APPENDIX F

HAZUS-MH Risk Assessment Tool Hurricane Result

HAZUS^{MH}

Risk Assessment Report

County: Tompkins

State: New York

Hazard: Hurricane

Date: 6/14/2004

Table of Contents

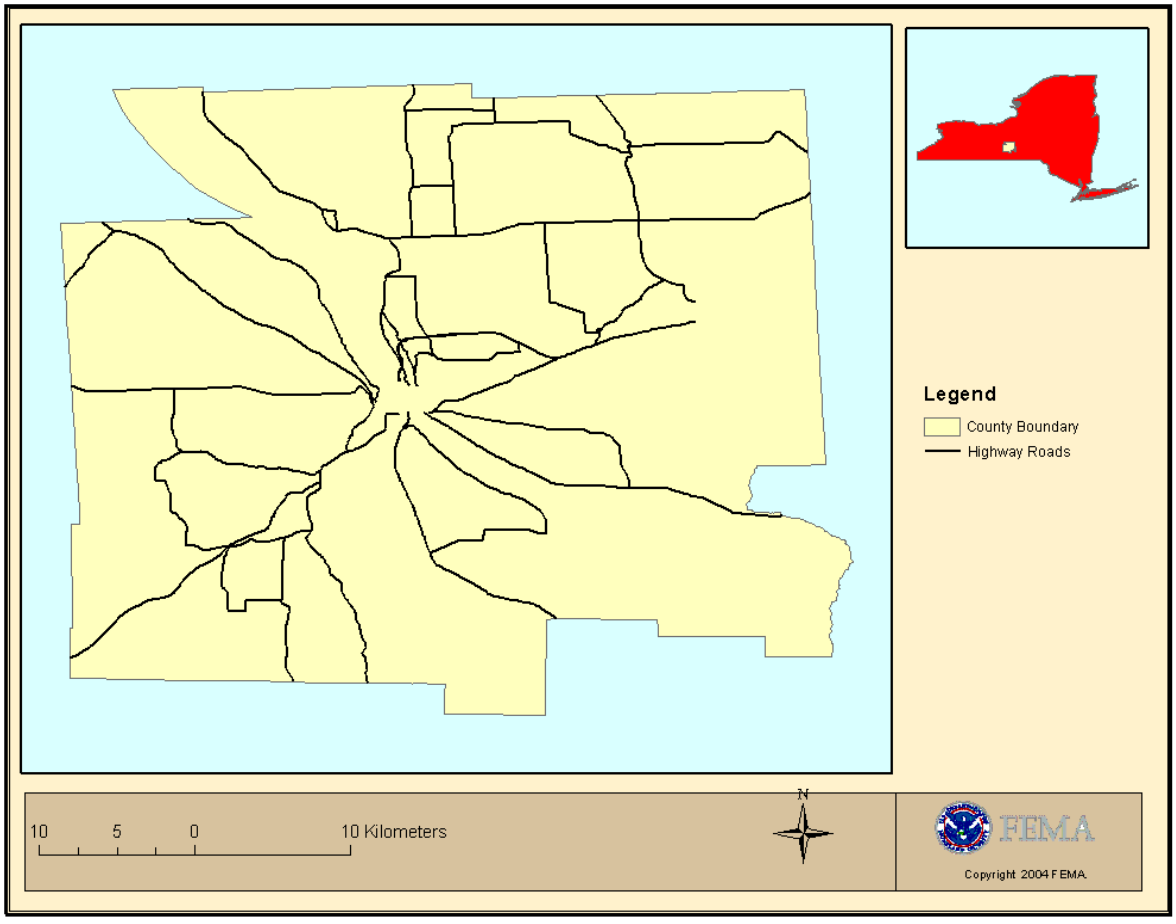
Introduction

HAZUS is a GIS-based regional loss estimation model developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of HAZUS is to provide loss estimates for earthquake, hurricane and flood hazards. These loss estimates may be used by local, state and regional officials to plan and stimulate efforts to mitigate risks from natural hazards and to prepare for emergency response and recovery.

The information provided in this report can be used to support mitigation planning through the assessment of risk and is associated with the hurricane hazard for the region. Similar reports are available for the earthquake and flood hazards. The first section provides hurricane hazard information. The next section provides information on assets associated with building, lifeline infrastructure, and critical facilities. The final section provides loss estimates associated with the hurricane hazard. The six appendices to the report provided additional information on the county's critical facilities.

Tompkins County, New York covers an area of over 468 square kilometers and contains 18 census tracts (see Figure 1). The population of the county is over 80 thousand people (2000 Census data). There are an estimated 21 thousand buildings in the region with a building replacement value (excluding contents) of $4,333M. Approximately 99% of the buildings (and 87% of the building value) are associated with residential housing.

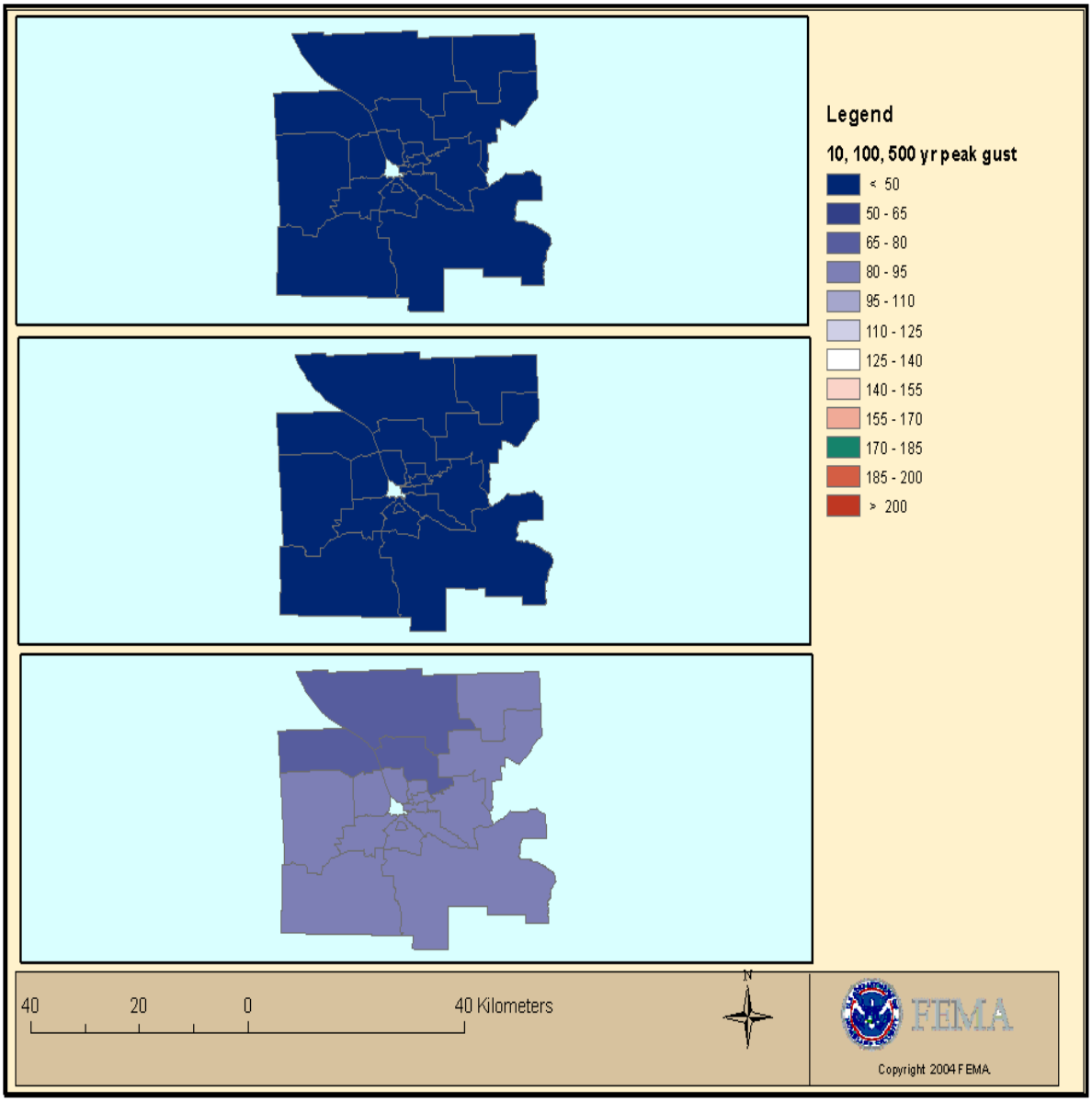
Figure 1: County Map - Tompkins, New York



Probabilistic Hurricane Hazard

HAZUS contains probabilistic hurricane hazard information. This hazard information was developed by ARA based on state of the art methodologies. Figure 2 provides hurricane hazard maps for 10, 100, and 500 year return periods. Wind Speed (Peak Gust) is the intensity measure used in the maps.

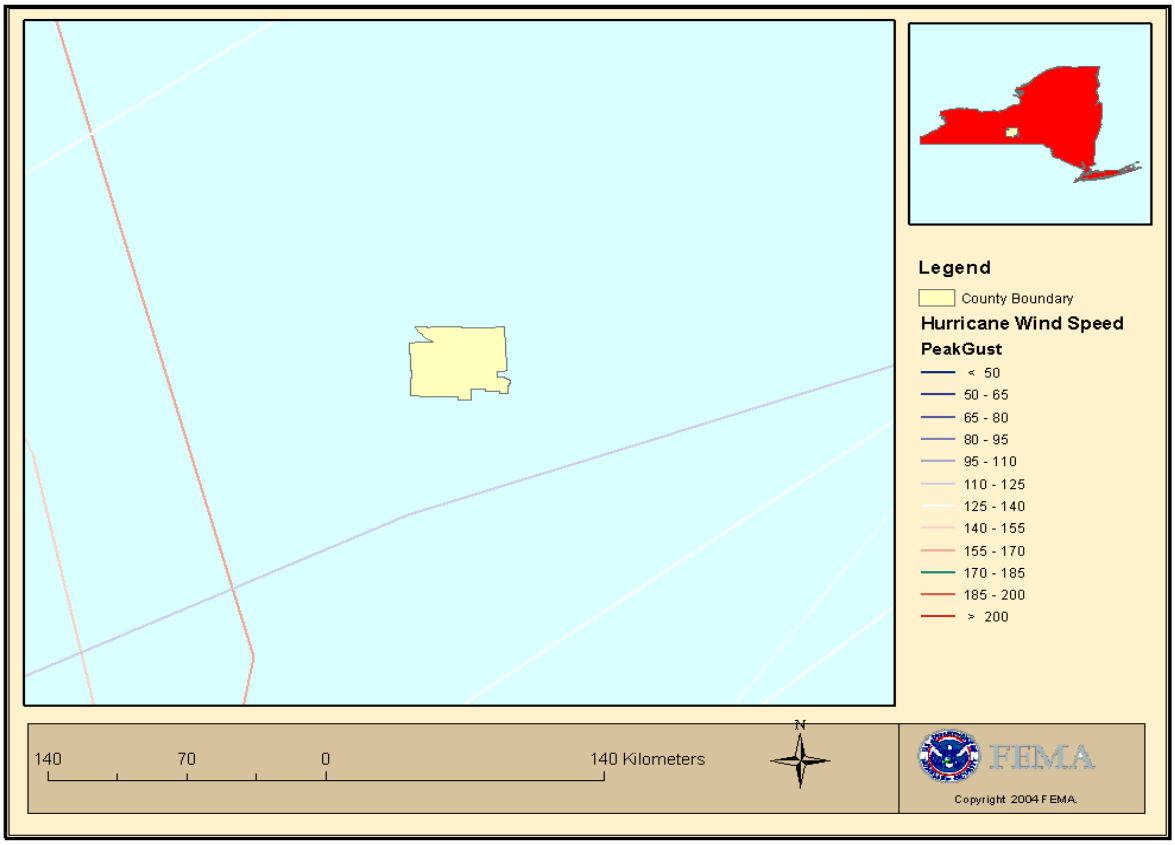
Figure 2: Probabilistic Hurricane Hazard Maps
(Wind Speed for 10, 100 and 500 year return periods)



Historical Hurricane Tracks

HAZUS also contains a catalog of historical hurricane tracks. The historical tracks catalog was developed based on information from the NOAA database (2003). Figure 3 provides a map of the historical tracks that have occurred within 150 km of Tompkins County. The historical hurricane tracks (and associated data) shown in the map are also listed in Appendix F of this report.

Figure 3: Historical Hurricane Tracks Map (within 150 km of county boundary)



Building Inventory

HAZUS estimates that there are 21 thousand buildings in the county which have an aggregate total replacement value of $4,333M. Tables 1 and 2 provide information about the building stock in Tompkins County. Table 1 provides the distribution by occupancy and Table 2 provides the distribution by building type.

Table 1: Building Inventory
(by General Occupancy)

Occupancy	Number of Buildings (in Thousands)	Building Value *	Contents Value *
Residential	20.89	$3,769M	$1,884M
Commercial	0.14	$343M	$369M
Industrial	< 0.01	$36M	$50M
Agricultural	< 0.01	$10M	$10M
Religion	< 0.01	$25M	$25M
Government	< 0.01	$10M	$12M
Education	0.02	$141M	$184M
Total	**21.08**	**$4,333M**	**$2,534M**

Table 2: Building Inventory
(by General Building Type)

Building Type	Number of Buildings (in Thousands)	Building Value *	Content Value *
Wood	14.39	$2,539M	$1,320M
Steel	0.17	$397M	$368M
Concrete	0.32	$358M	$225M
Masonry	2.80	$925M	$564M
Mobile Homes	3.40	$114M	$57M
Total	**21.08**	**$4,333M**	**$2,534M**

* '**M**' in Building and Content Value represents Millions.

Figure 4 provides a map showing the residential and non-residential building count in the county. The building count is presented by census tract within the county.

Figure 4: Building Count Map
Tompkins County, New York

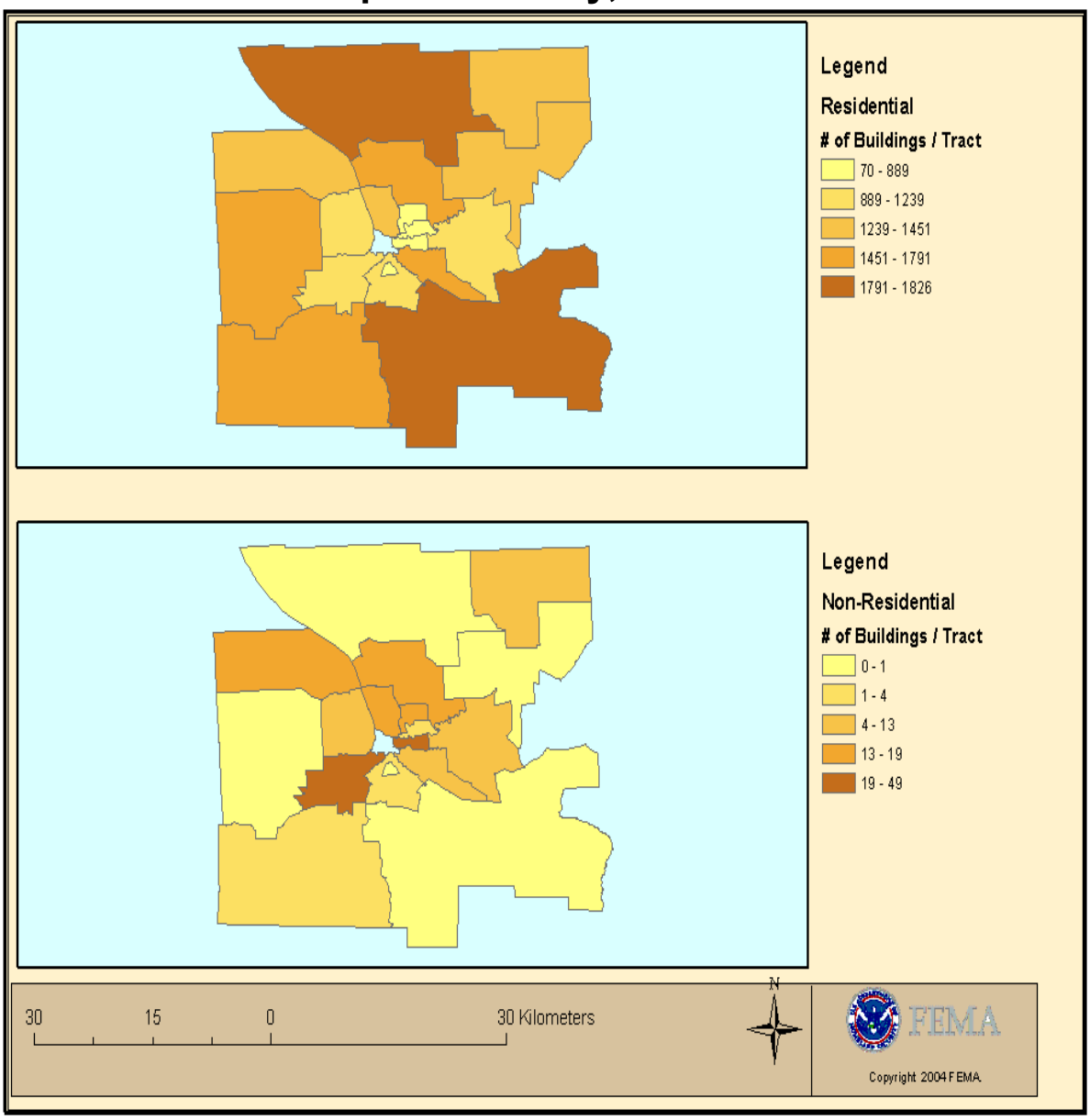
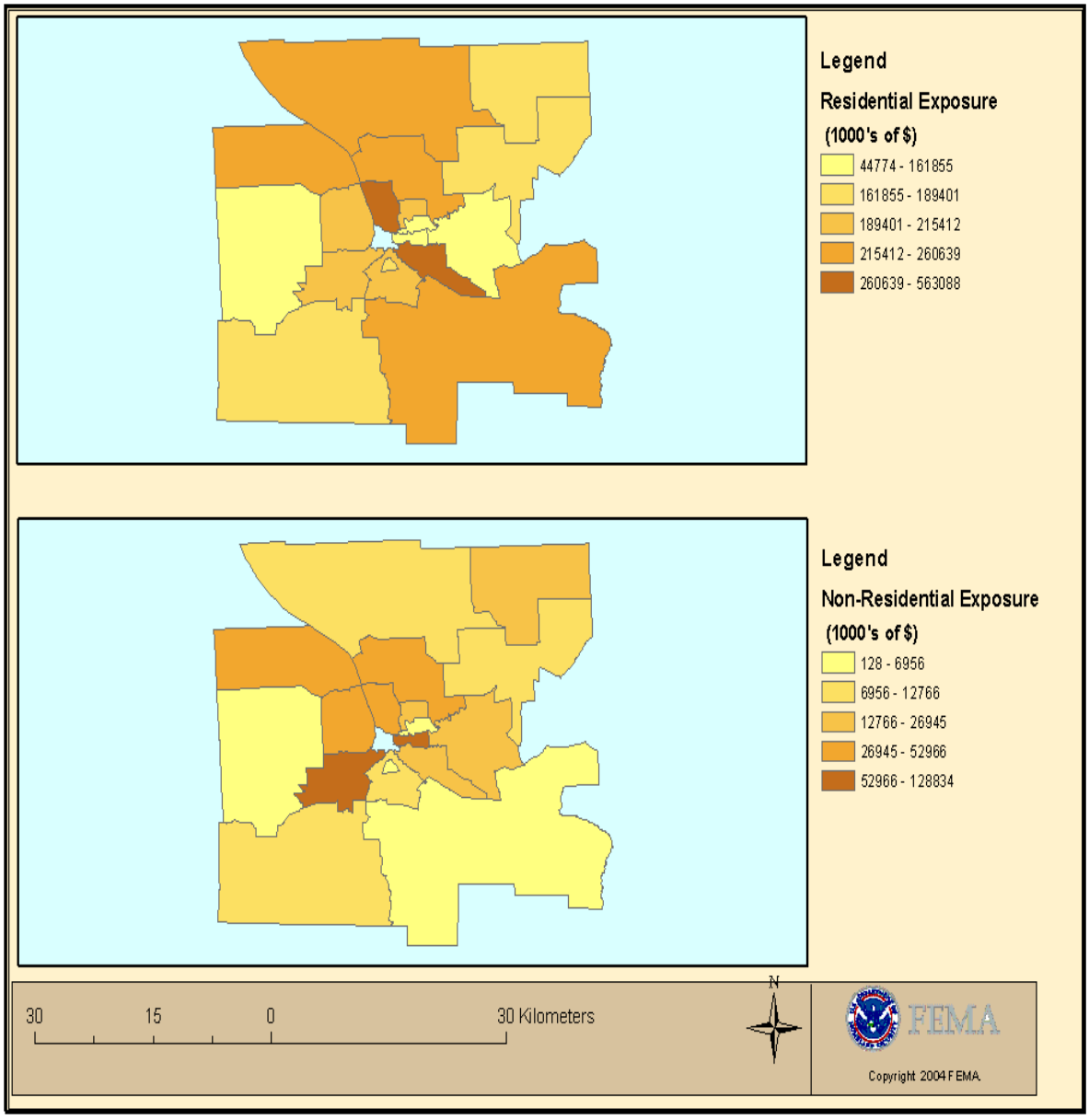


Figure 5 provides a map showing the residential and non-residential building exposure in the county. The building exposure is presented by census tract within the county.

Figure 5: Building Exposure Map
Tompkins County, New York



Lifeline Inventory

Within HAZUS, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ferry, ports and airports. There are six (6) utility systems that include potable water, waste water, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data is provided in Tables 3 and 4.

Table 3: Transportation System Lifeline Inventory

System	Component	# Locations / Length	Replacement Value*
Highway	Roadways	384 km	$1,236.79M
	Bridges	149	$717.93M
	Tunnels	0	$0.00M
	Sub-Total		**$1,954.73M**
Railway	Tracks	35 km	$30.61M
	Bridges	0	$0.00M
	Tunnels	0	$0.00M
	Facilities	0	$0.00M
	Sub-Total		**$30.61M**
Light Rail	Tracks	0 km	$0.00M
	Bridges	0	$0.00M
	Tunnels	0	$0.00M
	Facilities	0	$0.00M
	Sub-Total		**$0.00M**
Bus	Facilities	0	$0.00M
	Sub-Total		**$0.00M**
Ferry	Facilities	0	$0.00M
	Sub-Total		**$0.00M**
Port	Facilities	0	$0.00M
	Sub-Total		**$0.00M**
Airport	Facilities	6	$38.59M
	Runways	6	$220.05M
	Sub-Total		**$258.63M**
	Total		**$2,243.97M**

* '**M**' in Replacement Value represents Millions

Table 4: Utility System Lifeline Inventory

System	Component	# Locations / Length	Replacement Value*
Potable Water	Pipelines	0 km	$0.00M
	Facilities	0	$0.00M
	Sub-total		**$0.00M**
Waste Water	Pipelines	0 km	$0.00M
	Facilities	5	$392.94M
	Sub-total		**$392.94M**
Natural Gas	Pipelines	0 km	$0.00M
	Facilities	1	$1.29M
	Sub-total		**$1.29M**
Oil Systems	Pipelines	0 km	$0.00M
	Facilities	0	$0.00M
	Sub-total		**$0.00M**
Electrical Power	Facilities	1	$129.80M
	Sub-total		**$129.80M**
Communication	Facilities	8	$0.94M
	Sub-total		**$0.94M**
	Total		**$524.97M**

* '**M**' in Replacement Value represents Millions

Inventory of Assets: Essential Facilities

Essential Facility Inventory

Essential facilities include hospitals, schools, fire stations, police stations and emergency operations facilities. High potential loss facilities include dams, levees, military installations, nuclear power plants and hazardous material sites.

The following table provides the number of hospitals, emergency response facilities and schools that are in the county and their replacement value. The individual hospitals, schools and emergency response facilities are listed in Appendix A, B and C respectively of this report. The Figures 6, 7 and 8 on following pages provide maps for hospitals, emergency response facilities and schools respectively.

Table 5: Essential Facility Inventory

Building Type	Number of Buildings	Replacement Value *
Hospitals	6	$50M
Fire Stations	17	$12M
Police Stations	6	$10M
EOCs	0	$0M
Schools	24	$14M
Total	**53**	**$86M**

***** Replacement Value does not include contents, which can be substantial for essential facilities. '**M**' in Replacement Value represents Millions.

Figure 6 provides a map of the hospitals in the county.

Figure 6: Hospitals Map
Tompkins County, New York

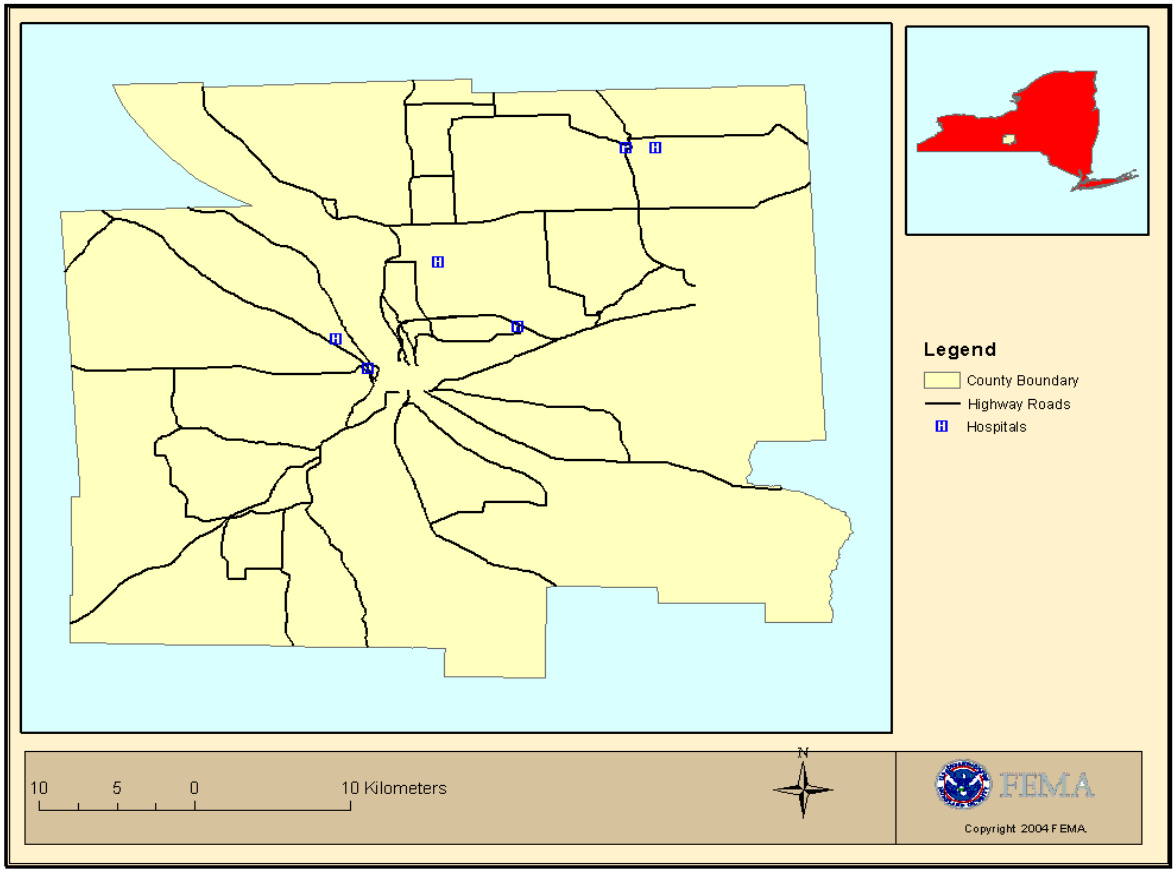


Figure 7 provides a map of the emergency response facilities (police stations, fire stations and emergency operation centers) in the county.

Figure 7: Emergency Response Facilities Map
Tompkins County, New York

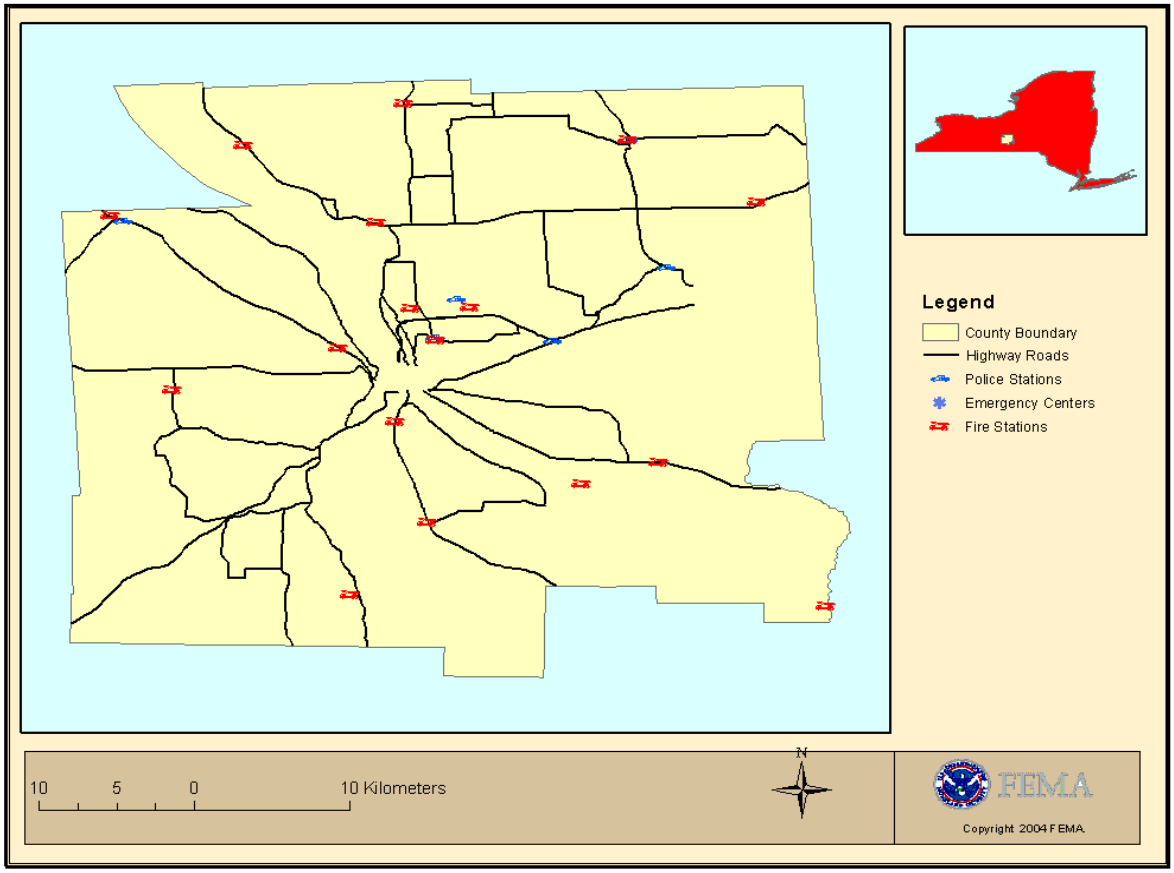
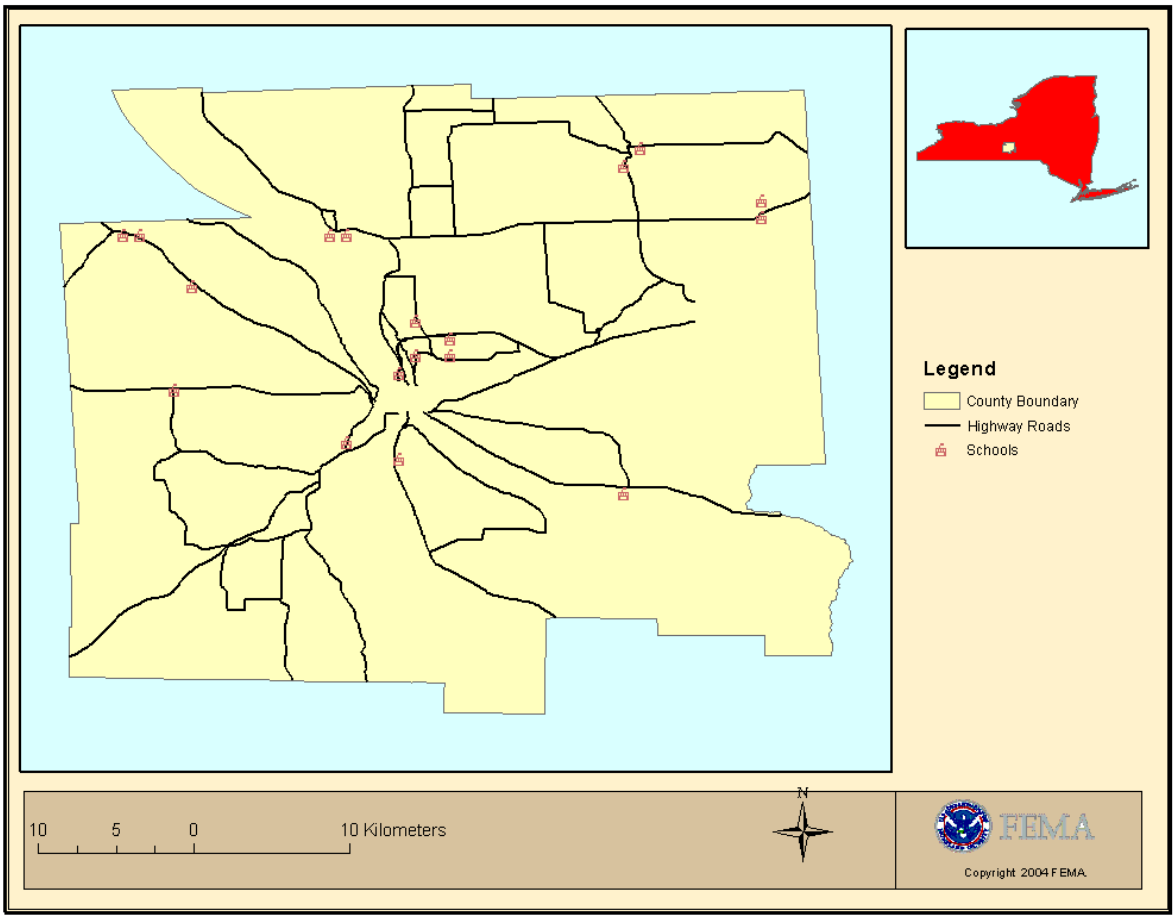


Figure 8 provides a map of the schools the county.

Figure 8: Schools Map
Tompkins County, New York



Inventory of Assets: Demographic Information

Demographic Information

HAZUS provides the following statistics (2000 Census data) on the County's population:

- Population by Income
- Population by Age
- Population by Ethnicity
- Population by Gender and
- by Occupancy.

Tables 6-9 present the various groupings.

Table 6: Population by Age and Gender (in thousands)

Category	Age < 16	16 < Age < 65	Age > 65	Total *
Male	7.28	28.78	3.25	39.32
Female	6.69	29.20	4.81	40.69
Total	13.97	57.98	8.06	80.01

Table 7: Population by Ethnicity (in thousands)

	White	Black	Native American	Hispanic	Pacific Islander	Asian	Other	Total *
Population	68.34	2.60	0.21	2.26	0.02	5.17	0.16	78.76
Percentage	86.77	3.30	0.27	2.87	0.03	6.56	0.21	

Table 8: Household Distribution by Annual Income (in thousands)

	Income < 20	Income >= 20	Total
Households	6.56	22.91	29.47
Percentage	22.26	77.74	

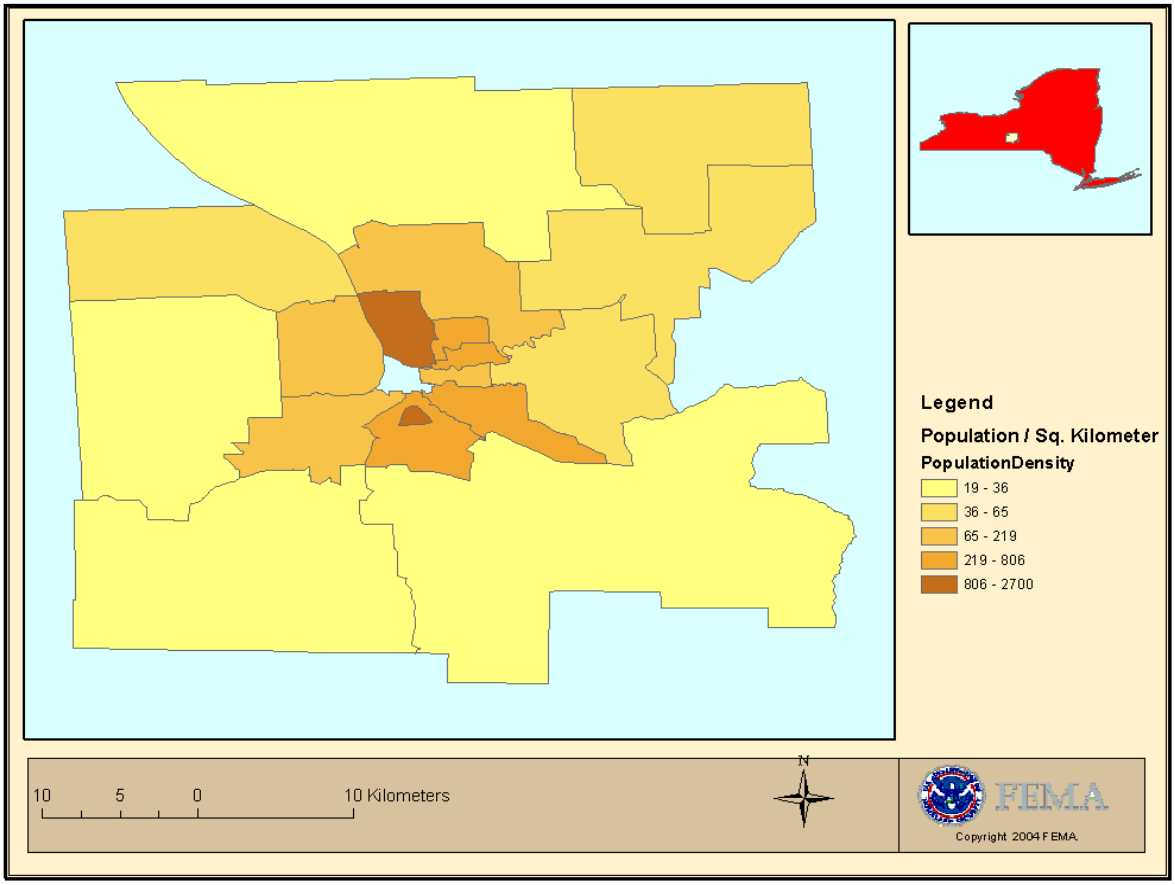
Table 9: Household Distribution by Residence Type (in thousands)

Category	Single Family	Multi-Family	Mobile Homes	Total *
Owner Occupied	14.38	0.54	2.30	17.21
Renter Occupied	2.55	8.14	0.66	11.35
Total	16.93	8.68	2.96	28.56

* Total population and household values may not match because of differences in the Census data.

The Figure 9 below displays the population density map (number of residents per square kilometer) for the county. The population density is presented by census tract within the county.

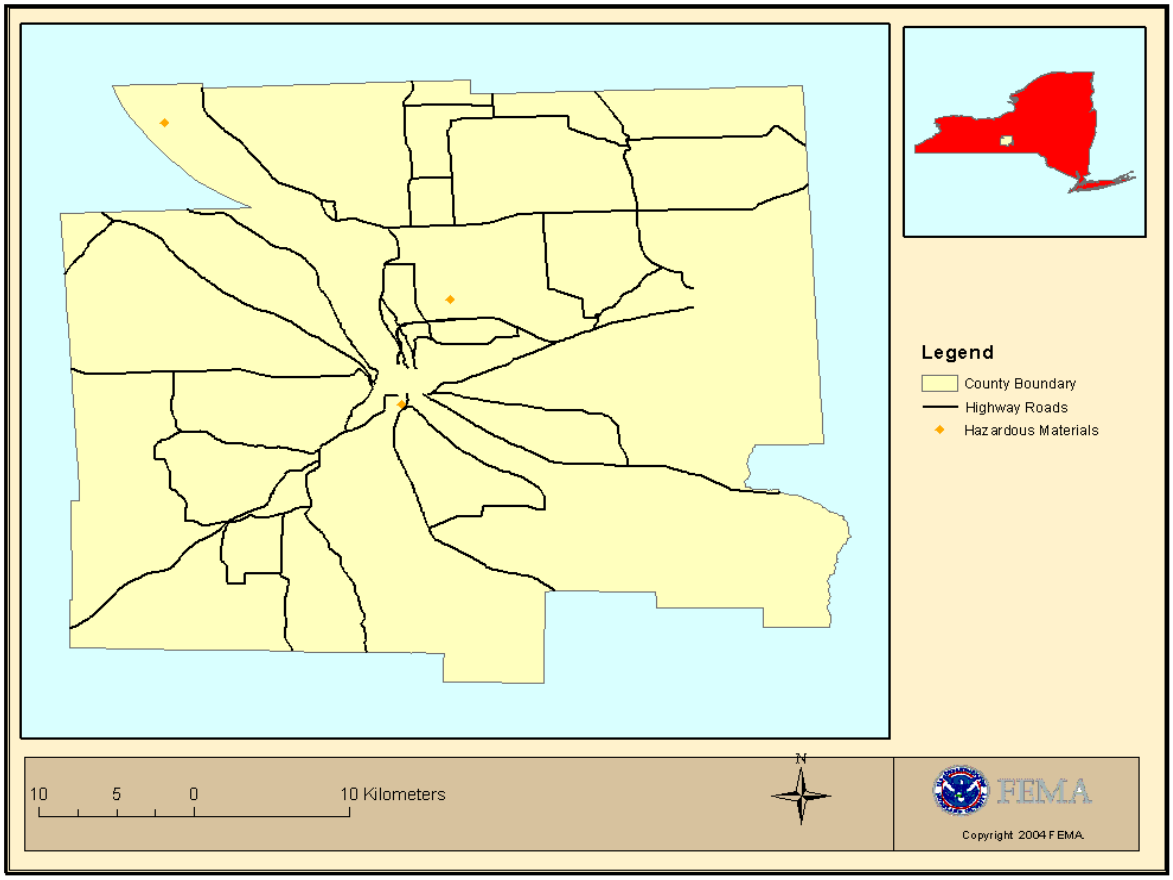
Figure 9: Population Density Map
Tompkins County, New York



Hazardous Materials Facilities

Hazardous material sites are identified as High Potential Loss Facilities in HAZUS. In Tompkins County, there are 20 hazardous materials sites. In HAZUS, a 'site' is defined for each facility / chemical combination, so there may be multiple entries for a single facility. Figure 10 provides a map of the sites in the county. The hazardous material sites shown in the map are also listed in Appendix D of this report.

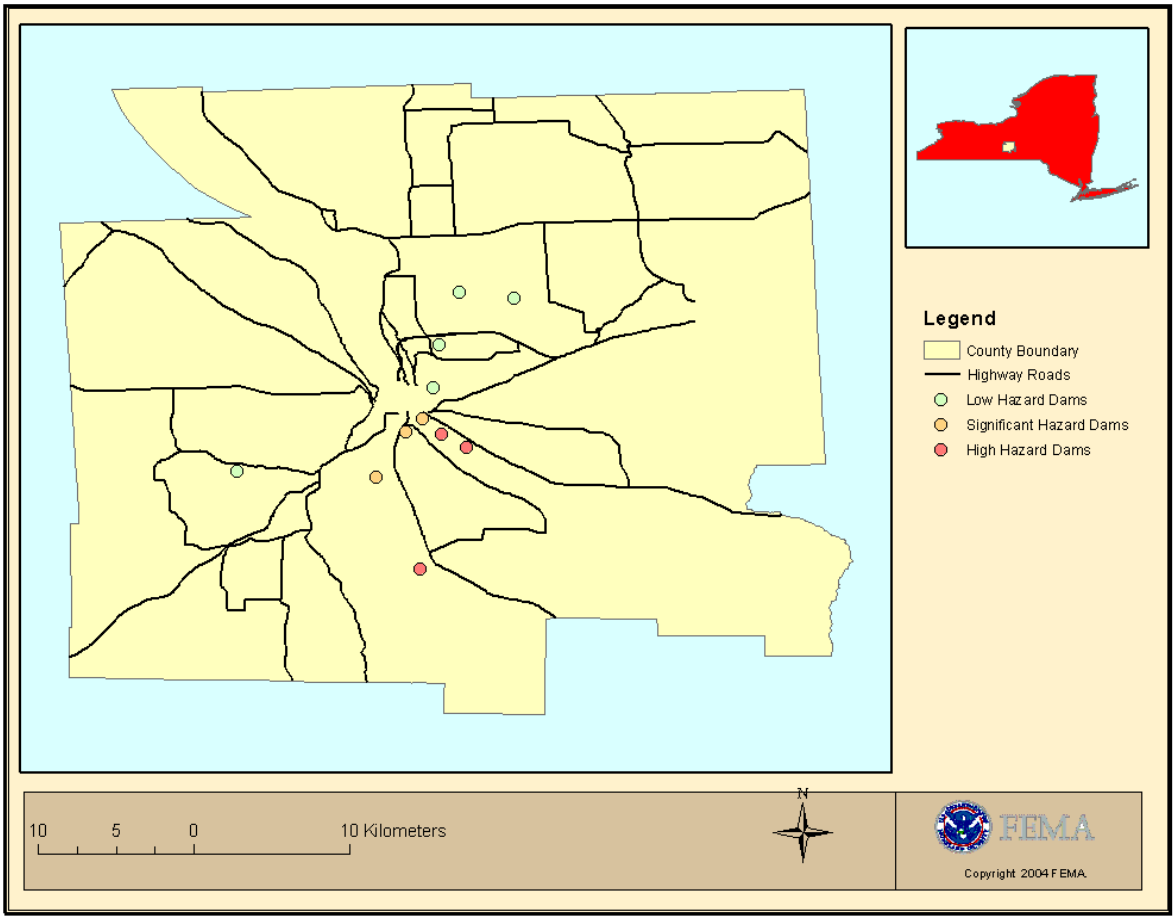
Figure 10: Hazardous Material Sites Map
Tompkins County, New York



Dams

Dams are identified as High Potential Loss Facilities in HAZUS. In Tompkins County, there are 3 high hazard dams, 3 significant hazard dams and 5 low hazard dams. The 'hazard' levels are determined by the US Army Corp of Engineers. Figure 11 provides a map of the dams in the county. The dams shown in the map are also listed in Appendix E of this report.

Figure 11: Dams Map
Tompkins County, New York



Loss Estimates: Buildings

Scenario Definition

Scenario Name:

Probabilistic

Building Damage

HAZUS estimates that about 0.04 thousand buildings will be at least moderately damaged. This is over 0% of the total number of buildings in the region. Table 10 below summarizes the expected damage by occupancy for the buildings in the region. Table 11 below summarizes the expected damage by building type.

Table 10: Building Damage by General Occupancy (in thousands of buildings)

Occupancy	None	Slight	Moderate	Extensive	Complete	Total
Residential	145.68	0.52	0.04	< 0.01	0.00	146.24
Commercial	1.00	< 0.01	< 0.01	< 0.01	0.00	1.01
Industrial	0.04	< 0.01	< 0.01	< 0.01	0.00	0.04
Agriculture	0.01	< 0.01	< 0.01	< 0.01	0.00	0.01
Religion	0.05	< 0.01	< 0.01	0.00	0.00	0.05
Government	0.04	< 0.01	< 0.01	0.00	0.00	0.04
Education	0.13	< 0.01	< 0.01	0.00	0.00	0.13
Total	**146.96**	**0.52**	**0.04**	**0.00**	**0.00**	**147.52**

Table 11: Building Damage by Building Type (in thousands of buildings)

Building Type	None	Slight	Moderate	Extensive	Complete	Total
Wood	101.29	0.34	0.01	0.00	0.00	101.64
Steel	0.93	< 0.01	< 0.01	< 0.01	0.00	0.93
Concrete	1.06	0.01	< 0.01	0.00	0.00	1.06
Masonry	16.12	0.10	0.02	< 0.01	< 0.01	16.24
Mobile Home	19.30	< 0.01	< 0.01	0.00	< 0.01	19.30
Total	**138.70**	**0.45**	**0.03**	**0.00**	**0.00**	**139.17**

Economic Loss to Buildings

The total building-related losses were $0.10M (2003 dollars); 10% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 90% of the total loss. Table 12 below provides a summary of the losses associated with the building damage by occupancy. Table 13 below provides a summary of the losses associated with the building damage by building type.

Table 12: Economic Loss by General Occupancy

Occupancy	Building Damage	Content Loss	Business Interruption	Total
Residential	$0.07M	$0.02M	$0.01M	$0.09M
Commercial	$0.00M	$0.00M	$0.00M	$0.01M
Industrial	$0.00M	$0.00M	$0.00M	$0.00M
Agriculture	$0.00M	$0.00M	$0.00M	$0.00M
Religion	$0.00M	$0.00M	$0.00M	$0.00M
Government	$0.00M	$0.00M	$0.00M	$0.00M
Education	$0.00M	$0.00M	$0.00M	$0.00M
Total	**$0.07M**	**$0.02M**	**$0.01M**	**$0.10M**

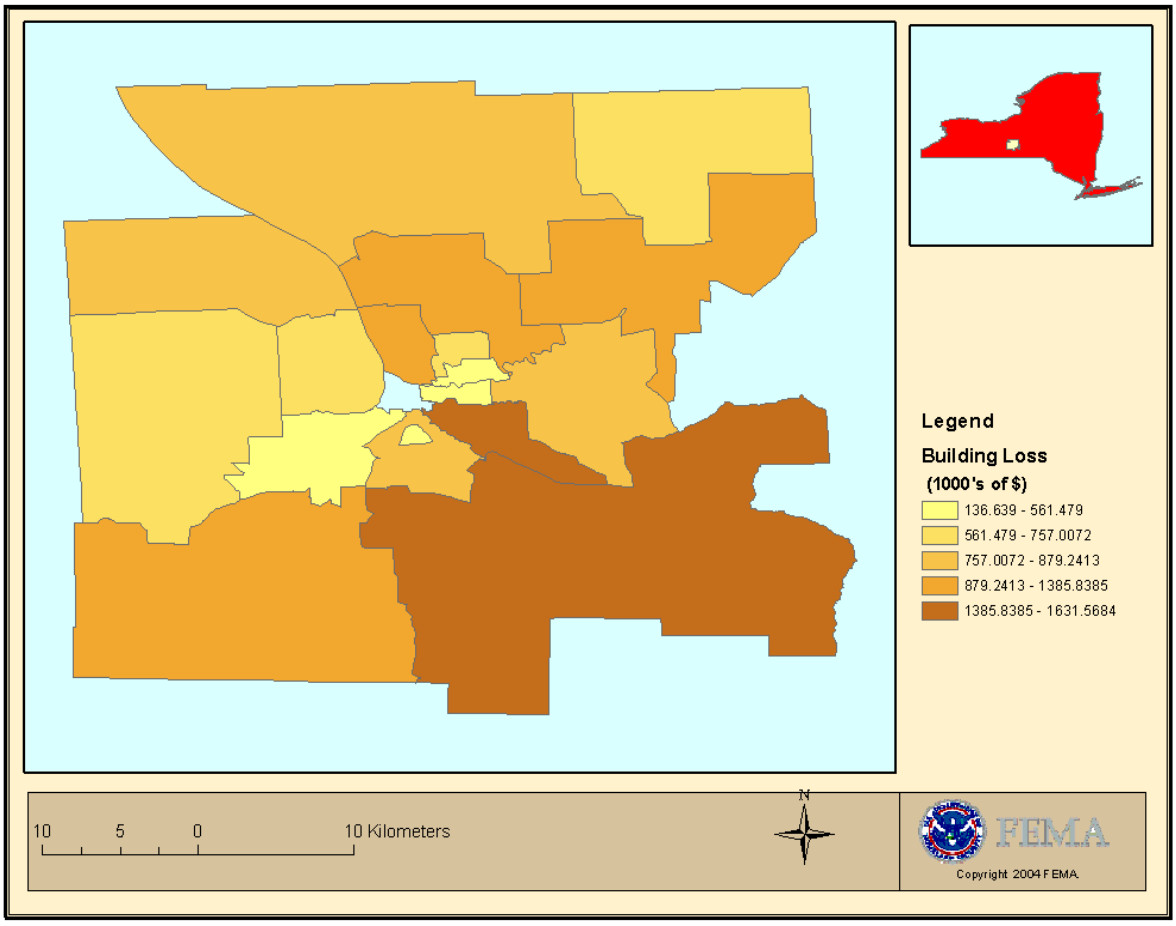
Table 13: Economic Loss by General Building Type

Building Type	Building Damage	Content Loss	Business Interruption	Total
Wood	$0.05M	$0.01M	$0.01M	$0.06M
Steel	$0.00M	$0.00M	$0.00M	$0.01M
Concrete	$0.00M	$0.00M	$0.00M	$0.00M
Masonary	$0.02M	$0.00M	$0.00M	$0.02M
Mobile Home	$0.00M	$0.00M	$0.00M	$0.00M
Total	**$0.07M**	**$0.02M**	**$0.01M**	**$0.10M**

* '**M**' in all the values above represents Millions

Figure 12 provides a thematic map of building (structural damage + nonstructural damage) loss in the county.

Figure 12: Building Loss Map
Tompkins County, New York



Loss Estimates: Lifelines Infrastructure

Economic Loss to Lifelines

HAZUS hurricane model does not compute any losses for transportation and utility systems. Tables 13 & 14 are place holders for a detailed breakdown of the expected lifeline loss estimates generated by future versions of HAZUS-MH

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Table 14: Transportation System Lifeline Losses

System	Component	Replacement Value *	Economic Loss *	Loss Ratio (%)
Highway	Roadways	$1,236.79M		
	Bridges	$717.93M		
	Tunnels	$0.00M		
	Sub-total	**$1,954.73M**		
Railway	Tracks	$30.61M		
	Bridges	$0.00M		
	Tunnels	$0.00M		
	Facilities	$0.00M		
	Sub-total	**$30.61M**		
Light Rail	Tracks	$0.00M		
	Bridges	$0.00M		
	Tunnels	$0.00M		
	Facilities	$0.00M		
	Sub-total	**$0.00M**		
Bus	Facilities	$0.00M		
	Sub-total	**$0.00M**		
Ferry	Facilities	$0.00M		
	Sub-total	**$0.00M**		
Port	Facilities	$0.00M		
	Sub-total	**$0.00M**		
Airport	Facilities	$38.59M		
	Runways	$220.05M		
	Sub-total	**$258.63M**		
	Total	**$2,243.97M**		

* '**M**' in Replacement Value and Economic Loss represents Millions

Table 15: Utility System Lifeline Losses

System	Component	Replacement Value *	Economic Loss *	Loss Ratio (%)
Potable Water	Pipelines	$0.00M		
	Facilities	$0.00M		
	Sub-total	**$0.00M**		
Waste Water	Pipelines	$0.00M		
	Facilities	$392.94M		
	Sub-total	**$392.94M**		
Natural Gas	Pipelines	$0.00M		
	Facilities	$1.29M		
	Sub-total	**$1.29M**		
Oil Systems	Pipelines	$0.00M		
	Facilities	$0.00M		
	Sub-total	**$0.00M**		
Electrical Power	Facilities	$129.80M		
	Sub-total	**$129.80M**		
Communication	Facilities	$0.94M		
	Sub-total	**$0.94M**		
	Total	**$524.97M**		

* '**M**' in Replacement Value and Economic Loss represents Millions

Essential Facility Damage

Of the 53 essential facilities in the county, HAZUS estimates that 0 facilities may be at least moderately damaged. This is over 0% of the total number in the region. Table 16 summarizes the expected damage for the essential facilities in the region.

Table 16: Building Damage for Essential Facilities (number of buildings)

Classification	None	Slight	Moderate	Extensive	Complete	Total
Hospitals	5.97	0.03	0.00	0.00	0.00	6
Fire Stations	16.93	0.06	0.00	0.00	0.00	17
Police Stations	5.98	0.02	0.00	0.00	0.00	6
EOCs	0.00	0.00	0.00	0.00	0.00	0
Schools	23.91	0.08	0.00	0.00	0.00	24
Total	**52.80**	**0.20**	**0.00**	**0.00**	**0.00**	**53**

Loss Estimates: Casualties

Casualty Estimates

The HAZUS estimates casualties at three (3) different times of the day: 2:00 AM, 2:00 PM and 5:00 PM. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows;

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening
- Severity Level 4: Victims are killed by the hurricane

Hurricane model at this time doesn't provide any casualty estimates. Table 17 is a place holder for the summary of the casualty estimates generated by future versions of HAZSU-MH.

Table 17: Casualty Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial				
	Commuting				
	Educational				
	Hotels				
	Industrial				
	Other-Residential				
	Single Family				
	Total				
2 PM	Commercial				
	Commuting				
	Educational				
	Hotels				
	Industrial				
	Other-Residential				
	Single Family				
	Total				
5 PM	Commercial				
	Commuting				
	Educational				
	Hotels				
	Industrial				
	Other-Residential				
	Single Family				
	Total				

Appendices

Appendix A: List of Medical Care Facilities

Appendix B: List of Schools

Appendix C: List of Police Stations, Fire Stations and Emergency Operation Centers

Appendix D: List of Hazardous Materials Sites

Appendix E: List of Dams

Appendix F: List of Historical Hurricane Tracks within 150 km of County boundary

Appendix A: List of Medical Care Facilities

Name	Address	# of Beds	Building Value	Latitude	Longitude
Groton Community Health Care		148	$8.26M	42.585303	-76.369360
Groton Intermediate Care Facility		148	$8.26M	42.585496	-76.351990
Guthrie Clinic		148	$8.26M	42.450977	-76.518312
Guthrie Clinic		148	$8.26M	42.476459	-76.431876
Cayuga Medical Center Convenient Care		148	$8.26M	42.515481	-76.477755
Cayuga Medical Center		148	$8.26M	42.469077	-76.537411

Appendix B: List of Schools

Name	Address	# of Students	Building Value	Latitude	Longitude
Boynton Middle School		596	$0.59M	42.460000	-76.500000
Cayuga Heights Elementary School		404	$0.59M	42.470000	-76.490000
DeWitt Middle School		636	$0.59M	42.480000	-76.470000
Enfield Elementary School		292	$0.59M	42.450000	-76.630000
Instructional Resource Center			$0.59M	42.480000	-76.470000
Northeast Elementary School		459	$0.59M	42.470000	-76.470000
Caroline Elementary School		382	$0.59M	42.390000	-76.370000
Lansing Elementary School		504	$0.59M	42.540000	-76.530000
Lansing Middle School		445	$0.59M	42.540000	-76.540000
Lansing High School		437	$0.59M	42.540000	-76.530000
Cassavant Elementary School			$0.59M	42.550000	-76.290000
Groton Elementary School		582	$0.59M	42.590000	-76.360000
Groton Middle School		301	$0.59M	42.580000	-76.370000
Groton High School		386	$0.59M	42.580000	-76.370000
Trumansburg Elementary School		513	$0.59M	42.540000	-76.660000
Dryden Head Start McLean			$0.59M	42.560000	-76.290000

Appendix B: List of Schools (continued)

Name	Address	# of Students	Building Value	Latitude	Longitude
Montessori School of Ithaca		155	$0.59M	42.410000	-76.500000
The Waldorf School of the Finger Lakes			$0.59M	42.420000	-76.530000
Ithaca Montessori School		71	$0.59M	42.490000	-76.490000
Lansing Head Start			$0.59M	42.540000	-76.530000
Trumansburg Head Start			$0.59M	42.510000	-76.620000
Trumansburg Middle School		517	$0.59M	42.540000	-76.650000
Charles O. Dickerson High School		467	$0.59M	42.540000	-76.650000
Montessori School of Ithaca			$0.59M	42.410000	-76.500000

Appendix C: List of Police Stations

Name	Address	Building Value	Latitude	Longitude
Village of Cayuga Heights Police Dept		$1.65M	42.469703	-76.479000
Village of Trumansburg Police		$1.65M	42.540697	-76.660665
New York State Police		$1.65M	42.467786	-76.410911
Tompkins County Public Safety		$1.65M	42.492701	-76.466837
Groton Police Department		$1.65M	42.590115	-76.366950
Village of Freeville Police Department		$1.65M	42.512131	-76.344817

Appendix C: List of Fire Stations

Name	Address	Building Value	Latitude	Longitude
Brooktondale Fire Station		$0.71M	42.380703	-76.393663
Cayuga Heights Fire Department		$0.71M	42.467836	-76.478304
Danby Volunteer Fire Company		$0.71M	42.357193	-76.483262
Enfield Fire Station		$0.71M	42.437759	-76.631916
Groton Fire Station		$0.71M	42.590174	-76.366959
Ithaca Fire Department		$0.71M	42.418422	-76.501742
Ithaca Fire Department		$0.71M	42.463459	-76.535110
Lansing Fire Department		$0.71M	42.539691	-76.512807
Lansing Fire Department		$0.71M	42.587016	-76.590221
Lansing Fire Department		$0.71M	42.612438	-76.496919
Lansing Fire Department		$0.71M	42.487622	-76.492986
McLean Fire Department		$0.71M	42.552164	-76.291649
Slaterville Springs Fire Station		$0.71M	42.393668	-76.348999
Speedsville Fire House		$0.71M	42.306094	-76.251406
Trumansburg Fire Department		$0.71M	42.543955	-76.667667
West Danby Fire Hall		$0.71M	42.313201	-76.528283

Appendix C: List of Fire Stations (continued)

Name	Address	Building Value	Latitude	Longitude
Tompkins County Fire & Rescue Building		$0.71M	42.488212	-76.458632

Appendix C: List of Emergency Operation Centers

Name	Address	Building Value	Latitude	Longitude

Appendix D: List of Hazardous Material Sites

Name	Address	Chemical	# of Residents within 5 km Radius	Latitude	Longitude
AES GREENIDGE GENERATION	590 PLANT RD., DRESDEN, NY 14441	BARIUM COMPOUNDS	800	42.601109	-76.636109
AES GREENIDGE GENERATION	590 PLANT RD., DRESDEN, NY 14441	MANGANESE COMPOUNDS	800	42.601109	-76.636109
AES GREENIDGE GENERATION	590 PLANT RD., DRESDEN, NY 14441	"SULFURIC ACID (1994	800	42.601109	-76.636109
AES GREENIDGE GENERATION	590 PLANT RD., DRESDEN, NY 14441	HYDROGEN FLUORIDE	800	42.601109	-76.636109
AES GREENIDGE GENERATION	590 PLANT RD., DRESDEN, NY 14441	"HYDROCHLORIC ACID (	800	42.601109	-76.636109
BORG WARNER AUTOMOTIVE MORSE TEC	800 WARREN RD., ITHACA, NY 14850	AMMONIA	3100	42.494169	-76.470559
BORG WARNER AUTOMOTIVE MORSE TEC	800 WARREN RD., ITHACA, NY 14850	SODIUM NITRITE	3100	42.494169	-76.470559
BORG WARNER AUTOMOTIVE MORSE TEC	800 WARREN RD., ITHACA, NY 14850	CHROMIUM COMPOUNDS	3100	42.494169	-76.470559
BORG WARNER AUTOMOTIVE MORSE TEC	800 WARREN RD., ITHACA, NY 14850	NICKEL COMPOUNDS	3100	42.494169	-76.470559
BORG WARNER AUTOMOTIVE MORSE TEC	800 WARREN RD., ITHACA, NY 14850	MANGANESE COMPOUNDS	3100	42.494169	-76.470559
BORG WARNER AUTOMOTIVE MORSE TEC	800 WARREN RD., ITHACA, NY 14850	COPPER COMPOUNDS	3100	42.494169	-76.470559
EMERSON POWER TRANSMISSION	620 S. AURORA ST., ITHACA, NY 14850	NICKEL	4800	42.430829	-76.498890
EMERSON POWER TRANSMISSION	620 S. AURORA ST., ITHACA, NY 14850	AMMONIA	4800	42.430829	-76.498890
AES CAYUGA GENERATION PLANT	228 MILLIKEN RD., LANSING, NY 14882	FORMIC ACID	800	42.601109	-76.636109
AES CAYUGA GENERATION PLANT	228 MILLIKEN RD., LANSING, NY 14882	"SULFURIC ACID (1994	800	42.601109	-76.636109
AES CAYUGA GENERATION PLANT	228 MILLIKEN RD., LANSING, NY 14882	"HYDROCHLORIC ACID (	800	42.601109	-76.636109

Appendix D: List of Hazardous Material Sites (continued)

Appendix D: List of Hazardous Material Sites (continued)

Name	Address	Chemical	# of Residents within 5 km Radius	Latitude	Longitude
AES CAYUGA GENERATION PLANT	228 MILLIKEN RD., LANSING, NY 14882	HYDROGEN FLUORIDE	800	42.601109	-76.636109
AES CAYUGA GENERATION PLANT	228 MILLIKEN RD., LANSING, NY 14882	BARIUM COMPOUNDS	800	42.601109	-76.636109
AES CAYUGA GENERATION PLANT	228 MILLIKEN RD., LANSING, NY 14882	ZINC COMPOUNDS	800	42.601109	-76.636109
AES CAYUGA GENERATION PLANT	228 MILLIKEN RD., LANSING, NY 14882	MANGANESE COMPOUNDS	800	42.601109	-76.636109

Appendix E: List of Dams

Name	Owner	Hazard	# of Residents within 5 km Radius	Dam Height (ft)	Surface Area (acres)	Latitude	Longitude
SIXMILE CREEK DAM	CITY OF ITHACA	H	4800	36	20	42.424999	-76.475280
VAN NATTA DAM	CITY OF ITHACA	S	4800	12	2	42.433610	-76.485829
DWYER DAM	CORNELL UNIVERSITY	L	4300	36	2	42.476670	-76.476670
JENNINGS POND DAM	NYS PARKS & RECREATION FI	H	600	17	32	42.346670	-76.487220
CORNELL UNIV WILDLIFE	CORNELL UNIVERSITY	L	3100	7	27	42.506670	-76.465000
CORNELL UNIVERSITY POND #2 DAM	CORNELL UNIVERSITY	L	3100	8	43	42.503329	-76.433329
POTTERS FALLS DAM	CITY OF ITHACA	H	4800	75	47	42.417499	-76.460830
SOUTH HILL POND DAM	ITHACA COLLEGE	S	3600	20	1	42.425830	-76.495559
ENFIELD FALLS DAM	NYS PARKS & RECREATION GE	B	3700	25	0	42.401110	-76.590560
ENFIELD GLEN DAM	NYS PARKS & RECREATION FI	L	3700	25	5	42.403329	-76.593329
TREMAN LAKE DAM	NYS PARKS & RECREATION FI	S	4800	36	25	42.400279	-76.513329
Triphammer	Cornell University	L	1100	28	20	42.451940	-76.479719

Appendix F: List of Historical Storms

Year	Scenario Name	Peak Gust	Storm Number	Land Fall States	States Affected	# of States Affected
1900	UN-NAME D-1900-1	147	1	TX	TX	1
1915	UN-NAME D-1915-2	129	2	TX	TX	1
1928	UN-NAME D-1928-4	153	4	FL	FL	1
1929	UN-NAME D-1929-2	133	2	FL	FL	1
1933	UN-NAME D-1933-8	126	8	NC	NC	1
1934	UN-NAME D-1934-2	102	2	LA	MS LA	2
1945	UN-NAME D-1945-9	133	9	FL	FL	1
1949	UN-NAME D-1949-2	134	2	FL	FL	1
1954	HAZEL	162	9	SC	CT PA DE MD VA NC SC	7
1955	CONNIE	104	2	NC	VA NC	2
1957	AUDREY	125	2	LA	LA TX	2
1959	GRACIE	125	8	SC	NC SC GA	3
1979	FREDERIC	82	6	FL	FL	1
1989	HUGO	132	8	SC	NC SC	2
1995	OPAL	130	15	FL	FL	1
1996	FRAN	98	6	NC	VA NC SC	3