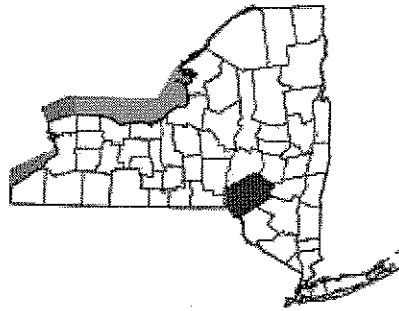
Number of Households: 200,536

Median Household Income: \$32,461

Per Capita Income: \$17,357

Major Cities: Binghamton

Total Area: 1468 square mile

**Village of Deposit**

Population: 1,687

Number of Households: 700

Median Household Income: \$28,750

Per Capita Income: \$15,068

County: Delaware

**Town of Hancock**

Population: 3,449

Number of Households: 1,390

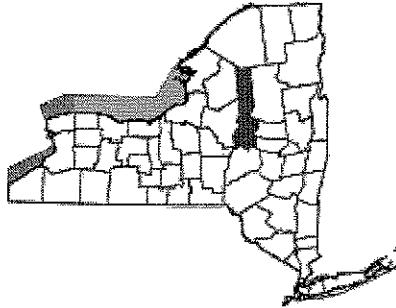
Median Household Income: \$30,449

Per Capita Income: \$16,057

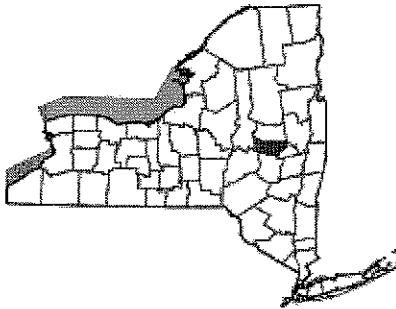
County: Delaware

**Herkimer County**

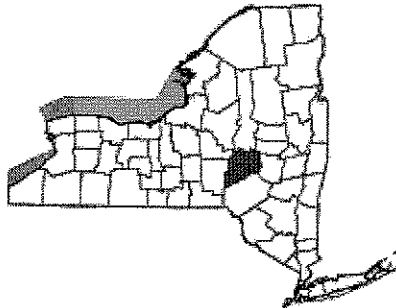
Population: 64,427  
Population Density: 46 per square mile  
Number of Households: 25,734  
Median Household Income: \$32,924  
Per Capita Income: \$16,141  
Major Cities: None  
Total Area: 1458 square miles

**Montgomery County**

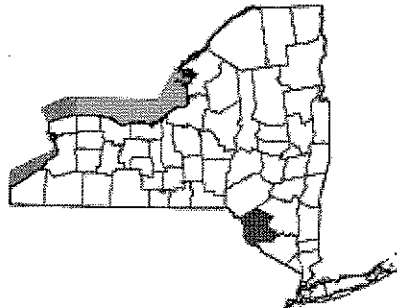
Population: 49,708  
Population Density: 123 per square mile  
Number of Households: 20,038  
Median Household Income: \$32,128  
Per Capita Income: \$17,005  
Major Cities: None  
Total Area: 410 square miles

**Otsego County**

Population: 61,676  
Population Density: 62 per square mile  
Number of Households: 20,038  
Median Household Income: \$33,444  
Per Capita Income: \$16,806  
Major Cities: None  
Total Area: 1,003 square miles

**Sullivan County**

Population: 73,966  
Population Density: 76 per square mile  
Number of Households: 27,661  
Median Household Income: \$36,998  
Per Capita Income: \$18,892  
Major Cities: None  
Total Area: 997 square miles



**Town of Sidney**

Population: 5,441

Number of Households: 1,944

Median Household Income: \$38,444

Per Capita Income: \$15,816

County: Broome

**Ulster County**

Population: 177,749

Population Density: 61 per square mile

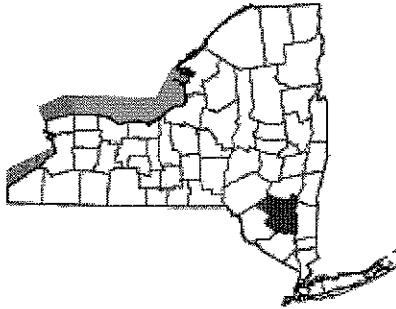
Number of Households: 67,499

Median Household Income: \$42,551

Per Capita Income: \$20,846

Major Cities: Kingston

Total Area: 1,161 square miles



**SOURCE: U.S. Census Bureau**