

6.0 APPENDIX B: HAZARD AND VULNERABILITY DATA

The information in this appendix supplements the discussion of Champaign County's hazards and vulnerabilities from Section 2: Hazard Identification and Risk Assessment. A complete list of historical incidents of each hazard is provided here. Additionally, detailed data on the anticipated damage to Champaign County from a 100-year flood and earthquake, per HAZUS estimates, is provided.

5.1 HAZARD HISTORY DATA

The National Climactic Data Center has maintained records on weather incidents across the United States since 1950. The tables below provide a history of the incidents on record for Champaign County from 1950 through present day.

5.1.1 Drought and Extreme Heat

These incidents include all occurrences categorized as drought or extreme heat.

Hazard	Location	Date	Injuries	Deaths	Property Damage	Crop Damage
Drought	Champaign (Zone)	07/01/1999	0	0	0	0
Drought	Champaign (Zone)	08/01/1999	0	0	0	0

5.1.2 Flood

The flood incidents identified in this table include events classified as flood and flash flood that occurred in Champaign County since 1950.

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Flash Flood	Champaign County	04/29/1996	0	0	2K	0
Flash Flood	Champaign County	05/11/1996	0	0	5K	0
Flash Flood	Champaign County	06/01/1997	0	0	75K	0
Flash Flood	St. Paris	01/21/1999	0	0	0	0
Flash Flood	St. Paris	04/28/1999	0	0	0	0
Flash Flood	Champaign County	09/23/2000	0	0	10K	0
Flash Flood	Rosewood	04/19/2002	0	0	0	0
Flood	Champaign County	06/05/2002	0	0	0	0
Flood	Champaign County	09/27/2002	0	0	0	0
Flood	Champaign County	11/10/2002	0	0	0	0
Flood	Champaign County	07/07/2003	0	0	0	0
Flood	Champaign County	08/02/2003	0	0	0	0

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Flood	Champaign County	01/04/2004	0	0	0	0
Flood	Champaign County	01/04/2004	0	0	0	0
Flood	Champaign County	01/05/2005	0	0	20K	0
Flood	Champaign County	01/11/2005	0	0	10K	0
Flood	Mechanicsburg	06/02/2006	0	0	0	0
Flood	Urbana	03/02/2007	0	0	3K	0
Flood	Urbana	03/14/2007	0	0	2K	0
Flood	Bowlusville	03/19/2008	0	0	3K	0
Flash Flood	Westville	07/12/2008	1	0	15K	0
Flood	Westville	07/13/2008	0	0	1K	0
Flood	Urbana	05/11/2011	0	0	10K	0
Flood	Christiansburg	12/05/2011	0	0	1K	0
Flood	St. Paris	01/27/2012	0	0	1K	0
Flood	North Lewisburg	03/18/2012	0	0	0	0
Flash Flood	Westville	03/18/2012	0	0	1K	0
Flood	St. Paris	07/08/2013	0	0	0	0
Flood	Grandview Hgts	04/29/2017	0	0	0	0
Flood	Catawba	08/11/2017	0	0	0	0
Flood	Bowlusville	02/24/2018	0	0	3K	0
Flood	Cable	06/08/2018	0	0	0	0

5.1.3 Severe Thunderstorm

Thunderstorm incidents include events that produced any combination of hail, lightning and thunderstorm wind; all hazards were not necessarily present in all incidents.

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Thunderstorm Wind	Champaign County	6/13/1958	0	0	0	0
Thunderstorm Wind	Champaign County	6/13/1958	0	0	0	0
Hail	Champaign County	6/22/1960	0	0	0	0
Thunderstorm Wind	Champaign County	6/25/1971	0	0	0	0
Thunderstorm Wind	Champaign County	5/17/1974	0	0	0	0
Thunderstorm Wind	Champaign County	5/17/1974	0	0	0	0
Thunderstorm Wind	Champaign County	1/11/1975	0	0	0	0
Thunderstorm Wind	Champaign County	7/3/1975	0	0	0	0
Thunderstorm Wind	Champaign County	3/26/1976	0	0	0	0
Hail	Champaign County	4/8/1980	0	0	0	0
Thunderstorm Wind	Champaign County	4/8/1980	0	0	0	0

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Thunderstorm Wind	Champaign County	6/1/1980	0	0	0	0
Thunderstorm Wind	Champaign County	7/5/1980	0	0	0	0
Thunderstorm Wind	Champaign County	7/5/1980	0	0	0	0
Thunderstorm Wind	Champaign County	7/5/1980	0	0	0	0
Hail	Champaign County	7/12/1980	0	0	0	0
Thunderstorm Wind	Champaign County	7/12/1980	0	0	0	0
Hail	Champaign County	7/12/1980	0	0	0	0
Thunderstorm Wind	Champaign County	8/11/1980	0	0	0	0
Thunderstorm Wind	Champaign County	6/21/1981	0	0	0	0
Thunderstorm Wind	Champaign County	3/31/1982	0	0	0	0
Hail	Champaign County	3/31/1982	0	0	0	0
Hail	Champaign County	5/22/1982	0	0	0	0
Hail	Champaign County	5/27/1982	0	0	0	0
Thunderstorm Wind	Champaign County	5/27/1982	0	0	0	0
Hail	Champaign County	3/27/1983	0	0	0	0
Thunderstorm Wind	Champaign County	4/30/1983	0	0	0	0
Hail	Champaign County	5/2/1983	0	0	0	0
Thunderstorm Wind	Champaign County	6/13/1984	0	0	0	0
Thunderstorm Wind	Champaign County	9/13/1984	0	0	0	0
Thunderstorm Wind	Champaign County	4/5/1985	0	0	0	0
Thunderstorm Wind	Champaign County	7/14/1985	0	0	0	0
Thunderstorm Wind	Champaign County	3/10/1986	0	0	0	0
Thunderstorm Wind	Champaign County	5/15/1986	0	0	0	0
Thunderstorm Wind	Champaign County	6/22/1986	0	0	0	0
Thunderstorm Wind	Champaign County	8/5/1989	0	0	0	0
Thunderstorm Wind	Champaign County	11/15/1989	0	0	0	0
Hail	Champaign County	6/8/1990	0	0	0	0
Thunderstorm Wind	Champaign County	9/14/1990	0	0	0	0
Hail	Champaign County	7/2/1991	0	0	0	0
Thunderstorm Wind	Champaign County	7/2/1991	0	0	0	0
Thunderstorm Wind	Champaign County	7/14/1992	0	0	0	0
Hail	Champaign County	7/16/1992	0	0	0	0
Thunderstorm Wind	Urbana	4/27/1994	0	0	5K	0
Thunderstorm Wind	St. Paris and	6/20/1994	0	0	50K	0
Hail	New Madison	7/29/1994	0	0	0	0
Thunderstorm Wind	Urbana	5/24/1995	0	0	3K	
Thunderstorm Wind	Countywide	6/7/1995	0	0	3K	0
Thunderstorm Wind	St. Paris & 4 S Urban	6/22/1995	0	0	5K	0
Hail	St. Paris & 4 S Urban	6/22/1995	0	0	0	0
Thunderstorm Wind	Urbana	6/26/1995	0	0	0	0

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Thunderstorm Wind	Countywide	7/13/1995	0	0	7K	0
Thunderstorm Wind	Carysville and	7/15/1995	0	0	10K	0
Hail	Carysville and	7/15/1995	0	0	0	0
Thunderstorm Wind	St. Paris	7/16/1995	0	0	2K	0
Thunderstorm Wind	Urbana	4/29/1996	0	0	2K	0
Thunderstorm Wind	Christiansburg	7/7/1996	0	0	50K	0
Thunderstorm Wind	Countywide	10/30/1996	0	0	10K	0
Thunderstorm Wind	Urbana	1/5/1997	0	0	0	0
Thunderstorm Wind	Mechanicsburg	5/18/1997	0	0	10K	0
Thunderstorm Wind	Urbana	7/2/1997	0	0	5K	0
Thunderstorm Wind	Urbana	7/27/1997	0	0	5K	0
Hail	Mechanicsburg	5/13/1998	0	0	0	0
Thunderstorm Wind	Countywide	6/19/1998	0	0	10K	0
Hail	Mechanicsburg	6/28/1998	0	0	0	0
Thunderstorm Wind	Mechanicsburg	7/19/1998	0	0	10K	0
Hail	Urbana	8/25/1998	0	0	10K	0
Thunderstorm Wind	Urbana	11/10/1998	0	0	5K	0
Thunderstorm Wind	Urbana	2/12/1999	0	0	3K	0
Thunderstorm Wind	Countywide	5/6/1999	0	0	3K	0
Thunderstorm Wind	Urbana	6/11/1999	0	0	2K	0
Thunderstorm Wind	Urbana	6/11/1999	0	0	1K	0
Thunderstorm Wind	Urbana	7/6/1999	0	0	5K	0
Thunderstorm Wind	St Paris	7/9/1999	0	0	3K	0
Thunderstorm Wind	North Lewisburg	7/21/1999	0	0	3K	0
Thunderstorm Wind	Countywide	4/20/2000	0	0	75K	0
Thunderstorm Wind	St Paris	5/10/2000	0	0	5K	0
Hail	Urbana	5/18/2000	0	0	25K	0
Hail	Spring Hills	7/28/2000	0	0	0	0
Thunderstorm Wind	Urbana	7/28/2000	0	0	5K	0
Thunderstorm Wind	St Paris	8/9/2000	0	0	10K	0
Thunderstorm Wind	Terre Haute	9/20/2000	0	0	10K	0
Hail	St Paris	4/9/2001	0	0	0	0
Thunderstorm Wind	Mechanicsburg	4/9/2001	0	0	10K	0
Thunderstorm Wind	Urbana	10/24/2001	0	0	7K	0
Lightning	Urbana	5/12/2002	0	3		0
Thunderstorm Wind	Mechanicsburg	5/12/2002	0	0	50K	0
Thunderstorm Wind	Countywide	6/5/2002	0	0	0	0
Hail	North Lewisburg	6/27/2002	0	0	0	0
Thunderstorm Wind	St Paris	7/29/2002	0	0	3K	0
Hail	Mechanicsburg	11/10/2002	0	0	0	0

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Thunderstorm Wind	Urbana	11/10/2002	0	0	3K	0
Thunderstorm Wind	Countywide	7/4/2003	0	0	7K	0
Thunderstorm Wind	Urbana	7/5/2003	0	0	2K	0
Thunderstorm Wind	Christiansburg	7/6/2003	0	0	3K	0
Thunderstorm Wind	Urbana	7/7/2003	0	0	3K	0
Thunderstorm Wind	Countywide	7/8/2003	0	0	10K	0
Thunderstorm Wind	Urbana	7/8/2003	0	0	20K	0
Thunderstorm Wind	Christiansburg	7/21/2003	0	0	2K	0
Hail	St Paris	5/17/2004	0	0	0	0
Thunderstorm Wind	Urbana	5/18/2004	0	0	3K	0
Thunderstorm Wind	St Paris	5/21/2004	0	0	3K	0
Thunderstorm Wind	St Paris	5/24/2004	0	0	3K	0
Thunderstorm Wind	Mingo	5/13/2005	0	0	0	0
Hail	Urbana	6/6/2005	0	0	0	0
Thunderstorm Wind	Mechanicsburg	7/25/2005	0	0	3K	0
Thunderstorm Wind	Urbana	8/20/2005	0	0	3K	0
Thunderstorm Wind	Urbana	8/20/2005	0	0	5K	0
Hail	Urbana	5/17/2006	0	0	0	0
Thunderstorm Wind	Urbana	5/25/2006	0	0	3K	0
Thunderstorm Wind	St Paris	6/7/2006	0	0	3K	0
Thunderstorm Wind	Countywide	6/22/2006	0	0	7K	0
Thunderstorm Wind	North Lewisburg	7/14/2006	0	0	2K	0
Thunderstorm Wind	Countywide	8/3/2006	0	1	8K	0
Hail	Urbana	9/30/2006	0	0	1K	0
Thunderstorm Wind	Urbana	5/15/2007	0	0	3K	0
Thunderstorm Wind	Urbana	6/17/2007	0	0	8K	0
Thunderstorm Wind	Urbana	8/16/2007	0	0	3K	0
Thunderstorm Wind	Kennard	12/23/2007	0	0	3K	0
Thunderstorm Wind	Urbana	6/13/2008	0	0	5K	0
Thunderstorm Wind	Urbana	6/15/2008	0	0	3K	0
Hail	North Lewisburg	6/22/2008	0	0	1K	0
Thunderstorm Wind	Urbana	6/25/2008	0	0	10K	0
Hail	Urbana	6/25/2008	0	0	1K	0
Thunderstorm Wind	Mechanicsburg	6/25/2008	0	0	3K	0
Thunderstorm Wind	Urbana	7/12/2008	0	0	6K	0
Thunderstorm Wind	Westville	2/11/2009	0	0	8K	0
Thunderstorm Wind	Urbana	5/3/2010	0	0	10K	0
Thunderstorm Wind	Catawba Station	6/15/2010	0	0	2K	0
Thunderstorm Wind	Christiansburg	9/7/2010	0	0	5K	0
Hail	North Lewisburg	3/23/2011	0	0	0	0

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Thunderstorm Wind	Crayon	4/27/2011	0	0	1K	0
Hail	Mutual	5/11/2011	0	0	0	0
Hail	Urbana	5/11/2011	0	0	0	0
Thunderstorm Wind	Mechanicsburg	5/23/2011	0	0	1K	0
Hail	Urbana	5/25/2011	0	0	0	0
Hail	Urbana	5/26/2011	0	0	0	0
Hail	Urbana	6/10/2011	0	0	0	0
Thunderstorm Wind	Northville	8/7/2011	0	0	70K	0
Thunderstorm Wind	Mechanicsburg	8/9/2011	0	0	2K	0
Thunderstorm Wind	Urbana	9/3/2011	0	0	6K	0
Hail	Spring Hills	3/18/2012	0	0	0	0
Hail	Spring Hills	3/18/2012	0	0	0	0
Hail	North Lewisburg	3/18/2012	0	0	0	0
Hail	North Lewisburg	3/18/2012	0	0	0	0
Hail	Mingo	3/30/2012	0	0	0	0
Thunderstorm Wind	Urbana	3/30/2012	0	0	1K	0
Thunderstorm Wind	St Paris	6/29/2012	0	0	10K	0
Thunderstorm Wind	Millerstown	6/29/2012	0	0	1K	0
Thunderstorm Wind	North Lewisburg	6/29/2012	0	0	10K	0
Thunderstorm Wind	North Lewisburg	6/29/2012	0	0	1K	0
Thunderstorm Wind	North Lewisburg	6/29/2012	0	0	25K	0
Thunderstorm Wind	Westville	9/21/2012	0	0	3K	0
Thunderstorm Wind	Urbana	9/21/2012	0	0	20K	0
Thunderstorm Wind	Kings Creek	7/10/2013	0	0	10K	0
Thunderstorm Wind	Urbana	7/10/2013	0	0	7K	0
Thunderstorm Wind	Urbana	7/10/2013	0	0	2K	0
Thunderstorm Wind	Woodstock	7/10/2013	0	0	2K	0
Thunderstorm Wind	Christiansburg	7/20/2013	0	0	1K	0
Hail	St Paris	8/21/2013	0	0	0	0
Thunderstorm Wind	Carysville	10/31/2013	0	0	30K	0
Thunderstorm Wind	St Paris	11/17/2013	0	0	1K	0
Hail	Thackery	5/13/2014	0	0	0	0
Thunderstorm Wind	Kings Creek	5/13/2014	0	0	3K	0
Hail	North Lewisburg	5/13/2014	0	0	0	0
Hail	Rosewood	5/21/2014	0	0	0	0
Hail	Westville	5/21/2014	0	0	0	0
Hail	Westville	5/21/2014	0	0	0	0
Hail	Millerstown	5/21/2014	0	0	0	0
Hail	Westville	5/21/2014	0	0	0	0
Hail	Westville	5/21/2014	0	0	0	0

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Hail	Urbana	5/21/2014	0	0	0	0
Hail	Urbana	5/21/2014	0	0	0	0
Hail	Westville	5/21/2014	0	0	0	0
Thunderstorm Wind	Kennard	6/24/2014	0	0	3K	0
Hail	Spring Hills	7/26/2014	0	0	0	0
Hail	Lippincotts	7/26/2014	0	0	0	0
Thunderstorm Wind	Christiansburg	5/11/2015	0	0	0	0
Thunderstorm Wind	Westville	5/11/2015	0	0	1K	0
Thunderstorm Wind	Mutual	6/8/2015	0	0	5K	0
Hail	Bowlusville	7/14/2015	0	0	0	0
Thunderstorm Wind	Northville	12/23/2015	0	0	8K	0
Thunderstorm Wind	Thackery	3/27/2016	0	0	4K	0
Thunderstorm Wind	Christiansburg	7/13/2016	0	0	1K	0
Thunderstorm Wind	Thackery	7/13/2016	0	0	1K	0
Thunderstorm Wind	Mechanicsburg	7/13/2016	0	0	1K	0
Thunderstorm Wind	Mechanicsburg	8/27/2016	0	0	1K	0
Thunderstorm Wind	Urbana	8/27/2016	0	0	0	0
Hail	Grandview Hgts	7/16/2017	0	0	0	0
Thunderstorm Wind	St Paris	7/21/2017	0	0	3K	0
Thunderstorm Wind	Bowlusville	7/21/2017	0	0	5K	0
Thunderstorm Wind	Urbana	7/21/2017	0	0	3K	0
Thunderstorm Wind	Christiansburg	5/15/2018	0	0	3K	0
Hail	Urbana Weller Arpt	5/15/2018	0	0	0	0
Thunderstorm Wind	Millerstown	7/1/2018	0	0	3K	0

5.1.4 Tornado

Confirmed tornadoes in Champaign County since 1950 are listed below.

Hazard	Location	Date	Fujita Scale	Deaths	Injuries	Property Damage	Crop Damage
Tornado	Champaign County	06/13/1958	F2	0	0	250K	0
Tornado	Champaign County	11/16/1965	F2	0	4	25K	0
Tornado	Champaign County	05/10/1973	F3	0	0	2.5K	0
Tornado	Champaign County	04/09/1999	F1	0	0	300K	0
Tornado	Champaign County	07/27/2014	EF0	0	0	15K	0

5.1.5 Windstorm

Incidents identified as windstorms are limited to wind-only events. Events in which severe wind occurred along with another hazards, such as winter weather or severe thunderstorms, are identified under the primary hazard.

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
High Wind	Champaign (Zone)	04/06/1997	0	0	0	0
High Wind	Champaign (Zone)	12/11/2000	0	0	0	0
High Wind	Champaign (Zone)	03/09/2002	0	0	35K	0
High Wind	Champaign (Zone)	05/11/2003	0	0	0	0
High Wind	Champaign (Zone)	12/01/2006	0	0	10K	0
High Wind	Champaign (Zone)	09/14/2008	0	0	4.7M	0
High Wind	Champaign (Zone)	02/11/2009	0	0	0	0
High Wind	Champaign (Zone)	12/09/2009	0	0	2K	0
High Wind	Champaign (Zone)	04/03/2016	0	0	0	0

5.1.6 Winter Storm

Winter storm events include incidents classified as blizzard, extreme cold/wind chill, ice storm, or winter storm that occurred in Champaign County since 1950.

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Winter Storm	Champaign (Zone)	01/02/1999	0	0	25K	0
Winter Storm	Champaign (Zone)	01/06/1996	0	0	500K	0
Ice Storm	Champaign (Zone)	03/06/1996	0	0	0	0
Winter Storm	Champaign (Zone)	03/19/1996	0	0	0	0
Ice Storm	Champaign (Zone)	01/24/1997	0	0	0	0
Winter Storm	Champaign (Zone)	01/01/1999	0	0	0	0
Winter Storm	Champaign (Zone)	01/07/1999	0	0	0	0
Winter Storm	Champaign (Zone)	01/13/1999	0	0	0	0
Ice Storm	Champaign (Zone)	12/13/2000	0	0	0	0
Winter Storm	Champaign (Zone)	03/26/2002	0	0	0	0
Winter Storm	Champaign (Zone)	12/25/2002	0	0	0	0
Winter Storm	Champaign (Zone)	02/15/2003	0	0	0	0
Winter Storm	Champaign (Zone)	01/25/2004	0	0	0	0
Winter Storm	Champaign (Zone)	03/16/2004	0	0	0	0
Winter Storm	Champaign (Zone)	12/22/2004	0	0	0	0
Winter Storm	Champaign (Zone)	01/21/2005	0	0	0	0
Winter Storm	Champaign (Zone)	12/08/2005	0	0	0	0
Winter Storm	Champaign (Zone)	12/15/2005	0	0	0	0

Hazard	Location	Date	Deaths	Injuries	Property Damage	Crop Damage
Winter Storm	Champaign (Zone)	03/07/2008	0	0	0	0
Ice Storm	Champaign (Zone)	12/23/2008	0	0	0	0
Ice Storm	Champaign (Zone)	01/10/2009	0	0	0	0
Ice Storm	Champaign (Zone)	02/01/2011	0	0	0	0
Blizzard	Champaign (Zone)	12/26/2012	0	0	0	0
Winter Storm	Champaign (Zone)	03/05/2013	0	0	0	0
Winter Storm	Champaign (Zone)	02/04/2014	0	0	0	0
Ice Storm	Champaign (Zone)	11/14/2018	0	0	0	0
Winter Storm	Champaign (Zone)	01/19/2019	0	0	0	0
Extreme Cold/Wind Chill	Champaign (Zone)	01/30/2019	0	0	0	0

5.2 HAZUS LOSS ESTIMATES

HAZUS is a nationally accepted methodology that utilizes U.S. Census and local geographic information systems (GIS) data to estimate losses for earthquakes, hurricanes, and floods. Because floods and earthquakes are identified as risks for Champaign County, HAZUS was used to generate and evaluate the county's vulnerability to these incidents. Estimates from HAZUS were generated using 2010 U.S. Census Bureau data, which calculated Champaign County's population as 40,097. Current building counts are slightly different than this information which is based upon the 2010 census.

5.2.1 Flood

Champaign County's vulnerability to flood was evaluated utilizing a HAZUS scenario for a 100-year flood event. For a flood of this magnitude, the damage to the county would be significant. The incident would expose a significant portion of the county's buildings to damage. Table 5-1 identifies buildings by occupancy type for all of Champaign County and those exposed to risk in this scenario.

Table 5-1: Building Exposure by Occupancy

Occupancy	Champaign County		100-Year Flood Scenario	
	Exposure (\$1000)	Percent of Total	Exposure (\$1000)	Percent of Total
Residential	\$3,349,677	76.4%	\$796,846	80.2%
Commercial	\$531,965	12.1%	\$83,603	8.4%
Industrial	\$230,179	5.2%	\$59,150	6.0%
Agricultural	\$70,058	1.6%	\$32,073	3.2%
Religion	\$99,856	2.3%	\$13,747	1.4%
Government	\$22,444	0.5%	\$4,775	0.5%
Education	\$82,620	1.9%	\$3,712	0.4%
Total	\$4,386,799	100%	\$993,906	100%

Essential Facility Inventory

Essential facilities are healthcare facilities like hospitals and clinics, fire and EMS stations, police stations, and operations and dispatch centers. Schools are included in essential facilities. Champaign County's essential facilities are identified in Table 5-2.

Table 5-2: Essential Facility Inventory

Facility Type	Number
Hospital	1 (20 beds)
Schools	21
Fire Stations	5
Police Stations	5
Emergency Operation Center	1

Estimated Building Damage

Per HAZUS estimates, 31 buildings will sustain at least moderate damage. This accounts for 73% of the total buildings identified for the scenario. Zero buildings are estimated to be completely destroyed. Tables 5-3 and 5-4 identify the anticipated building damage based on occupancy type and building type.

Table 5-3: Expected Building Damage by Occupancy

Occupancy	Percent Damaged					
	1-10%	11-20%	21-30%	31-40%	41- 50 %	> 50%
Agriculture	0	0	0	0	0	0
Commercial	0	0	0	0	0	0
Education	0	0	0	0	0	0
Government	0	0	0	0	0	0
Industrial	0	0	0	0	0	0
Religious	0	0	0	0	0	0
Residential	73	30	1	0	0	0
Total	73	30	1	0	0	0

Table 5-4: Expected Building Damage by Building Type

Building Type	Percent Damaged					
	1-10%	11-20%	21-30%	31-40%	41- 50 %	> 50%
Concrete	0	0	0	0	0	0
Manufactured Housing	0	0	0	0	0	0
Masonry	8	2	0	0	0	0
Steel	0	0	0	0	0	0
Wood	65	28	1	0	0	0
Total	81	30	1	0	0	0

Based on this scenario, HAZUS does not predict that any critical facilities will sustain moderate or significant damage. Therefore, it is anticipated that the hospital beds, emergency services,

and institutional services normally present in the county would continue to be functional in a 100-year flood scenario.

Table 5-5: Expected Damage to Essential Facilities

Classification	Total	Moderate Damage	Substantial Damage	Loss of Use
Fire Stations	5	0	0	0
Hospitals	1	0	0	0
Police Stations	5	0	0	0
Schools	21	0	0	0

Shelter Requirements

When flooding forces people from their homes, some will seek refuge at a public shelter. In this incident, it is anticipated that 542 households would be displaced and approximately 713 people would seek temporary shelter.

Building Related Losses

The total economic loss for the identified 100-year flood event is estimated to be \$22.63M.

Building-related losses are separated into two loss categories: direct building loss and business interruption loss. Building losses include structural damage and damage to contents. Business interruption losses include the costs associated with not being able to conduct normal business, displaced workers, and lost opportunities. Table 5-6 provides a summary of the anticipated losses.

Table 5-6: Building-Related Economic Loss Estimates

Area	Residential	Commercial	Industrial	Others	Total
<i>Building Loss</i>					
Building	8.40	0.83	0.97	0.42	10.62
Content	3.69	2.76	2.19	2.77	11.41
Inventory	0	0.10	0.32	0.14	0.55
<i>Business Interruption</i>					
Income	0	0.01	0	0	0.01
Relocation	0.01	0	0	0	0.01
Rental Income	0	0	0	0	0
Wage	0	0.01	0	0.01	0.02
Total	12.10	3.71	3.48	3.35	22.63

5.2.2 Earthquake

The simulated earthquake epicenter was assumed to be in Urbana, the county's most populated jurisdiction. The simulated earthquake had a magnitude of 5.0 on the Richter Scale and a depth of 5.0 km. The HAZUS loss estimation program utilized 2010 U.S. Census data for this scenario. There are an estimated 16,000 buildings in the county with a replacement value of \$4,386M.

Critical Facility Inventory

HAZUS separates critical facilities into essential facilities and high potential loss (HPL) facilities. Essential facilities are healthcare facilities like hospitals and clinics, fire and EMS stations, police stations, and operations centers. Schools are included in essential facilities. HPL facilities include dams, levees, nuclear power plants, military installations and hazardous material sites.

Table 5-7: Critical Facility Inventory

Essential Facilities		High Potential Loss Facilities	
<i>Facility Type</i>	<i>Number</i>	<i>Facility Type</i>	<i>Number</i>
Hospital	1 (20beds)	Hazardous Materials Sites	28
Schools	21		
Fire Stations	5		
Police Stations	5		
EOC	1		

Transportation and Utility Lifeline Inventory

Lifeline systems are defined as transportation and utilities. Transportation systems include highways, railways, and airports. Utility systems include water treatment and potable water plants, wastewater treatment plants, natural gas suppliers, fuel oil suppliers, electrical power plants, and communications hubs. The total value of these lifeline systems exceeds \$1,232M and includes more than 110 km of highway, 185 bridges, and 3,270 km of pipes.

Table 5-8: Transportation System Inventory

System	Components	Quantity	Replacement Value
Highways	Bridges	185	\$47.90M
	Segments	18	\$463.80M
Railways	Bridges	1	\$0.10M
	Facilities	2	\$5.30M
	Segments	13	\$62.50M
Bus	Facilities	1	\$1.10M
Airport	Facilities	2	\$21.30M
	Runways	2	\$75.90M
Total			\$678.00M

Table 5-9: Utility System Inventory

System	Components	Quantity	Replacement Value
Potable Water	Distribution Lines	N/A	\$32.70M
Waste Water	Distribution Lines	N/A	\$19.60M
	Facilities	7	\$489.50M
Natural Gas	Distribution Lines	N/A	\$13.10M
Communication	Facilities	1	\$0.10M
Total			\$555.00M

Building Damage

The estimated building damage according to HAZUS is extensive. The number of buildings projected to sustain moderate damage is 2,316, approximately 14% of all buildings in the county. It is estimated that 226 buildings would be destroyed. Table 5-10 summarizes the anticipated building damages.

Table 5-10: Expected Building Damage by Occupancy

Occupancy	None	Slight	Moderate	Extensive	Complete
Agriculture	107	48	61	34	9
Commercial	370	185	215	108	33
Education	12	5	6	3	1
Government	21	8	9	4	1
Industrial	135	63	79	43	13
Other Residential	784	402	416	190	45
Religion	57	23	21	10	3
Single Family Residential	8,017	3,050	1,509	416	122
Total	9,503	3,786	2,316	808	226

Depending on the type of building construction, damage from an earthquake can be more or less serious. Based on common types of construction, the scenario is extrapolated into damage according to type of construction type.

Table 5-11: Expected Building Damage by Building Type

Building Type	None	Slight	Moderate	Extensive	Complete
Wood	7,198	2,588	955	120	9
Steel	187	77	136	93	28
Concrete	63	26	33	18	4
Precast	60	21	36	26	5
Reinforced Masonry	24	7	12	8	1
Unreinforced Masonry	1,596	844	825	383	142
Manufactured Housing	377	223	318	189	36
Total	9,503	3,786	2,316	808	226

Essential Facility Damage

According to HAZUS estimates, only 3 of the county's hospital beds (16%) would be available and functional on the day of the earthquake. These would be needed by patients already hospitalized at the time of the earthquake and by those requiring hospitalization for injuries sustained in the incident. After one week, it is estimated that 28% of the beds would be available. By the 30-day mark, an estimated 59% would be fully functional. Anticipated damage to other essential facilities is detailed in Table 5-12.

Table 5-12: Expected Damage to Essential Facilities

Classification	Total	Moderate Damage >50%	Complete Damage > 50%	With Functionality >50% on Day 1
Hospitals	1	1	0	0
Schools	21	10	0	10
EOCs	1	1	0	0
Police Stations	5	1	0	4
Fire Stations	5	0	0	5

Transportation and Utility Lifeline Damage

Per HAZUS estimates, most highways, bridges, railways, and rail bridges will have more than 50% functionality on the first day after an earthquake and will continue to experience greater than 50% function throughout the recovery period. Limited damage to these transportation systems is expected.

Airports are also expected to have at least 50% functionality immediately following the incident. It is anticipated that two airports will sustain at least moderate damage. This damage is not expected to prevent them from functioning.

Tables 5-13 and 5-14 describe the anticipated damage to utility system facilities and pipelines.

Table 5-13: Expected Utility System Facility Damage

System	Total	Moderate Damage	Complete Damage	Day 1 >50% Functionality	Day 7 >50% Functionality
Waste Water	7	5	0	1	7
Communication	1	1	0	1	1

Table 5-14: Expected Utility System Pipeline Damage

Utility	Total Pipeline	Anticipated Leaks	Anticipated Line Breaks
Potable Water	1,635	146	37
Waste Water	981	105	26
Natural Gas	654	30	8

Electrical service is more difficult to restore. Table 5-15 outlines the number of customers anticipated to be without electric service following the incident. There are 15,329 households in the county.

Table 5-15: Expected Electric Power System Performance

Days Post-Event	Households Without Service
Day 1	7,655
Day 3	4,793
Day 7	1,835
Day 30	303
Day 90	9

Debris Generation

The amount of debris generated by an earthquake can be substantial. HAZUS classifies debris into two types based on the handling equipment required: brick/wood and reinforced concrete/steel. In the given scenario, a total of 130,000 tons of debris is anticipated. Brick/wood would comprise 49% of that amount. When converting these totals to truckloads, debris removal would require 5,240 truckloads, assuming 25 tons per truck.

Shelter Needs

Temporary public shelters are often necessary post-quake to provide housing for people displaced by the event. HAZUS estimates that 271 households would be displaced and 164 people would seek housing in a temporary shelter.

Casualties

The number of people estimated to be injured or killed by the earthquake is divided into four categories based on the extent of the victim's injuries:

- Level 1 – Require medical attention but not hospitalization
- Level 2 – Require hospitalization for non-life-threatening injuries
- Level 3 – Require hospitalization for critical injuries
- Level 4 – Fatalities

Casualty estimates are provided for 3 times of day that represent periods of the day that various sectors of the community operate at peak capacity loads. These figures are provided in Table 5-16.

Table 5-16: Casualty Estimates

Time	Location	Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	1	0	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	4	1	0	0
	Other Residential	25	5	1	1
	Single Family Residential	70	16	2	4
	TOTAL	99	22	3	6
2 PM	Commercial	68	16	2	4
	Commuting	0	0	0	0
	Educational	31	8	1	2
	Hotels	0	0	0	0
	Industrial	26	6	1	2
	Other Residential	6	1	0	0
	Single Family	16	4	1	1
	TOTAL	147	35	5	9
5 PM	Commercial	51	12	2	3
	Commuting	0	1	1	0
	Educational	2	1	0	0
	Hotels	0	0	0	0
	Industrial	16	4	0	1
	Other Residential	10	2	0	0
	Single Family Residential	28	6	1	2
	TOTAL	107	26	4	7

Economic Loss

Total economic loss for this earthquake scenario is estimated to be \$580.98M. This includes building and lifeline related losses and is based on the building inventory in the county. Building losses are examined in two categories: direct building loss and business interruption loss. Direct building losses include structural damage and damage to contents. Business interruption losses include the costs associated with not being able to conduct normal business, displaced workers, and lost opportunities.

Total estimated building losses are anticipated to be \$453.44M. Business interruption expenses account for 16% of this total. Residential structures are expected to sustain the greatest loss by far, more than 56% of the total loss for the county.

Table 5-17 provides a summary of the anticipated building-related losses. All figures are expressed in millions of dollars.

Table 5-17: Building-Related Economic Loss Estimates

Area	Single-Family	Other Residential	Commercial	Industrial	Other	Total
Income Losses						
Wage	0	1.07	11.92	1.04	0.91	14.94
Capital Related	0	0.46	10.01	0.62	0.33	11.43
Rental	4.70	2.93	5.57	0.33	0.49	14.02
Relocation	16.39	2.66	9.08	1.46	4.65	34.23
Capital Stock Losses						
Structural	27.66	6.02	16.51	5.36	8.04	63.58
Non-Structural	109.04	30.52	41.18	17.16	15.19	213.09
Content	44.52	9.37	23.02	12.14	9.36	98.41
Inventory	0	0	0.86	2.49	0.39	3.74
TOTAL	202.30	53.01	118.15	40.60	39.37	453.44

Transportation and Utility Lifeline Losses

Earthquakes often cause extensive damage to a community's infrastructure. Tables 5-18 and 5-19 depict the potential damage Champaign County could expect to its transportation and utility systems. Loss figures address only the cost to repair, not business interruption costs. Numbers are expressed in millions of dollars.

Table 5-18: Transportation System Economic Losses

System	Component	Inventory Value	Economic Loss
Highway	Segments	\$463.79M	0
	Bridges	\$47.91M	\$1.33M
Railways	Segments	\$62.49M	0
	Bridges	\$0.08M	0
	Facilities	\$5.33M	\$0.66M
Bus	Facilities	\$1.14M	\$0.51M
Airport	Facilities	\$21.30M	\$8.87M
	Runways	\$75.93M	0
Total		\$678M	\$11.4M

Table 5-19: Utility System Economic Losses

System	Component	Inventory Value	Economic Loss
Potable Water			
	Distribution Lines	\$32.70M	\$0.66M
Waste Water	Facilities	\$489.50M	\$114.88M
	Distribution Lines	\$19.60M	\$0.47M
Natural Gas	Distribution Lines	\$13.10M	\$0.14M
Communication	Facilities	\$0.10M	\$0.03M
Total		\$555.03M	\$116.17M