

## **5.4.5 TRANSPORTATION HAZARDS**

This section provides a profile and vulnerability assessment for transportation hazards.

### **HAZARD PROFILE**

This section provides profile information including description, extent, location, previous occurrences and losses and the probability of future occurrences.

#### **Description**

Disasters that can result from hazards having an element of human intent, negligence, error or technological failure are called man-made hazards. DMA 2000 does not require the consideration of man-made hazards, as these are often already considered by other planning efforts. However, man-made hazards can be included in HMPs and as deemed appropriate by the Planning Team. The man-made hazard evaluated for the Cayuga County is transportation. Transportation hazards include hazardous materials in transit, vehicular accidents, aviation accidents, at-grade railroad crossings, and flood vulnerable roadways.

A transportation hazard may be defined as a condition created by moving anything by common carrier. Transportation hazards can be divided into two categories: hazards created by the material that is being transported; and hazards created by the transportation medium. Transportation systems available in the Cayuga County include air, railroad, and water (Barge Canal). A major accident in each of these transportation systems is possible. All of these systems and supporting transportation resources provide services locally, regionally and nationally.

Vehicular Accidents: A vehicular accident is a road traffic incident that usually involves one road vehicle colliding with another vehicle or other road user, such as an animal or a stationary roadside object. A vehicular accident may result in injury, property damage or possibly fatalities. Many factors contribute to vehicular accidents, including: equipment failure, poor road conditions, weather, traffic volume, and driver behavior.

Hazardous Materials (HAZMAT) in Transit: A HAZMAT is defined as a substance or material determined to be capable of posing an unreasonable risk to health, safety or property when transported. They come in various forms that can cause death, serious injury, long-lasting health effects and damage to buildings, homes and other property. As stated previously in the HAZMAT definition, unreasonable risk covers a broad range of health, fire, and environmental considerations. HAZMAT substances include explosives, flammable solids, substances which become dangerous when wet, oxidizing substances and toxic liquids. An accident involving a vehicle carrying HAZMAT becomes a HAZMAT incident if the HAZMAT leaks, is involved in a fire, or the potential of release, fire or other hazard exists. Hazards can occur during production, storage, transportation, use or disposal (Campbell, Date Unknown; FEMA, 2006).

Aviation Accidents: According to the International Civil Aviation Organization, an aviation accident is an occurrence with the operation of an aircraft which takes place between the time a person boards the aircraft with the intention of flight to the time the person has disembarked the aircraft. There are three different occurrences that determine an aviation accident: a person is fatally or seriously injured; the aircraft sustains damage or structural failure; or the aircraft is missing or completely inaccessible. An aviation incident is an occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation (International Civil Aviation Organization, 2001).

At-Grade Railroad Crossings: An at-grade railroad crossing is an intersection where a public highway, road, street, or private roadway crosses one or more railroad tracks at grade, or at the same ground surface level. These crossings are marked by crossbucks, stop signs, or other signals, and may be identified by a U.S. DOT inventory number (49 CFR 218.93).

Flood Vulnerable Roadways: A flood vulnerable roadway is any public road that has a history of being covered by enough water in a manner that the road surface, markings and edges are not visible to the operator of a vehicle, cyclist or a pedestrian. These conditions can be caused by stream/river flooding, poor drainage along roadways or normal surface runoff. Water on the roadway can be either standing or moving and could also leave debris such as gravel, leaves and sticks on the roadway. Duration of the flooding event can vary from minutes to days (Fifth Planning District Commission, 1999).

### Extent

#### **Vehicular Accidents**

There is no warning time for vehicular accidents. Contributing factors for these accidents are typically associated with the driver, vehicle and the environment. Factors associated with the driver include: error, speeding, experience, and blood-alcohol level. Factors associated with the vehicle include: type, condition, and center of gravity. Environmental factors include: quality of the infrastructure, weather, and obstacles. The majority of vehicular accidents are attributed to the driver. Vehicular accidents can have severe effects on those directly involved, as well as effects to others not directly involved. Other effects may include: severe traffic delays, lost sales to businesses, delayed commodity shipments, and increased insurance costs (Cova and Conger, 2003).

#### **HAZMAT in Transit**

HAZMAT incidents may occur at any time, in populated or remote areas of Cayuga County. Multiple incidents may occur simultaneously and all typically require a multi-agency, multi-jurisdictional response. To identify the extent of the hazard in a particular community or region, what types of HAZMAT are stored, handled, processed or transported must be determined (FEMA, 1997).

On average, 6,774 HAZMAT events occur in the U.S. annually. Of those events, 5,517 are highway events, 991 are railroad events, and 266 are due to other causes. Transportation of HAZMAT on highways involves tanker trucks or trailers and certain types of bulk-cargo vehicles. Average trip lengths are 28 miles for gasoline trucks and 260 miles for chemical trucks. These trucks are responsible for the greatest number of HAZMAT events (FEMA, 1997).

Natural hazards can contribute to transportation-related HAZMAT events. Severe storms, high winds and fires can worsen conditions surrounding HAZMAT events. This makes it more difficult to contain releases and to mitigate the short and long term effects. These releases create short and long term toxicological threats to people, plants and wildlife. Toxic materials affect people through inhalation, ingestion or direct contact with skin (FEMA, 1997).

During transportation, the U.S. Department of Transportation (DOT) classifies HAZMAT in one or more categories: explosive, blasting agent, flammable liquid, flammable solid, oxidizer, organic peroxide, corrosive material, compressed gas, flammable compressed gas, poison, irritating materials, inhalation hazard, etiological agent, radioactive material and other regulated material (FEMA, 1997).

### Aviation Accidents

Approximately 80-percent of all aviation accidents occur shortly before or during take-off and landing. These are usually said to have been caused by human error. Mid-flight accidents are rare but not unheard of. A survey was conducted on 1,843 plane crashes that occurred between 1950 and 2006. The survey showed that of those 1,843 plane crashes, 53-percent were due to pilot (human) error; 21-percent due to mechanical failure; 11-percent due to weather; eight-percent due to other human error (lack of communication, improper maintenance); 6-percent due to sabotage and terrorism; and 1-percent due to other causes (Krasner, 2009).

Aviation accidents are often devastating incidents that may result in serious injuries or fatalities. The Federal Aviation Administration (FAA) and the National Transportation Safety Board (NTSB) are the agencies responsible for monitoring air travel and investigation accidents. Some of the most common causes of aviation accidents occur as a result of the violation of FAA and NTSB regulations. Some other causes of accidents include, but are not limited to:

- Pilot or flight crew errors – Pilot errors are the number one cause of aviation accidents and account for the highest number of fatalities. Pilots have the responsibility to transport passengers safely from one place to another and follow the FAA and NTSB regulations to better ensure passenger safety. If a pilot or flight crew makes an error, an accident may occur.
- Faulty equipment – Faulty aircraft equipment and/or mechanical features are another common cause of an aviation accident.
- Aircraft design flaws – The manufacturer of an aircraft is responsible for an aviation accident if the structural design is flawed and results in an accident.
- Failure to properly fuel or maintain the aircraft – If any regulations and safety standards set by the FAA or NTSB are violated, an accident may occur.
- Negligence of Federal Air Traffic Controllers – The failure of air traffic controllers to properly monitor the airways is another cause of aviation accidents (Aviation Law News, Date Unknown).

### At-Grade Railroad Crossings

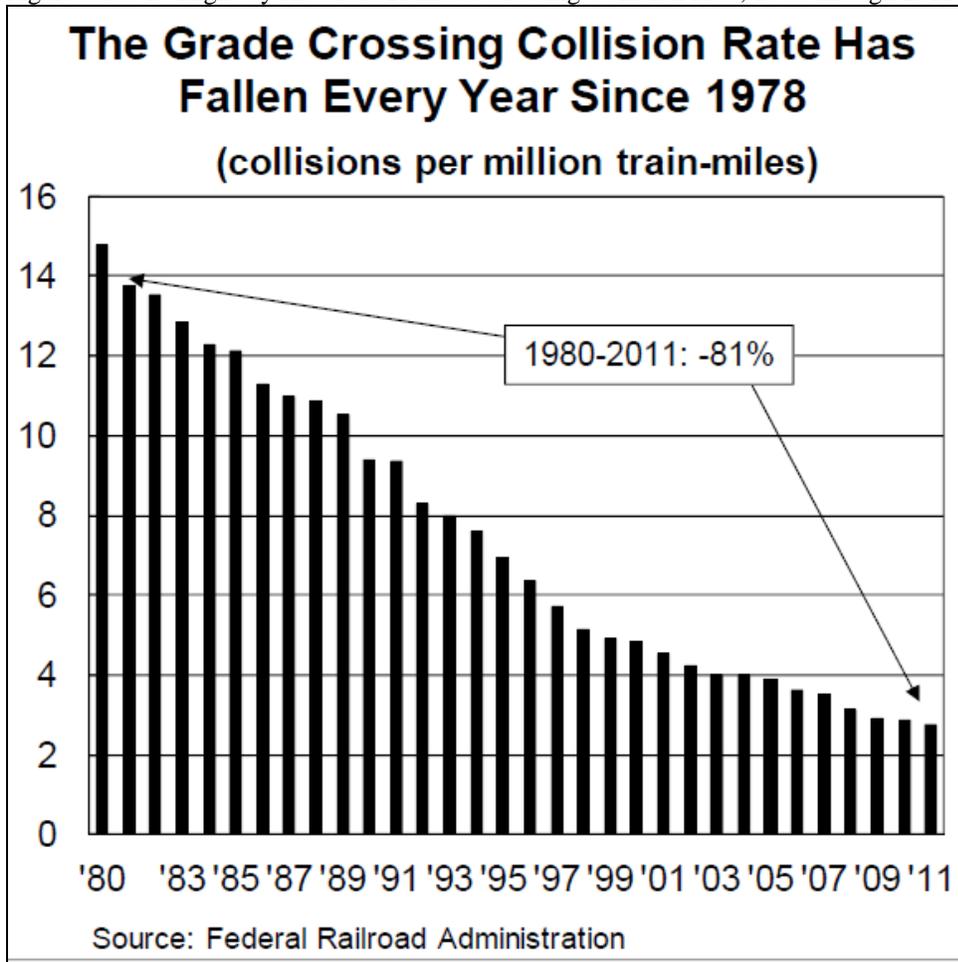
Accidents involving trains and pedestrians or motor vehicles are very severe. A motorist is 30-times more likely to die in a collision with a train than any other type of motor vehicle accident (West Virginia Department of Transportation, Date Unknown).

As of July 2012, there are approximately 136,041 public at-grade crossings in the U.S. In 2009, there were 1,896 incidents at public highway-rail crossings in the U.S. that resulted in 247 deaths and 705 injuries. Also in 2009, 431 people were killed and 343 people were injured while trespassing on railroad rights-of-way and property (U.S. Department of Transportation – Federal Highway Administration, Date Unknown).

For most local road officials, at-grade railroad crossings are the most common exposure to railroads. Such crossings are often a nuisance for both highway and railroad officials. Railroad crossings are a conflict point between two different transportation systems, which have different operating characteristics and different needs (Association of American Railroads, 2012).

Between 1980 and 2011, the number of grade-crossing collisions fell 81-percent (Figure 5.4.5-1). Injuries associated with collision fell 75-percent and fatalities fell 70-percent. The grade crossing collision rate has fallen every year since 1978 (Association of American Railroads, 2012).

Figure 5.4.5-1. Highway/At-Grade Railroad Crossing Collision Rate, 1980 through 2011



Source: Association of American Railroads, 2012

New York State has been a national leader in grade crossing safety, installing full sets of active warning systems, including flashers and gates, at all appropriate public crossings in the State. As a result, New York State has among the lowest crossing accident rates in the country. The State has also been reducing the overall number of at-grade railroad crossings. In 1975, there were over 4,000 public crossings and currently there are only 2,687. Of those 2,687 public crossings, 2,040 are equipped with active warning devices, while 600 have passive devices only. Because of this, the occurrence of at-grade crossing accidents in New York State is relatively low. Between April 2010 and March 2011, there were only 30 accidents, with 16 of those being caused by illegal driver or pedestrian action (New York State Department of Transportation, 2011).

**Flood Vulnerable Roadways**

See Section 5.4.2 (Flood) for detailed information on the extent for flood and flood vulnerable roadways.

**Location**

Transportation hazards are not uncommon in the Planning Area. Transportation systems within the Cayuga County include roads, railway and air. Therefore, the location of these transportation hazards can occur anywhere in Cayuga County.

### **Vehicular Accidents**

A vehicular accident can occur on any traveled roadway in Cayuga County. Areas of particular concern include areas of roads that are difficult to navigate, conducive to accidents, historically accident-prone, adjacent to water bodies, and pass through populated or highly traveled areas. The majority of main roads in Cayuga County run in a north-south direction, with few roads running east-west. However, two major parkways run east-west across Cayuga County: U.S. Route 20 passes through the City of Auburn, and Interstate 90 (New York State Thruway) transverses Cayuga County near the Villages of Weedsport and Port Byron, as well as other towns. The main north-south corridors are New York State Route 38 and New York State Route 34, both passing through the City of Auburn near the center of Cayuga County. Figure 5.4.5-2 depicts traffic volume in Cayuga County, with Interstate 90, U.S. Route 20, and New York State Route 34 experiencing the greatest volumes.

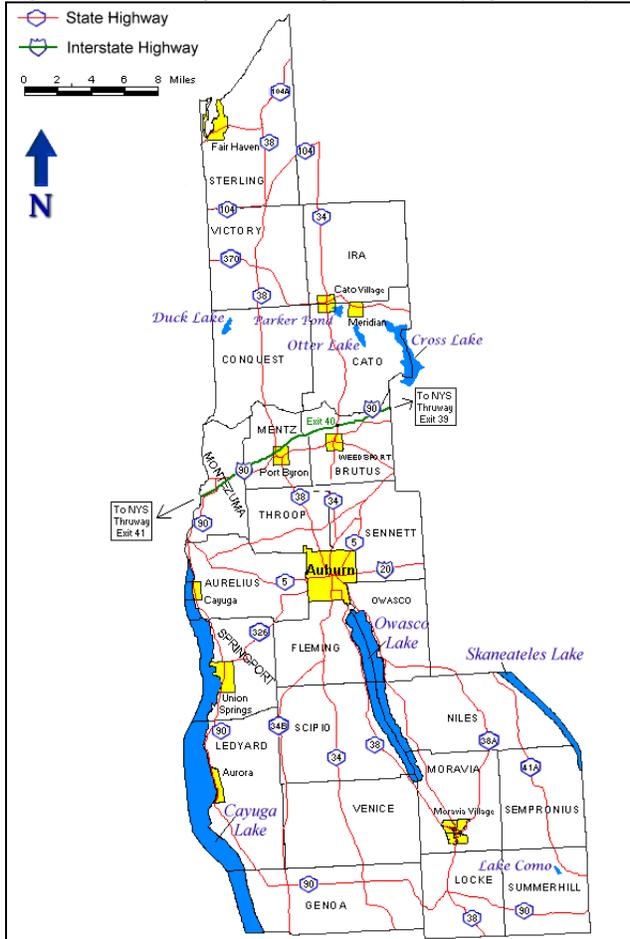


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cross-overs and modifications to the VMS overhead sign. Work also included construction support services such as shop drawing review, and plant and material inspection. The 3-year project was constructed in six 5-mile long segments.

New York State Thruway (Mile Post 296 -312) transverses Cayuga County as identified in the following map.

Figure 5.4.5-3. Major Thoroughfares in Cayuga County



**HAZMAT in Transit**

Highways, railways, barge canal, and commercial or military aviation routes constitute a major threat due to the number of chemicals and hazardous substances, including radioactive materials, transported in vehicles, vessels, trains and aircraft. Of particular concern has been truck traffic on local roads including NYS Routes 90, 41A, 38A, 38, and 34. Also, local shortcuts in Cayuga County and GPS routes often send trucks onto smaller county roads, such as Tollgate Hill Road, which connects NYS Routes 38 and 90. This road is hazardous for truck traffic due to the grade of the roadway. This increases the possibility that an accident involving hazardous materials could occur. See Figure 5.4.5-2 for the locations of the high traffic routes.

**Aviation Accidents**

While Cayuga County is served by up to four regional commercial airports, only one is located within Cayuga County. Whitford Airport is a commercial and flight education airport located on Ditmar Road in the Town of Cato. The airport maintains 3,630 feet of paved and 2,800 feet of grass runways, and offers a wide range of aviation related services such as sightseeing flights, banner towing and aircraft rentals ([www.whitfordairport.com](http://www.whitfordairport.com)).

Other regional airports serving Cayuga County include the Greater Rochester International Airport in Rochester, Hancock International Airport in Syracuse, and Ithaca/Tompkins Regional Airport in Tompkins County. Cayuga County does not lie directly within the approach and take off zones of these airports; however, Cayuga County is still exposed to some risk.

There are approximately six private airfields and one public for small planes in Cayuga County. There is also one in the Town of Skaneateles and in the Town of Tyre. These could be significant because one or more are used by certified pesticide applicators for aerial spraying of crops, utility rights-of-way, or mosquito control.

**At-Grade Railroad Roadways**

The responsibilities for public crossings at grade are shared between the railroad and the road/highway agency. The railroad is responsible for the crossing surface between the out ends of the railroad ties, for the installation of the crossbuck signs where no signals are present, and for the operation and maintenance of the railroad crossing signals and associated control circuitry. The road or highway agency is responsible for warning and regulatory signs on the approaches to the crossing, for pavement markings and for the street or highway approaches outside the end of the railroad ties (West Virginia Department of Transportation, Date Unknown).

Two major rail corridors cross central/northern Cayuga County. The CSX line crosses east-west through the Towns of Montezuma, Mentz, and Brutus. The Cayuga County portion is 11.5 miles with four grade-crossings and at least two driveway crossings. There are also two significant bridges, one carrying the rail line over the New York State Barge Canal/Seneca River and the other carrying the New York State Thruway (I-90) over the rail line. Amtrak also uses this corridor, so it may become a high speed rail corridor in the future (Cayuga County Input, 2013).

Finger Lakes Railway crosses Cayuga County on a generally east-west path through Aurelius, Auburn and Sennett. The Cayuga County portion is 19.1 miles with over 20 grade-crossings, and at least 5 driveway crossings. Two significant bridges occur on the Finger Lakes Railway in Cayuga County. The first is the 1.6 mile long causeway across Cayuga Lake which includes a half mile of causeway and three

bridges in Cayuga County. The second is the Owasco River crossing which occurs at the junction of State Routes 5 and 38 and U.S. Route 20, next to the walls of the maximum security New York State Department of Corrections (NYSDOC) prison (Auburn Correctional Facility) (Cayuga County Input, 2013).

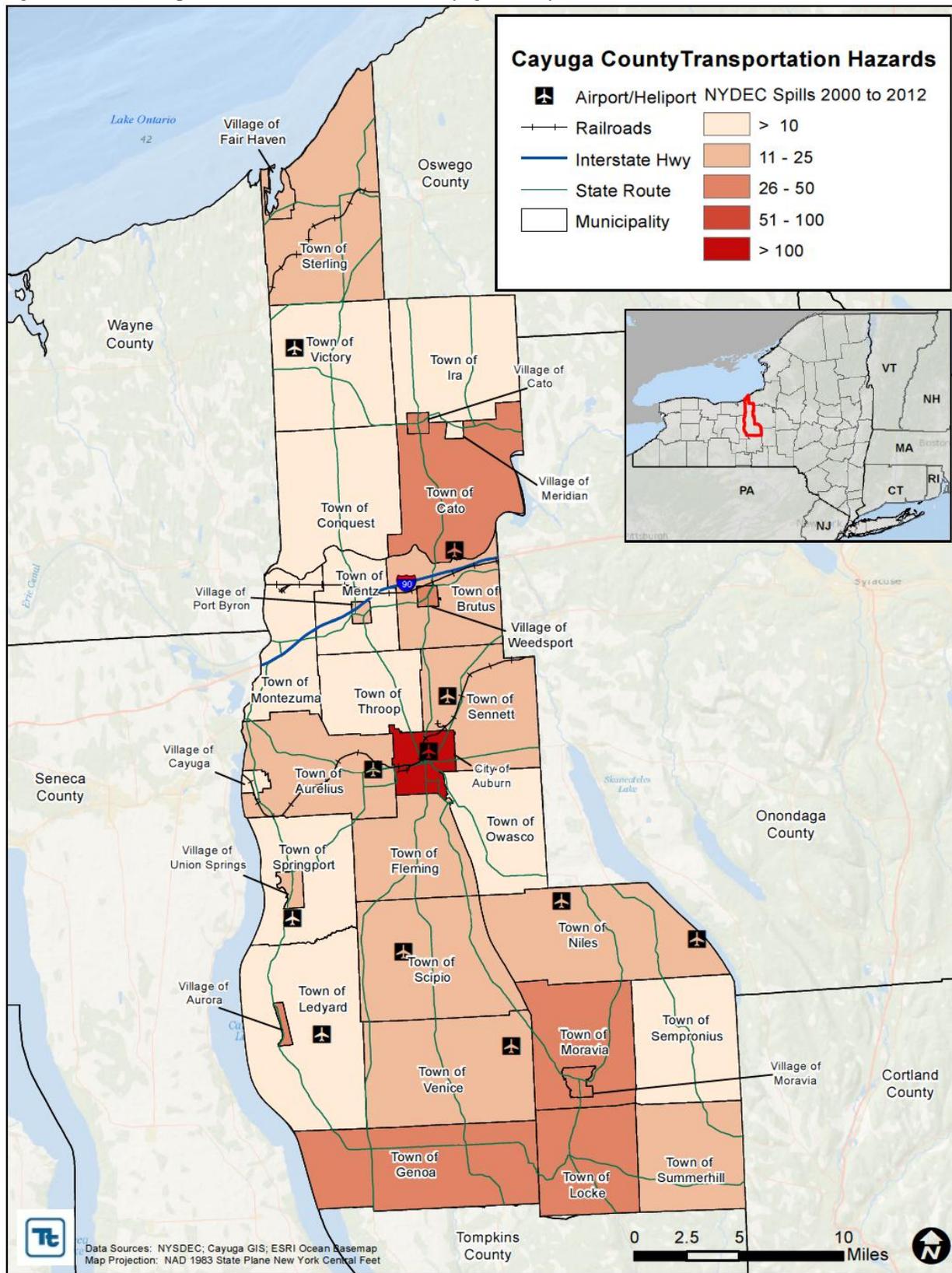
### **Flood Vulnerable Roadways**

According to FEMA, flood hazard areas are defined as areas that are shown to be inundated by a flood of a given magnitude on a map. These areas are determined using statistical analyses of records of riverflow, storm tides, and rainfall; information obtained through consultation with the community; floodplain topographic surveys; and hydrologic and hydraulic analyses. Flood hazard areas are delineated on FEMA's Flood Insurance Rate Maps (FIRM), which are official maps of a community on which the Federal Insurance and Mitigation Administration has indicated both the Special Flood Hazard Areas (SFHA) and the risk premium zones applicable to the community.

In addition to FIRM, FEMA also provides FISs for entire counties and individual jurisdictions. These studies are narrative reports of countywide flood hazards, including descriptions of the flood areas studied and the engineered methods used, principal flood problems, flood protection measures and graphic profiles of the flood sources (FEMA, Date Unknown). A countywide FIS for Cayuga County has been completed. The 2007 FIS discussed the principal flood problems in Cayuga County including flood vulnerable roadways (FEMA FIS, 2007). See the Flood Hazard section (5.4.1) for more information.

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Figure 5.4.5-4. Transportation Hazard Locations in Cayuga County



Source: NYSDEC; Cayuga County GIS



### Previous Occurrences and Losses

#### Historic Transportation Incidents

Steamship Frontenac Fire - On July 27, 1907, the Steamship Frontenac caught fire as it was approaching Union Springs. The steamship grounded south of the Village, and eight passengers drowned despite rescue efforts (Cayuga County Input, 2013).

Gasoline Tanker Accident - On April 10, 1975, a gasoline tanker lost its brakes coming down the steep sloping New York State Route 90. The tanker crashed into the intersection of the New York State Routes 90 and 38. The spilled gasoline caught fire and destroyed eleven buildings in the Hamlet of Locke (Cayuga County Input, 2013).

#### Vehicular Accidents

The New York State Department of Transportation (NYSDOT) Safety Information Management System provides a summary report of intersection and non-intersection accidents at specific mile markers or intersections of major roadways throughout New York State. Accident data for the section of the New York State Thruway in Cayuga County was obtained throughout a Freedom of Information Law Request from the New York Thruway Authority. An accident report query for the New York State Thruway Mile Post 296 through 312 was reviewed. Complete accident data was only made available for the period between January 3, 2011 and Dec 14, 2011.

According to the database, approximately 161 accidents occurred along the New York State Thruway within Cayuga County between Mile Posts 296 – 312 in 2011. Accidents types included those with other motor vehicles, obstructions and/or debris, driver inattention, slippery pavement, or animals, among other types. Of the 161 accidents, only one of them was caused by weather conditions (flooding, snow, rain, ice, etc.). However, 49 of the 161 accidents (or approximately 30%) occurred when weather conditions were reported as Rain, Snow, or Sleet/Hail/Freezing Rain, and 59 (37%) occurred when road conditions were described as Snow/Ice or Wet.

Monetary losses and/or impacts associated with the aforementioned releases have not been made available or calculated.

#### HAZMAT in Transit

According to the New York State Department of Environmental Conservation (NYSDEC) – Spill Incident Database (2000 – 2012), there have been 244 spills from commercial or passenger vehicles, vessels, gasoline stations, railroad cars, or tanks trucks due to traffic accidents, equipment failure, or other causes since 2000, spilling over 90,000 gallons of hazardous material. The most frequently spilled materials included gasoline (58 spills), diesel (38 spills), and hydraulic oil (73 spills), but the spills of the greatest quantity of materials were of agricultural-related products such as milk or whey. The majority of incidences occurred in the City of Auburn, with 109 spills reported since 2000 – 47 of those incidences reportedly occurred at 25 Quarry Road. While most spills were minor, 12 events released 100 or more gallons of materials. Due to the vast amount of spills recorded since 2000, Table 5.4.5-1 shows only the transportation-related HAZMAT spills which have occurred in Cayuga County since 2007.

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Table 5.4.5.1. NYSDEC Spill Incident Database for Cayuga County, 2007-2012

Spill Number	Date Reported	Spill Name	Municipality	Location	Material	Amount Spilled	Cause/Source
1209545	11/7/2012	Express Mart #360	Cato	3475 NY 370	Diesel	UNKNOWN	Equipment Failure/ Gasoline Station
1208775	11/3/2012	Motor Vehicle Accident	Auburn	6708 East Lake Rd	Gasoline	10.00 Gal.	Traffic Accident/ Passenger Vehicle
1208782	11/3/2012	Creek	Auburn	East Lake Road	Gasoline	10.00 Gal.	Traffic Accident/ Passenger Vehicle
1208883	11/3/2012	Roadway	Auburn	7134 County House Rd	Diesel	10.00 Gal.	Unknown/ Commercial Vehicle
1207623	10/30/2012	Owasco Flats Trailhead Area	Moravia	State Rte. 38	Transmission Fluid	1.50 Gal.	Traffic Accident/ Passenger Vehicle
1206287	9/26/2012	NYS Rte. 5, IFO 7852 Grant Ave	Sennett	NYS Rte. 5, IFO 7852 Grant Ave	Diesel	175.00 Lbs.	Traffic Accident/ Commercial Vehicle
1206210	9/23/2012	Expressmart	Auburn	160 State Street	Gasoline	0.50 Gal.	Human Error/ Gasoline Station
1206066	9/19/2012	On Road	Sennett	9800 Block Of Baker Rd	Hydraulic Oil	15.00 Gal.	Equipment Failure/ Commercial Vehicle
1205725	9/8/2012	Traffic Accident	Springport	3 USA Way	Motor Oil	1.00 Gal.	Traffic Accident/ Passenger Vehicle
1205606	9/5/2012	Express Mart Store # 331	Auburn	2 Whitebridge Road	Gasoline	0.50 Gal.	Human Error/ Gasoline Station
1205583	9/4/2012	Outside	Aurelius	1579 Clarke Street Rd	Battery Acid	2.00 Gal.	Traffic Accident/ Commercial/Industrial
1205248	8/24/2012	East Venice Cemetery Assoc	Genoa	3432 Myers Rd	Gasoline	20.00 Gal.	Traffic Accident/ Commercial/Industrial
1205043	8/18/2012	Intersection	Springport	Powers Rd And Rte. 326	Transmission Fluid	1.00 Gal.	Traffic Accident/ Passenger Vehicle
1204737	8/12/2012	Vehicle Accident	Ledyard	Sherwood Rd And Dog Corners Rd	Motor Oil And Transmission Fluid	2.00 Gal.	Traffic Accident/ Passenger Vehicle
1204689	8/10/2012	Port Byron Service Area	Port Byron	Interstate 90	Gasoline	UNKNOWN	Unknown/ Gasoline Station
1204603	8/8/2012	On The Road	Sterling	Rte. 3 And Martville Rd	Hydraulic Oil	3.00 Gal.	Equipment Failure/ Commercial Vehicle
1203872	7/19/2012	Express Mart #360	Cato	3475 NY 370	Diesel	2.00 Gal.	Human Error/ Gasoline Station
1203509	7/11/2012	On The Road	Sennett	State Rte. 34 Between Manrow Rd And Turnpike Rd	Hydraulic Oil	2.00 Gal.	Unknown/ Commercial Vehicle
1203291	7/5/2012	On Roadway And Creek	Genoa	East Genoa Rd & Rte. 90	Diesel/Transmission Fluid/Motor Oil	20 Gal.	Traffic Accident/ Passenger Vehicle

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Spill Number	Date Reported	Spill Name	Municipality	Location	Material	Amount Spilled	Cause/Source
				Intersection			
1203093	6/28/2012	Morgan Rubbish Removal	Auburn	Gates Rd	Hydraulic Oil	45.00 Gal.	Equipment Failure/ Commercial Vehicle
1202903	6/23/2012	Road Side	Scipio	4249 Court St	Gasoline	5.00 Lbs.	Traffic Accident/ Passenger Vehicle
1202044	5/31/2012	Pole 18	Ira	12606 Bethel Road	Transformer Oil	5.00 Gal.	Traffic Accident/ Unknown
1201639	5/19/2012	Sodus Bay	Fair Haven	King Street	Gasoline	UNKNOWN	Unknown/ Unknown
1201264	5/8/2012	IFO Residence	Auburn	7 Bowen St	Motor Oil	Unknown	Equipment Failure/ Commercial Vehicle
1200870	4/26/2012	Storm Drain	Auburn	North St And Quarry Rd	Unknown Petroleum	Unknown	Unknown/ Unknown
1200823	4/25/2012	Nucor Steel Plant	Auburn	25 Quarry Rd	Hydraulic Oil	50.00 Gal.	Equipment Failure/ Commercial Vehicle
1200792	4/25/2012	Tony Hood Property	Cato	2505 West Main St	#2 Fuel Oil	Unknown	Equipment Failure/ Private Dwelling
1114292	3/23/2012	Lowes	Auburn	299 Grant Ave	Hydraulic Oil	30.00 Gal.	Equipment Failure/ Commercial/Industrial
1114199	3/22/2012	Lowes	Auburn	299 Grant Ave	Hydraulic Oil	25.00 Gal.	Equipment Failure/ Commercial Vehicle
1113428	2/28/2012	Xpress Mart 331	Auburn	2 Whites Bridge Rd	Gasoline	1.00 Gal.	Human Error/ Institutional, Educational, Gov., Other
1113263	2/22/2012	Roadway	Sempronius	Bear Swamp State Forest/Iowa Rd And Ridge Rd	Unknown Petroleum	5.00 Gal.	Unknown/ Unknown
1111414	12/22/2011	Xpress Mart 301	Auburn	1528 Clark St	Gasoline	1.00 Gal.	Equipment Failure/ Passenger Vehicle
1110265	11/18/2011	Expressmart 302	Auburn	160 State St	Gasoline	2.00 Gal.	Human Error/ Gasoline Station
1108388	10/1/2011	Traffic Accident	Sempronius	2229 Route 41a	Diesel	100.00 Gal.	Traffic Accident/ Unknown
1107804	9/20/2011	Buckeye Pipeline Facility Tank Farm	Auburn	3186 Gates Rd	Gasoline	988.00 Gal.	Equipment Failure/ Commercial/Industrial
1107816	9/20/2011	Buckeye Pipeline	Auburn	Turnpike And Townsend Rd	Gasoline	24990.00 Gal.	Human Error/ Commercial/Industrial
1107372	9/12/2011	Auto Accident	King Ferry	1647 Route 90	Gasoline	1.00 Gal.	Traffic Accident/ Passenger Vehicle
1104342	7/19/2011	Wooded Area Off Road	Cato	2391 West Main Street	Unknown Petroleum	200.00 Gal.	Traffic Accident/ Commercial Vehicle



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Spill Number	Date Reported	Spill Name	Municipality	Location	Material	Amount Spilled	Cause/Source
1104225	7/17/2011	Alnye Trucking	Locke	NY 38 North Of Harris Hill Rd	Milk	4000.00 Gal.	Traffic Accident/ Commercial Vehicle
1104225	7/17/2011		Locke		Diesel	60.00 Gal.	Traffic Accident/ Commercial Vehicle
1103469	6/28/2011	Garbage Truck MVA	Moravia	Toll Gate Hill Rd And Rte. 38	Other	UNKNOWN	Traffic Accident/ Commercial Vehicle
1103255	6/23/2011	Sunoco Pit Stop	Weedsport	9036 Erie Dr.	Diesel	40.00 Gal.	Unknown/ Unknown
1102344	5/31/2011	I 90 303.3 Westbound	Brutus	I 90 303.3 Westbound	Unknown Petroleum	150.00 Gal.	Traffic Accident/ Commercial Vehicle
1101642	5/13/2011	1505 Tollgate Hill Rd	Locke	1505 Tollgate Hill Rd	Whey	78,000 Pounds	Traffic Accident/ Commercial Vehicle
1012780	3/23/2011	Pits Stop Store/ Gas Pump 1	Port Byron	10 Rochester St	Hydraulic Oil	10.00 Gal.	Equipment Failure/ Institutional, Educational, Gov., Other
1011332	2/11/2011	In Roadway	Fleming	5361 Silver St Rd	Hydraulic Oil	1.00 Gal.	Equipment Failure/ Commercial Vehicle
1010428	1/6/2011	Millis Transport Terminal	Weedsport	3295 Rte. 31	Diesel	7.00 Gal.	Equipment Failure/ Commercial Vehicle
1009776	12/13/2010	Roadway	Summerhill	Route 90 And Salt Rd	Unknown Petroleum	Unknown	Traffic Accident/ Passenger Vehicle
1008624	11/17/2010	To Ditchline	Aurora	In Front Of 2190 State Rte. 90	Gasoline	5.00 Gal.	Traffic Accident/ Private Dwelling
1008210	11/4/2010	Roadside	Locke	659 Bird Cemetery Rd	Transformer Oil	3.00 Gal.	Traffic Accident/ Commercial/Industrial
1006967	9/29/2010	Mile 311.4 West I90	Montezuma	I90	Diesel	300.00 Gal.	Traffic Accident/ Commercial Vehicle
1006804	9/23/2010	In Roadway	Auburn	257 Clark St	Hydraulic Oil	30.00 Gal.	Equipment Failure/ Commercial Vehicle
1005740	8/24/2010	Exit 40 East I90 Mile 304	Brutus	I90	Diesel	25.00 Gal.	Traffic Accident/ Commercial Vehicle
1005164	8/7/2010	Intersection 41a	Sempronius	Phillips Rd	Transmission Fluid	0.90 Gal.	Traffic Accident/ Passenger Vehicle
1003877	7/7/2010	Glanville Road Intersection	Fleming	Route 34	Gasoline	55.00 Gal.	Traffic Accident/ Passenger Vehicle
1003662	7/2/2010	Express Mart 301	Auburn	1528 Clark St	Gasoline	1.00 Gal.	Human Error/ Gasoline Station
1003131	6/20/2010	Nice And Easy	Aurelius	41 Clark St Rd	Gasoline	20.00 Gal.	Equipment Failure/ Gasoline Station
1001504	5/8/2010	Roadway (AA)	Auburn	1113 West Genesee St	Transmission Fluid	1.00 Gal.	Traffic Accident/ Unknown
1001504	5/8/2010		Auburn		Motor Oil	1.00 Gal.	Traffic Accident/



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Spill Number	Date Reported	Spill Name	Municipality	Location	Material	Amount Spilled	Cause/Source
							Unknown
1001349	5/5/2010	Cato Meridian School Bus	Cato	Jones / Irish Station Rd	Motor Oil	4.50 Gal.	Equipment Failure/ Institutional, Educational, Gov., Other
1000897	4/23/2010	In Roadway @ Accident	Fleming	Rte. 34 South Of Willowbrook Rd	Diesel	UNKNOWN	Traffic Accident/ Unknown
1000763	4/20/2010	Roadway	Moravia	1282 Sun Lane	Unknown Petroleum	Unknown	Traffic Accident/ Commercial Vehicle
912212	2/22/2010	Roadway	Auburn	7147 North Division St	Diesel	0.75 Gal.	Equipment Failure/ Commercial Vehicle
909357	11/20/2009	I 90 West Bound Mm 304.9	Brutus	I 90 Mm 304.9 Westbound	Gasoline	30.00 Gal.	Traffic Accident/ Passenger Vehicle
907453	10/2/2009	I/A/O 2074 Skillet Rd	Fleming	2074 Skillet Rd	Auto Waste Fluids	Unknown	Traffic Accident/ Passenger Vehicle
906945	9/20/2009	Kwik Fill	Auburn	134 State St	Gasoline	12.00 Gal.	Equipment Failure/ Passenger Vehicle
905362	8/7/2009	Roadway	Genoa	8967 Rte. 90	Diesel	100.00 Gal.	Traffic Accident/ Commercial/Industrial
905170	8/3/2009	Express Mart	Auburn	2 White Bridge Rd	Gasoline	5.00 Gal.	Human Error/ Gasoline Station
904821	7/25/2009	Roadside	Auburn	3191 Stone School Rd	Motor Oil	2.00 Gal.	Traffic Accident/ Commercial Vehicle
904563	7/20/2009	I/A/O 151 Dunning Ave	Auburn	151 Dunning Ave	Hydraulic Oil	3.00 Gal.	Equipment Failure/ Commercial Vehicle
903299	6/21/2009	895 SR 20 Also SR 5	Aurelius	895 SR 20 Also SR 5	Motor Oil/Diesel	20.4 Gal.	Equipment Failure/ Commercial Vehicle
903209	6/18/2009	NYS Thruway 307.3 E/B	Mentz	NYS Thruway 307.3 E/B	Diesel	10.00 Gal.	Equipment Failure/ Commercial Vehicle
903129	6/16/2009	Route 5	Sennett	Mile Mark 3000, East Bound	Unknown Petroleum	5.00 Gal.	Human Error/ Unknown
902931	6/11/2009	Kwikfill	Auburn	State Street	Gasoline	1.00 Gal.	Equipment Failure/ Gasoline Station
902030	5/19/2009	Mile Marker 304.1 West Bound	Weedspport	NYS Thruway Exit 40 Tandem Lot	Rendering By-Product	50.00 Gal.	Housekeeping/ Commercial Vehicle
901506	5/7/2009	Main Road	Throop	State Street Rte. 38 At The Four Corners	Diesel	10.00 Gal.	Equipment Failure/ Tank Truck
900366	4/9/2009	Petro Petroleum/ Express Mart	Auburn	1528 Clark Rd	Gasoline	1.75 Gal.	Human Error/ Passenger Vehicle
900025	4/1/2009	Carolina Eastern Vail	Auburn	73 Columbus St	Diesel	4.00 Gal.	Equipment Failure/



**SECTION 5.4.5: RISK ASSESSMENT – TRANSPORTATION HAZARDS**

Spill Number	Date Reported	Spill Name	Municipality	Location	Material	Amount Spilled	Cause/Source
							Tank Truck
813974	3/26/2009	Sunoco Station # 0364-0216	Auburn	36 East Genesee	Gasoline	UNKNOWN	Equipment Failure/ Gasoline Station
813810	3/23/2009	NYS Thruway Mm 304.5 E/B	Mentz	NYS Thruway Mm 304.5 E/B	Diesel	UNKNOWN	Traffic Accident/ Commercial Vehicle
813634	3/18/2009	Rte. 41 A & New Hope Rd	Niles	Rte. 41 A & New Hope Rd	Transmission Fluid, Gasoline, Antifreeze	Unknown	Traffic Accident/ Commercial Vehicle
813055	3/5/2009	Yard	Scipio Center	2373 Sherwood Rd	Auto Waste Fluids	Unknown	Traffic Accident/ Passenger Vehicle
812996	3/3/2009	I/A/O 1278 Bartnick Rd	Genoa	1278 Bartnick Rd	Manure	Unknown	Traffic Accident/ Tank Truck
812996	3/3/2009		Genoa		Diesel	UNKNOWN	Traffic Accident/ Tank Truck
811491	1/20/2009	Farm Driveway	Genoa	203 Mahony Rd	Milk	2450.00 Gal.	Traffic Accident/ Commercial Vehicle
811140	1/8/2009	Thruway Port Byron Rest Area	Port Byron	Thruway Eastbound Mm310	Gasoline	1.00 Gal.	Equipment Failure/ Gasoline Station
811001	1/4/2009	Small Stream	Victory	Rte. 370	Gasoline	10.00 Gal.	Traffic Accident/ Unknown
810277	12/13/2008	Fast Trac	Auburn	Grand Ave Next To Walgreens	Gasoline	2.00 Gal.	Equipment Failure/ Gasoline Station
808074	10/17/2008	Thruway Exit 40 Exchange	Weedsport	Exit 40 Ramp	Waste Oil/Used Oil	Unknown	Traffic Accident/ Tank Truck
808074	10/17/2008		Weedsport		Whey	Unknown	Traffic Accident/ Tank Truck
805144	8/4/2008	West Side Skaneateles Lake	Niles	1781 Russels Landing	Gasoline	2.00 Gal.	Other/ Vessel
805132	8/3/2008	In Roadway	Sennett	Weedsport Sennett Rd	Motor Oil	5.00 Gal.	Human Error/ Passenger Vehicle
804805	7/28/2008	Corner Spring St	Union Springs	Rte. 90	Gasoline	3.00 Gal.	Traffic Accident/ Passenger Vehicle
803701	6/28/2008	Fast Trac Gas Station	Auburn	148 Grant Ave	Gasoline	5.00 Gal.	Human Error/ Gasoline Station
801999	5/21/2008	Cato Gas Station	Cato	Main Street & NYS Rt370	Gasoline	UNKNOWN	Other/ Gasoline Station
713335	3/17/2008	Express Mart	Auburn	1528 Clark St	Gasoline	1.00 Gal.	Equipment Failure/ Gasoline Station
711407	1/29/2008	NYS Thruway	Montezuma	Mm 311.7 Westbound	Diesel	25.00 Gal.	Human Error/ Commercial Vehicle
707214	10/1/2007	Garbage Truck	Summer Hill	Rte. 41a / Branch Rd	Garbage	Unknown	Human Error/ Commercial Vehicle



## SECTION 5.4.5: RISK ASSESSMENT – TRANSPORTATION HAZARDS

Spill Number	Date Reported	Spill Name	Municipality	Location	Material	Amount Spilled	Cause/Source
707163	9/28/2007	Railcar	Port Byron	Mile Post QC315.37	Unknown Hazardous Material	Unknown	Equipment Failure/ Railroad Car
705941	8/24/2007	Roadway / Dublin Hill Road	Aurora	Dublin Hill Road	Hydraulic Oil, Diesel	300.00 Gal.	Equipment Failure/ Commercial Vehicle
703052	6/14/2007	Fast Track #207	Auburn	136 Grant Ave	Gasoline	8.00 Gal.	Other/ Gasoline Station
702578	6/1/2007	Petro-All #302	Auburn	160 State Street	Gasoline	3.00 Gal.	Human Error/ Passenger Vehicle
702244	5/24/2007	Grant Street	Auburn	Grant Street	Gasoline	5.00 Gal.	Other/ Gasoline Station
700799	4/20/2007	On Roadway	New Hope	Rte. 41 A South of New Hope	Motor Oil	4.00 Gal.	Traffic Accident/ Commercial Vehicle
700760	4/19/2007	Suburban Energy Truck	Auburn	94 York Street	#2 Fuel Oil	Unknown	Other/ Commercial Vehicle
700100	4/3/2007	On Pavement	Auburn	25 Quarry Road	Hydraulic Oil	15.00 Gal.	Equipment Failure/ Commercial/Industrial
613275	3/11/2007	Nucor Parking Lot	Auburn	25 Quarry Rd	Hydraulic Oil	25.00 Gal.	Equipment Failure/ Commercial/Industrial
613176	3/8/2007	NYS Thruway East Bound	Weedsport	Mile Post 304.2	Diesel	150.00 Gal.	Traffic Accident/ Commercial Vehicle
611075	1/4/2007	Pit Stop Weedsport	Weedsport	Rte. 34 & 31	Diesel	UNKNOWN	Equipment Failure/ Institutional, Educational, Gov., Other

Source: NYSDEC, 2012

Note: This table includes only transportation-related spill information.



The above spill history indicates that all spills incidents were closed, meaning that the necessary cleanup and removal actions have been completed and no further remedial activities were necessary (NYSDEC, Date Unknown).

**Aviation Accidents**

There have been no significant aviation accidents in Cayuga County.

**At-Grade Railroad Roadways**

There have been some past occurrences of railroad accidents in Cayuga County. Finger Lakes Railway (FLR) - On July 8, 2004, seven cars of a thirteen car Finger Lakes Railway freight train derailed on the Owasco River Bridge at New York State Route 38 in the City of Auburn. The engine and four cars made it across the grade crossing at State Street and the rail bridge, but two railroad boxcars toppled from the bridge and five derailed but remained upright. One of the two railroad boxcars that toppled from the bridge over the Owasco River landed upside down in a parking lot next to the Auburn Correctional Facility and the other one ended up balanced upside down on the rail bridge and the other on the riverbank. The last two cars remained on the track and upright. About eighteen rolls of containerboard burst through the roof of one of the toppled cars and some of them ended up in the streambed and along the bank. The accident did not damage the bridge carrying New York State Route 38 traffic across the Owasco River (Cayuga County Input, 2013).

Additionally, minor accidents occur from time to time. On February 5, 2013 a Ford Explorer collided with a moving train in Auburn on State Street, the same site as the above derailment (The Citizen, 2013). While no injuries resulted from this accident, it illustrated the possibility of such an incident occurring.

Figure 5.4.5-5 – Vehicle Collides with Train in Auburn



Source: Voll, 2013

**Flood Vulnerable Roadways**

See Section 5.4.1 (Flood) for additional flooding events that occurred in Cayuga County.

### Probability of Future Events

Transportation hazards are impossible to accurately predict; however, areas prone to these hazards can be located and quantified through analysis of historical records and plotted on a County base map. Certain characteristics that together cause these hazards or increase the vulnerability of these hazards can be outlined and areas that may be prone are identifiable.

In Section 5.3, the identified hazards of concern for Cayuga County were ranked. The probability of occurrence, or likelihood of the event, is one parameter used for ranking hazards. Based on historical records and input from the Planning Committee, the probability of occurrence for transportation hazards in Cayuga County is considered frequent (likely to occur routinely several times a year, as presented in Table 5.3-3).

### VULNERABILITY ASSESSMENT

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For vehicular accidents (including hazardous materials in transit), the entire County has been identified as the hazard area. The following text evaluates and estimates the potential impact of vehicular accidents on Cayuga County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, safety and health of County residents, (2) general building stock, (3) critical facilities, and (4) economy
- Further data collections that will assist understanding of this hazard over time

#### Overview of Vulnerability

##### Transportation Accidents

Cayuga County features numerous heavily trafficked roadways that traverse Cayuga County. As discussed previously the heaviest traveled route is Interstate 90 which connects Rochester to Syracuse. In addition to Interstate 90 other heavily traveled roads in Cayuga County include U.S. Route 20 and NYS Route 34. These routes are major transportation routes for all types of materials, including hazardous materials that are routed through Cayuga County. Hazardous materials incidents resulting from transit have the potential to pose unreasonable risks to health, safety, or property when transported. These routes are adjacent to bodies of water, and in some cases are near populated areas. Both the environment and residents of Cayuga County are vulnerable to the effects of transportation accidents.

##### HAZMAT in Transit

Cayuga County routinely experiences incidents related to hazardous materials incidents related to transportation accidents. As previously discussed, numerous incidents involving hazardous materials have occurred over the past five years, however the majority of these incidents involved petroleum-based materials which do not pose an acute threat to the community and its residents. These types of spills pose the highest threat to the environment. Spills occurring near bodies of water pose the greatest risk to the environment.

##### Aviation Accidents

Cayuga County is also vulnerable to aviation accidents. Although not directly in the path of the takeoff or approach zones, Cayuga County is still somewhat vulnerable to aviation accidents. Cayuga County lies between two metropolitan areas and is adjacent to population centers in Canada, thus there is a potential for aviation accidents. As daily flight traffic increases in future years Cayuga County's vulnerability will likely increase as well.

##### At-Grade Railroads

Cayuga County is vulnerable to at-grade railroad accidents. As mentioned there are two major rail corridors that traverse Cayuga County. The potential for railroad accidents exists at railroad crossings as rail lines cross roadways in Cayuga County. In addition to the immediate threat to life and safety, long-term health effects from spilled hazardous materials carried throughout Cayuga County. Railroad

## SECTION 5.4.5: RISK ASSESSMENT – TRANSPORTATION HAZARDS

accidents also have the potential to impact the environment. As mentioned earlier, the railways cross Cayuga Lake, the New York State Barge Canal, and the Seneca River. An accident and subsequent release of hazardous materials into these bodies of water would pose a significant threat to the environment. Based upon the potential for a rail accident and the secondary effects of such an incident it is safe to say that Cayuga County is vulnerable to railroad accidents.

### Data and Methodology

For this hazard, data was obtained from the NYSDEC Spill Incident Database, NYSDOT Safety Information Management System, and local County officials.

### Impact on Life, Health and Safety

#### Transportation Accidents

Potential losses from vehicular accidents, including hazardous materials in transit, include human health and life, property and natural resources. Vehicular accidents may result in injury or death to drivers/passengers on the road, the public in the immediate vicinity and emergency services personnel. The number of people exposed depends on population density, both by day and night, and on the proportions located indoors and outdoors. As table 5.4.5-2 illustrates, according to New York State county traffic safety data reports, from 1998 – 2011 there have been 19,623 accidents, 124 of which resulted in at least one fatality.

Table 5.4.5-2. Traffic Accidents in Cayuga County 1998-2011

Year	Number of Accidents	Number of Fatal Accidents	Number of Fatalities
1998	1,244	8	10
1999	1,472	10	12
2000	1,717	10	11
2001	1,287	5	5
2002	892	5	5
2003	984	8	9
2004	1,005	15	18
2005	947	5	6
2006	1,405	9	10
2007	1,774	7	9
2008	1,735	13	14
2009	1,720	15	16
2010	1,815	8	8
2011	1,626	6	6
<b>Totals</b>	<b>19,623</b>	<b>124</b>	<b>139</b>

Source: NYS Ticket and Crash Report Database 2013

The data illustrates that while the number of accidents reported yearly averages approximately 1,400 incidents per year for the period in which data is available, these accidents rarely result in a fatality. In fact, of the 19,623 accidents reported from 1998-2011, only 124 involved a fatality. The percentage of traffic accidents which resulted in a fatality was less than one percent of total accidents. Thus, it is safe to say that while Cayuga County is vulnerable to traffic accidents, these incidents will occur frequently however will rarely result in a fatality. Thus it can be concluded that the impact to health, life, and safety for traffic accidents is relatively low, and appropriately mitigated through public education and awareness efforts by County Enforcement.

### **HAZMAT in Transit**

Vulnerability to a release or spill of hazardous materials depends on the amount and type of material, as well as the location of the release. Exposure to hazardous materials (e.g., accumulation of vapors in nearby homes or business from spilled materials) can be severe especially for sensitive populations including children and the elderly. Hazardous material releases also threaten the health and safety of those responding and cleaning up the release.

### **Aviation Accidents**

There is always a potential for an impact from aviation incidents. Although this potential exists there have been no past occurrences of incidents of aviation accidents in Cayuga County. Also, as mentioned in the previous section there is an airport located within Cayuga County so the potential for an incident does exist. The proximity of Cayuga County regional airports that offer commercial air service makes Cayuga County vulnerable to aviation accidents. Also, aviation accidents can occur anywhere regardless of the origin or destination of the flight. Given the factors discussed including past occurrences, it can be concluded that Cayuga County's vulnerability to aviation accidents and the impact on life, health, and safety is relatively low.

### **At-Grade Railroads**

As noted in the previous occurrence section, in 2004 a significant railroad accident occurred where seven cars derailed spilling container board. Fortunately the cargo spilled as a result of this incident was not life-threatening, however this incident illustrates the possibility for a rail accident. Each day significant quantities of life-threatening agents are transported via rail systems. A release of a chemical with an immediate threat to health and life, e.g. chlorine, would pose an acute threat to populations near then accident. Thus due to the proximity of rail lines to population centers and the potential release of harmful chemicals, it is safe to conclude that community members within Cayuga County are vulnerable to rail accidents.

## **Impact on General Building Stock, Critical Facilities and the Economy**

### **Transportation Accidents**

Due to insufficient data, a full loss estimate was not completed for the Transportation Accident hazard.

### **HAZMAT in Transit**

Due to insufficient data, a full loss estimate was not completed for the HAZMAT in Transit hazard.

### **Aviation Accidents**

Due to insufficient data, a full loss estimate was not completed for the Aviation Accident hazard.

### **At-Grade Railroad**

Due to insufficient data, a full loss estimate was not completed for the At-Grade Railroad hazard.

## **Additional Data and Next Steps**

As shown in the section above, limited data availability regarding the probability and potential impact of the transportation hazard in Cayuga County has prohibited the completion of a quantitative loss estimate for this HMP. With time, Cayuga County will work with appropriate agencies to collect additional data to support mitigation planning and consideration of potential risks and prioritization of mitigation measures for this hazard.

It is recognized that NYS Routes 3, 5, 31, 34, 38, 90, 104, and 370 are State-owned highways and Cayuga County does not have jurisdiction over these routes. In addition to these State-owned highways, U.S. Route 20 and Interstate 90 also pass through Cayuga County and, as is in the case with the State-owned highways, Cayuga County does not have jurisdiction over these roads. It is also recognized that Cayuga County needs to compile and maintain data regarding specific concerns and past losses for this hazard. This data will be included in future revisions of the HMP. Such data should include specific information regarding the damage/loss of life/property/infrastructure, and any data on the potential/actual cost and logistics of responding to such an event.

Studying traffic and potential transportation accident patterns could provide information on the vulnerability of specific road segments and nearby populations. County officials are presently conducting traffic counts and evaluating road conditions, collecting data that should be available for use in roadway vulnerability analyses in the near future. Increased understanding of the types of hazardous materials being transported through Cayuga County will also support mitigation efforts.

To support the analysis of potential mitigation actions, historic hazardous material releases in transit could be studied. Costs to respond to a release, remediate the environment, or repair damaged infrastructure would be useful in studying mitigation options.

### **Overall Vulnerability Assessment**

#### **Transportation Accidents**

The Planning Committee rated transportation accidents as a frequent occurrence (likely to occur once or more every twenty-five years) and provided an overall ranking for this hazard as frequent. In regard to non-HAZMAT vehicular accidents, data indicate that these are frequent occurrences; as traffic increases, the potential for vehicular accidents also can occur. Law enforcement, driver education, and transportation management efforts can help to reduce the potential for accidents. Existing and future mitigation efforts should continue to be developed and employed to reduce the potential impact of such events and prepare Cayuga County and local responders to these situations. The potential for railroad and aviation accidents also exists, although these incidents will occur far less frequently than vehicle accidents.

#### **HAZMAT-In Transit**

The Planning Committee rated vehicular accidents involving hazardous materials as a frequent occurrence (likely to occur once or more every twenty-five years) and provided an overall ranking for this hazard as frequent. A release of HAZMAT associated with a vehicular accident in Cayuga County is possible; such events have been documented in the past. While it is not possible to predict when and where a release of HAZMAT will occur, the local Fire Department and County HAZMAT team are generally well-equipped and prepared to respond to such situations. In addition, established emergency procedures are in place, remediation would be expected to occur in a timely manner, and any infrastructure would be repaired as needed. However, such events can be costly.