Champaign County Multi-Jurisdictional Hazards Mitigation Plan

Preliminary Review Draft – June 5, 2015

PRELIMINARY REVIEW DRAFT

Update of the August, 2009 Champaign County
Multi-Jurisdictional Natural Hazards Mitigation Plan

CHAMPAIGN COUNTY
rpc
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The five-year update to the Champaign County Multi-Jurisdictional Hazards Mitigation Plan during 2014-2015 was funded by the Federal Emergency Management Agency through the Illinois Emergency Management Agency State-Local Hazard Mitigation Grant Program, with a local match provided by Champaign County, Illinois and plan update project facilitation provided by Champaign County Regional Planning Commission, www.ccrpc.org, and technical assistance provided by the Champaign County GIS Consortium, www.ccgisc.org.

Preparation of the Champaign County Multi-Jurisdictional Natural Hazard Mitigation Plan, developed during 2007-2009 was funded through a Pre-Disaster Mitigation Grant Program Planning Grant from the Federal Emergency Management Agency, with the local match provided by Champaign County, and project facilitation provided by Champaign County Regional Planning Commission.

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Overview

The Champaign County Multi-Jurisdictional Hazard Mitigation HMP (HMP) identifies and prioritizes community policies, actions and tools to implement in order to reduce potential risk and potential for future losses associated with the occurrence of selected natural and technical hazards. The HMP is developed to be useful to each participating jurisdiction. The HMP can be used to increase awareness of potential natural hazards and technical hazards; and to understand potential losses from hazard events.

The HMP meets the planning criteria of the *Disaster Mitigation Act of 2000* including specific planning objectives established by the Federal Emergency Management Agency (FEMA): coordination among agencies, integration with other planning efforts & existing programs, and state coordination of local mitigation planning.

The HMP is intended to be adopted by each participating local government.

The HMP includes the following information specific to the Plan Area (described in Chapter 2):

- profiles of selected natural and technical hazards;
- hazards risk assessments;
- hazard mitigation goals;
- jurisdiction-specific mitigation action implementation schedule;
- schedule to monitor, evaluate and update the HMP; and
- information regarding opportunities for continued public involvement.

Planning Process

The planning process to develop and update the HMP encompassed multiple tasks, with opportunities provided for citizen input public participation throughout. Table 1-1 is a summary of the major planning process tasks, and project staff and planning teach efforts to involve participating jurisdictions, and encourage citizen input and public participation.

During the planning process, HMP project staff encouraged representatives of Champaign County, adjacent counties, representatives of the 24 municipalities located wholly or partially within Champaign County, and key public safety representatives of the University of Illinois at Urbana-Champaign (UIUC) and Parkland College to provide ideas and feedback regarding the HMP development and update efforts.

Each invited local government bodies agreed to participate in HMP development, and each provided a resolution indicating their intent to participate in HMP development and review and potentially adopt the HMP, and a separate similar resolution prior to the start of the HMP update. The invited public safety representatives of UIUC and Parkland College agreed to participate in the HMP development and update process.

Figure 1-1 is a map indicating participating jurisdictions within the Plan Area.

Table 1-1: Description of HMP Planning Process

Determine Plan Area and Organize Resources
- encourage jurisdictions to participate
  - Project staff, consisting of project manager, planning intern, and administrative support staff, publicized HMP development to Champaign County, neighboring counties, all municipal jurisdictions situated within or partially within Champaign County, University of Illinois at Urbana-Champaign, and Parkland College.
  - Project staff solicited and obtained agreement of 27 jurisdictions (including 25 local government jurisdictions and two higher education institutions) to participate in HMP development and subsequent update.

Building Planning Team
- recruit planning team and recruit advisory group
  - Project staff recruited Planning Team Chair, Planning Team members, and Advisory Group members.

Create an Outreach Strategy
- publicize project
- encourage public participation throughout HMP development
  - To encourage public participation throughout the development and HMP update, the Planning Team agreed to a multi-faceted outreach strategy that encompassed use of an interactive website, interviews, newsletters, press releases, area-specific meetings, and outreach via the Play It Safe community event, and project review open houses. Project staff developed templates of outreach materials for use by all participants.
- establish and maintain interactive website
  - Project staff established and maintains HMP website.

Profile Hazards & Assess Risks
- identify hazards
  - Planning Team selected natural hazards to include in 2009 HMP, and agreed to add selected technical hazards to HMP update.
- profile hazard events
- inventory assets and estimate potential losses
- review findings with Planning Team, Advisory Group, public, and participating jurisdictions
  - Project staff updated natural hazards profiles and provided hazards profiles for technical hazards selected by Planning Team.
  - Champaign County GIS Consortium staff coordinated use of HAZUS-MH software and related digital data collection for risk assessments and subsequent risk assessments updates conducted for riverine flood events and earthquake events.
  - With input from Champaign County GIS Consortium, project staff compiled data and drafted risk assessment descriptions for HMP.
  - Planning Team and Advisory Group reviewed and provided comments regarding draft HMP hazards profiles and risk assessment data, followed by a public review and comment period.
- develop newsletter updates and press releases
  - Project staff developed press releases, newsletters, and display posters regarding current hazards profiles and risk assessments information.

Review Community Capabilities
- review capabilities of each jurisdiction
  - Project staff and Planning Team researched existing programs, plans, ordinances and documents for each participating jurisdiction relevant to HMP development and to implementation of potential mitigation actions.

Table 1-1: Description of HMP Planning Process (continued)

Review Community Capabilities (continued)

- Project staff interviewed key representative(s) of each participating municipal jurisdiction to provide updates and obtain feedback regarding HMP development and update.

Develop Mitigation Plan

- formulate goal & determine objectives
- conduct public survey or otherwise encourage public input regarding possible mitigation ideas
  - During HMP development, project staff developed and publicized a public preference survey to receive input regarding potential mitigation action preferences.
- identify & prioritize mitigation action(s)
  - Project staff provided Planning Team a review of survey results, background information regarding identification of goals and objectives, types of mitigation actions, and a proposal for prioritizing mitigation actions.
- review and update implementation strategy
  - Planning Team rated various mitigation options and provided feedback to project staff.
  - Based on Planning Team input, project staff drafted HMP review document containing current goals and objectives, proposed HMP mitigation actions, and implementation strategy.
  - Project staff invited Planning Team and Advisory Group review and comment of proposed draft HMP, followed by a public review and comment period.
  - Project staff met with representatives of each participating local government, the University of Illinois at Urbana-Champaign, and Parkland College to review status of existing mitigation actions, and to consider proposed new mitigation actions.

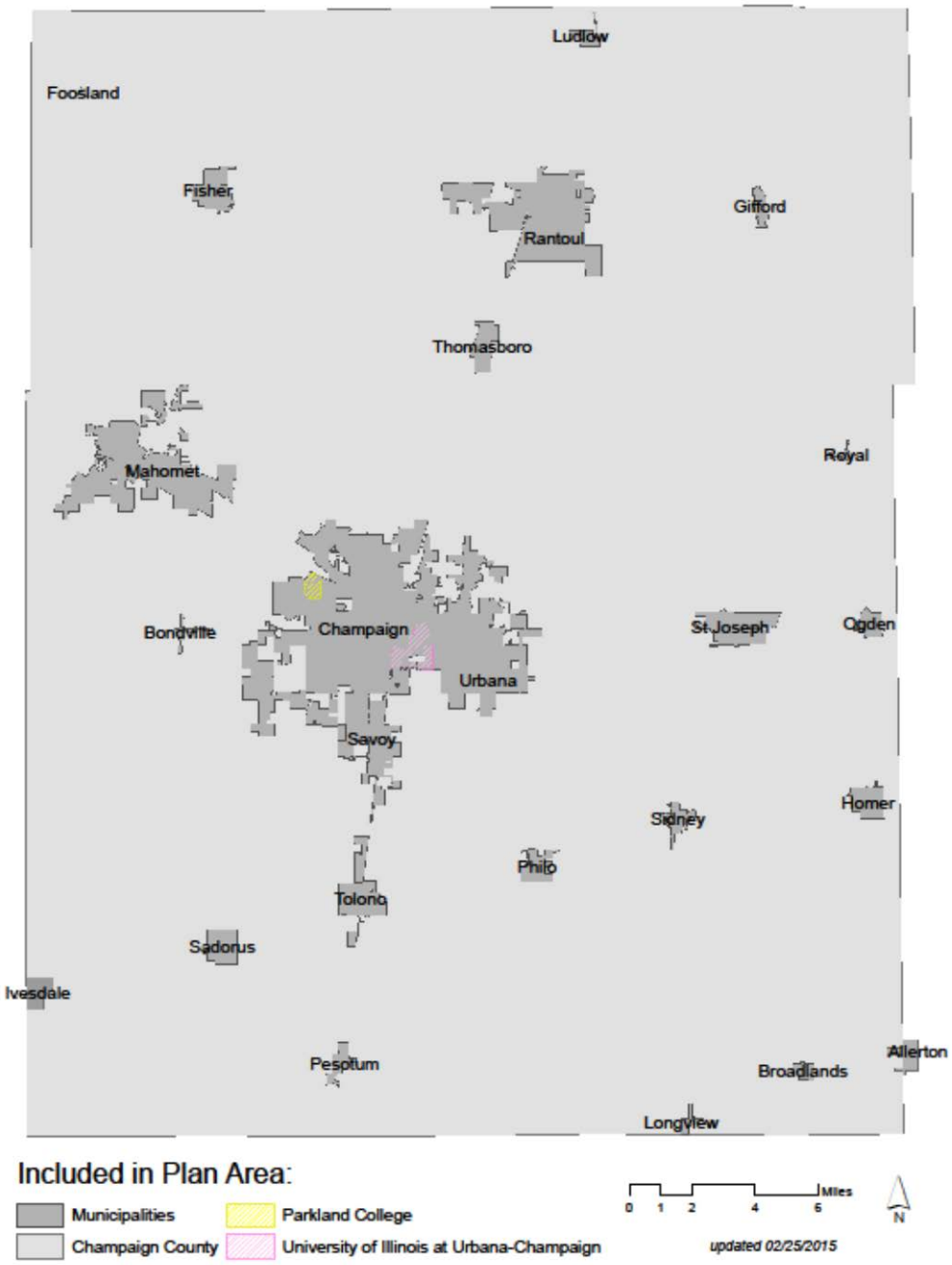
Implement HMP & Monitor Progress

- review and update options for HMP maintenance
  - Project staff reviewed options for HMP maintenance with Planning Team members.
  - Planning Team members reached consensus regarding a preferred HMP maintenance schedule.

Review and Adopt Plan

- disseminate information regarding proposed mitigation actions for each jurisdiction, invite additional comments and input, and request plan review
  - Project staff updated draft HMP document for review of Planning Team and Advisory Group prior to a public review and comment period.
  - Project staff and Planning Team reviewed 'Local Mitigation Plan Review Tool' with regard to draft HMP update prior to submitting HMP update for initial state and FEMA plan review.
- based on review comments and input received, make final HMP revisions as appropriate
  - Project staff received FEMA issued 'approvable pending adoption' letter regarding draft HMP update.
  - Planning Team members requested local government jurisdictions which they represented during HMP development and update process to review and adopt HMP.
  - Project staff requested local government jurisdictions which they represented on Planning Team during HMP development and update process to review and adopt HMP.
- finalize revisions to HMP as need be
  - On an as-needed basis, project staff incorporated final revisions to HMP, only per request of the particular local government jurisdiction prior its adoption of HMP, and specific only to the particular participating jurisdiction.

Figure 1-1. Participating Jurisdictions within Plan Area



All Participating Jurisdictions Represented on Planning Team

Project staff selected a 'combination' approach to represent participating jurisdictions on the Planning Team. This approach allowed for the direct representation of the seven largest populated local government jurisdictions (an estimated 90% of Plan Area population as of 2010) on the Planning Team, and for the authorized representation of the 20 smaller municipalities on the Planning Team (an estimated 10% of Plan Area population based on the 2010 U.S. Census Bureau estimates. Table 1-2 lists all participating jurisdictions and their estimated populations.

Table 1-2. Representation of Participating Jurisdictions on Planning Team

Key
Jurisdiction directly represented on Planning Team.
Jurisdiction represented by CCRPC project staff on Planning Team.

	Participating Jurisdiction	2010 Population
1	University of Illinois at Urbana-Champaign (UIUC)	44,942 students [1]
2	Parkland College	9,715 students [1]
3	Unincorporated area of Champaign County	29,066
4	City of Champaign	81,055
5	City of Urbana	41,250
6	Village of Rantoul	12,941
7	Village of Savoy	7,280
8	Village of Mahomet	10,170 [2]
9	Village of St. Joseph	3,967
10	Village of Tolono	3,447
11	Village of Fisher	1,881
12	Village of Philo	1,466
13	Village of Thomasboro	1,126
14	Village of Homer	1,193
15	Village of Sidney	1,233
16	Village of Gifford	975
17	Village of Ogden	810
18	Village of Pesotum	551
19	Village of Bondville	443
20	Village of Sadorus	416
21	Village of Ludlow	371
22	Village of Broadlands	349
23	Village of Ivesdale	267
24	Village of Allerton	277
25	Village of Royal	293
26	Village of Longview	153
27	Village of Foosland	101

Source: U.S. Bureau of the Census Population Estimates, State and County Quick Facts

Table 1-2 Notes:

1. Student enrollment figures as of Fall 2013 are based on the UIUC Common Data Set 2013-2014 for Institutional Enrollment as of October 15, 2013, and Parkland College Office of Admissions and Enrollment Management estimate accessed online during 2015. The student population is counted as part of the most current population estimates indicated for the underlying participating municipal jurisdictions.

2. Lake of the Woods, a Census Designated Place, is included as part of the Village of Mahomet 2010 Census Population estimate.

HMP Planning Team

For the development of the HMP and subsequent HMP update, project staff recruited Champaign County EMA Coordinator to serve as HMP Planning Team Chairperson and recruited a twelve-member HMP Planning Team to guide project staff efforts throughout the project duration. Planning team members were chosen to represent the most densely populated participating jurisdictions in the Plan Area. Duties of the Planning Team members included providing data and information about their respective jurisdictions, participating in the development and update of the HMP, and, as applicable, to bring forward the HMP for review and to request adoption by their respective local government jurisdictions.

Table 1-3 lists HMP Planning Team members who represented each local government jurisdiction within the Plan Area, specifically the jurisdiction represented and the person's position or title and agency within the jurisdiction.

Table 1-4 lists HMP Planning Team members, and their respective position or title, representing the two participating institutions of higher education, namely UIUC and Parkland College.

HMP Advisory Group

Project staff recruited a broad-based HMP Advisory Group to support the HMP Planning Team in their review of the draft HMP document and to provide their additional input at key stages during the project. Advisory group members included representatives of school districts in the Plan Area, public service providers, private service providers, and selected government agency representatives. Table 1-5 lists the HMP Advisory Group members and their affiliation.

Table 1-3. Planning Team Representatives: Participating Local Government Jurisdictions

Jurisdiction	Representatives on HMP Planning Team: 2007-2009	Representatives on HMP Planning Team: 2014-2015
Champaign County	▪ Director, Champaign County Emergency Management Agency ▪ Emergency Response Planner, Champaign-Urbana Public Health District	▪ Coordinator, Champaign County Emergency Management Agency ▪ Deputy Coordinator, Champaign County Emergency Management Agency ▪ Emergency Preparedness Planner, Champaign-Urbana Public Health District
City of Champaign	▪ Emergency Management Coordinator, Champaign Fire Dept. ▪ Acting Deputy Chief, Champaign Fire Department ▪ Assistant Planning Director, Planning & Development Dept.	▪ Fire Marshall, Champaign Fire Dept. ▪ Deputy Chief/Training Officer, Champaign Fire Dept.
Village of Mahomet	▪ Village Planner	▪ Community Development Director
Village of Rantoul	▪ Chief Inspector	▪ Superintendent, Inspections, Planning & Zoning
Village of Savoy	▪ Public Education & Prevention Coordinator, Savoy Fire Dept.	▪ Lieutenant/EMT-Intermediate, Savoy Fire Dept.
Village of St. Joseph	▪ Village of St. Joseph Trustee	▪ Fire Chief, St. Joseph-Stanton Fire Department & Emergency Services[1]
City of Urbana	▪ Division Chief, Prevention and Education, Urbana Fire Dept. ▪ Planning Manager, Community Development Services	▪ Division Chief, Urbana Fire Dept. ▪ Interim Planning Manager, Community Development Services
Village of Allerton Village of Bondville Village of Broadlands Village of Fisher Village of Foosland Village of Gifford Village of Homer Village of Ivesdale Village of Longview Village of Ludlow Village of Ogden Village of Pesotum Village of Philo Village of Royal Village of Sadorus Village of Sidney Village of Thomasboro Village of Tolono	Authorization Provided by Village Board of Trustees to Champaign County Regional Planning Commission HMP Project Staff to Represent Jurisdiction on Planning Team[1]	Authorization Provided by Village Board of Trustees to Champaign County Regional Planning Commission HMP Project Staff to Represent Jurisdiction on Planning Team[2]

Table 1-3 Note:

1. The HMP Planning Team member representing the Village of St. Joseph passed away mid-way through the 2015 Update project. HMP Update project staff represented the Village for the remaining portion of the update project.

Table 1-4. Planning Team Members Representing Institutions of Higher Education

	Representative on HMP Planning Team: 2007-2009	Representative on HMP Planning Team: 2014-2015
Parkland College	▪ Public Safety Lieutenant ▪ Public Safety Director	▪ Director of Public Safety/Chief of Police
University of Illinois at Urbana-Champaign	▪ Director, Office of Campus Emergency Planning	▪ Police Lieutenant, Division of Public Safety ▪ Emergency Planning Coordinator, Division of Public Safety

Table 1-5. Advisory Group Members

Advisory Group Members: 2007-2009	Advisory Group Members: 2014-2015
▪ Executive Director, Housing Authority of Champaign County ▪ County Engineer, Champaign County Highway Department ▪ Emergency Services Coordinator, Central IL Chapter, American Red Cross ▪ Director of Information Technology, Champaign School District ▪ Manager of Marketing and Public Relations, Provena Medical ▪ Director of Emergency Preparedness, Carle Foundation Hospital ▪ Superintendent, Heritage Community Unit School District ▪ Senior Hydro geologist and Assistant to Director for Environmental Initiatives, Illinois State Geological Survey, UIUC ▪ Executive Director, Urbana-Champaign Sanitary District ▪ Superintendent, Ludlow Community Consolidated School District ▪ School Resource Officer, St. Joseph-Ogden Community High School District ▪ Superintendent, Mahomet-Seymour Community Unit School District ▪ Assistant Superintendent, Urbana School District ▪ Superintendent, St. Joseph Community Consolidated School District ▪ Planning Director, Champaign County Forest Preserve District ▪ Superintendent, Thomasboro Community Consolidated School District ▪ Superintendent, Rantoul Township High School District ▪ Superintendent, Gifford Community Consolidated School District ▪ Superintendent, Tolono Community Unit School District ▪ Regional Coordinator, Illinois Emergency Management Agency ▪ Parts Administrator, Champaign-Urbana Mass Transit District ▪ Resource Conservationist, Champaign County Soil and Water Conservation District ▪ Superintendent, Fisher Community Unit School District ▪ Superintendent, Prairieview Community Consolidated School District	▪ Executive Director, Housing Authority of Champaign County ▪ County Engineer, Champaign County Highway Department ▪ Business Development & Strategic Services, Presence Medical Center ▪ Director of Emergency Preparedness, Carle Foundation Hospital ▪ Superintendent, Heritage Community School District #8 ▪ Superintendent, St. Joseph-Ogden Community High School District #305 ▪ Superintendent, Mahomet-Seymour Community Unit School District ▪ Superintendent, Urbana School District #116 ▪ Superintendent, Gifford Community Consolidated School District #188 ▪ Safety and Training Director, Champaign-Urbana Mass Transit District ▪ Research Conservationist, Champaign County Soil and Water Conservation District ▪ Illinois State Climatologist, Illinois State Water Survey ▪ Emergency Services Coordinator, Central Illinois Chapter, American Red Cross

Planning Team Meetings

The Planning Team held seven meetings between April, 2008 and May, 2009 to guide and review each stage of HMP development.

Meeting One: The initial meeting of Planning Team members included an introduction to the HMP development process, and the setting of guidelines for participation as an HMP Planning Team member. An overview of required HMP elements was provided, including means of encouraging public participation throughout HMP development, within project budget. The idea to form an Advisory Group received support of the Planning Team, and the HMP timeline was reviewed.

Meeting Two: Existing programs, plans, ordinances and documents of participating jurisdictions were reviewed as they related to HMP development. The use of HAZUS-MH software was described for the Risk Assessment stage. The methods used to identify buildings, infrastructure, and critical facilities were reviewed. Hazard identification and hazard profiling were reviewed.

Meeting Three: Review of Risk Assessment findings occurred. An overview of the Mitigation Plan Development Stage was provided. The Planning Team formulated HMP goal statements.

Meeting Four: Plans for a public preference survey regarding mitigation actions were discussed. Planning Team members began the process of identifying existing and proposed mitigation actions for their jurisdiction.

Meeting Five: Planning Team members continued review of existing and proposed mitigation actions. Results of the HMP public preference survey were reviewed. Planning Team members decided on a method for prioritizing mitigation actions.

Meeting Six: Planning Team members prioritized the ongoing and proposed mitigation actions selected for each of their jurisdictions. Members discussed the HMP maintenance process and reached consensus regarding a method to monitor, evaluate, and update the HMP.

Meeting Seven: Planning Team members offered review comments of the HMP Review Draft and planned the public HMP review meeting.

The HMP Planning Team held five public meetings between August, 2014 and June, 2015 during the HMP update.

Meeting One: Planning Team members reviewed the purpose of the HMP update project, project scope, stages of the HMP update process, proposed project timeline and a tentative schedule of Planning Team meetings. Planning Team members considered options for an effective outreach strategy to encourage public participation during the HMP update process. The Planning Team discussed various technical hazards to

potentially include in the HMP update, and supported again forming a HMP Advisory Group to assist in review of the draft update to the HMP.

Meeting Two: Planning Team members selected technical hazards to include in the HMP update, reviewed preliminary updates to hazards profiles for natural hazards, and received a progress report on updated risk assessments underway. Planning Team members agreed on a proposed outreach strategy for the update project.

Meeting Three: Planning Team members reviewed preliminary risk assessment update findings, status of capability assessment updates for the participating jurisdictions, potential types of updates to adopted goals and objectives. Members agreed to include the concept of 'resiliency' where applicable in HMP goals and objectives. Members discussed general progress of implementation of mitigation actions identified for each participating jurisdiction.

Meeting Four: Project staff briefed Planning Team members regarding Advisory Group and public review open comment period beginning for the Draft Hazard Profiles and Risk Assessment sections, status of capability assessment updates, and reviewed a revised version of proposed adjustments to the HMP goals and objectives. Planning Team members provided input regarding the proposed HMP goals and objectives to include climate change and resiliency concerns. Planning Team members continued review of status and updates to mitigation actions.

Meeting Five: Planning Team members reached consensus on a draft of final proposed updates to the HMP goals and objectives. Project staff updated members regarding status of revisions to address remaining updates to the full HMP and reviewed the timeline for review and adoption of the draft HMP. Planning Team members agreed to a HMP maintenance plan, and discussed open house and outreach opportunities at present stages of the draft HMP open public review and comment period.

Outreach Strategy to Encourage Public Participation

Providing continuous opportunities for citizen input and participation during the development of the HMP and during the subsequent HMP update was a priority for the Planning Team and project staff. The outreach strategy and related efforts are described below.

Initial HMP Development and Review: March, 2008 through June, 2009

- Outreach. Key representatives of all municipalities in or partially in the County were invited to participate in developing a multi-jurisdictional HMP. Each municipal jurisdiction placed the request to participate in developing an HMP on its Council or Trustee public meeting agenda. By request, HMP project staff reviewed benefits of mitigation planning with Village Trustees at public meetings in the Villages of Tolono, Pesotum, and Sadorus.

- Interactive HMP Website. During the Organization Stage, the HMP website (http://www.ccrpc.org/HMP) was created as a means to both share information with the public

about development of the HMP and to provide an interactive means to allow public feedback regarding the HMP during its development. The website included agendas and minutes of each HMP Planning Team meeting, plus related documents and links. Participating jurisdictions were encouraged to include a link to the HMP website from their own websites.

- Invitation to Adjacent Local Government Jurisdictions. Project staff contacted County administrators and emergency management coordinators of counties adjacent to the Plan Area to inform them regarding the development of the HMP, to solicit their input regarding any aspect of the multijurisdictional HMP project. These contacts were made to representatives of Ford, McLean, Piatt, Douglas, and Vermilion Counties.

- Press Releases. Press releases were issued during the risk assessment, mitigation planning, and implementation stages of HMP development. The press releases included information about opportunities for public participation in development of the HMP.

- Information Displays. Posters informing the public about ways to participate in HMP development were displayed at public libraries within the HMP area. Posters included information about: types of natural hazards reviewed, types of risks assessed, ongoing mitigation planning efforts, information about an opportunity to provide feedback in a preference survey about hazard mitigation measures, who to contact for additional information, and date, time and location of the public meeting scheduled to occur toward the end of the HMP development process.

- Public Preference Survey. In December, 2008 and through mid-January, 2009, a preference survey regarding selected mitigation measures under consideration for each jurisdiction was made available to members of all participating jurisdictions online. Paper copies of the preference survey were provided to the primary contact for each participating jurisdiction and were made available upon request.

- Public Meetings. Public meetings were held with the governing bodies of each local government participating in HMP to review and to consider adoption of the proposed HMP. Comments and questions from local government officials and the public were addressed by HMP Planning Team members or project staff at these meetings.

Update of HMP and review: June, 2014 through October, 2015

- Initial Outreach. Key representatives of all municipalities in or partially in the County were invited to participate in the five-year update of HMP. Each municipal jurisdiction placed the request to participate in developing an HMP on its Council or Trustee public meeting agenda. HMP project staff reviewed the five-year HMP update and benefits of mitigation planning with Village Trustees at public meetings upon request.

- Interactive HMP Website. An improved HMP website was developed to both share information with the public about the planning process and update of the HMP and to provide an interactive means to allow public feedback regarding the HMP update. The website included agendas and minutes of each HMP Planning Team meeting, plus related documents and links. Participating jurisdictions were encouraged to include a link to the HMP website from their own websites.

- Invitation to Adjacent Local Government Jurisdictions. Project staff contacted County administrators and emergency management coordinators of counties adjacent to the Plan Area to inform them of the planned update of the HMP, and to welcome their participation and input regarding any aspect of the HMP update project. These contacts were made to representatives of Ford, McLean, Piatt, Douglas, and Vermilion Counties.

- Newsletters. Twice during the HMP update process, and once during the HMP update open public review comment period, a newsletter was mailed to the top local government official of each participating local government for sharing or noting at their City Council or Village Board of Trustees. The newsletters contained timely information regarding topics under current review by the HMP Planning Team at the time during the update process. Each newsletter contained an invitation to the public to attend and provide input or questions at HMP Planning Team meetings. Contact information and the HMP website URL were provided in the newsletter.

- Community Event. HMP Planning Team Chairperson and HMP project staff attended a 'Play It Safe' community event to share information about the HMP update and answer questions. This event took place prior to the open public review period.

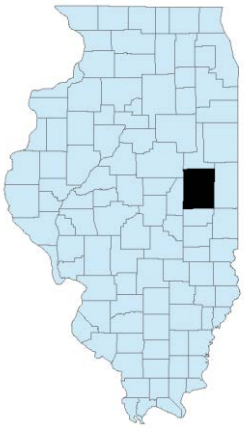
- Open houses. HMP project staff and HMP Planning Team hosted three promoted and advertised open house sessions to share information about the HMP update, answer questions, and receive public input. These open house sessions occurred during the public review period.

- Public Meetings. Public meetings were held with the governing bodies of each local government participating in HMP, on an as-needed basis during the HMP update, and following development of the Draft Update of the HMP to review and to consider adoption of the proposed HMP. Comments and questions from local government officials and the public were addressed by HMP Planning Team members or project staff at these meetings.

Chapter 2, pp. 14-24Plan Area

Located in east central Illinois, the Plan Area encompasses the geographic area of unincorporated Champaign County and 24 municipalities situated wholly or partially within Champaign County, and includes the main campus areas of Parkland College and the University of Illinois at Urbana-Champaign. The total surface area of the Plan Area is approximately 998.4 square miles, consisting of an estimated 995.8 square miles of land and approximately two square miles of water surface.

Figure 2-1. Location



Population and Growth within Plan Area

The 2010 U.S. Census Bureau population estimate for the Plan Area is 201,372. Population projections are that the Plan Area population will total approximately 250,000 people by the year 2040.[1] Figure 2-2 is a diagram of population density within the Plan Area which indicates moderate but stabilized population growth has occurred, with a focus on growth in the urban areas since about 1980. While some population growth has occurred in core areas of the largest municipalities, a significant amount has also occurred on the fringes of these municipalities, converting rural land for urban uses. Some unincorporated areas have experienced recent population growth. This is especially noted in townships closest to the larger municipalities.

Figure 2-3 is a map of the growth of municipal areas in the Plan Area occurring between 1972 and 2015. Since 1972, the acreage of Plan Area surface located within the corporate limits of a municipality has increased by 151 percent.

Figure 2-2. Population Density of Plan Area

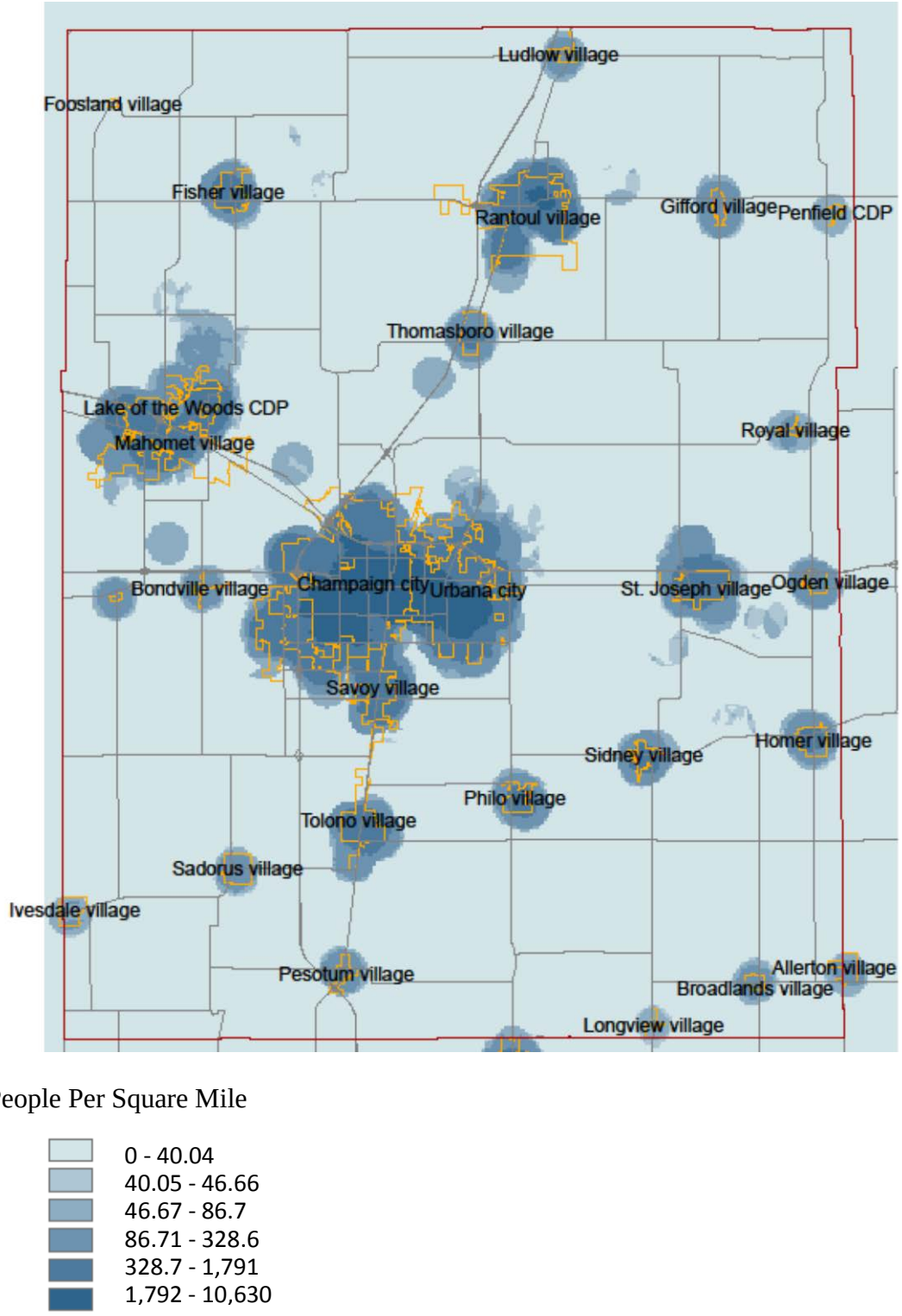
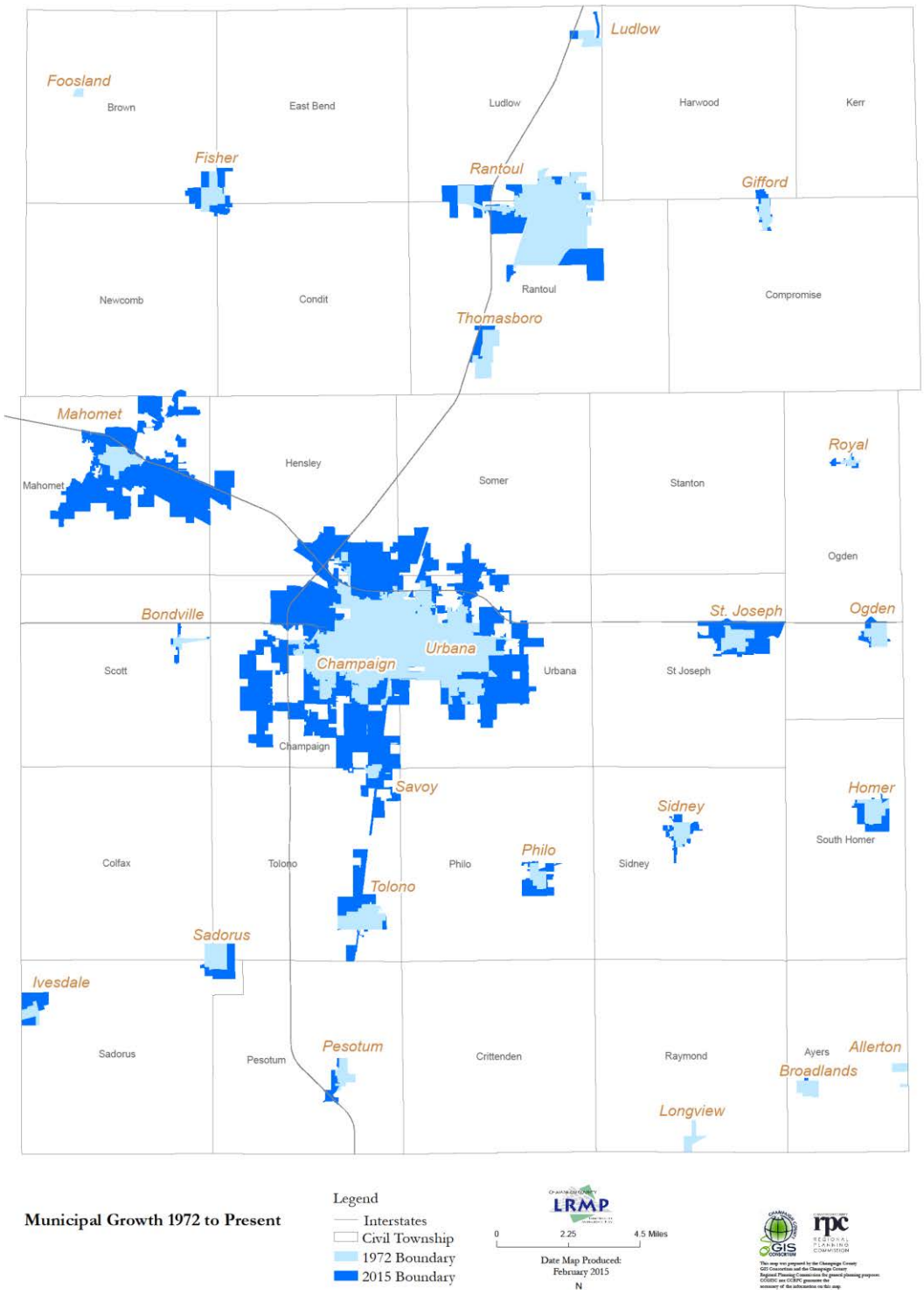


Figure 2-3. Growth of Municipalities within Plan Area



Land Uses and Future Development Trends within Plan Area

Agriculture
Farmlands (cropland) constitute the largest share of land use by acreage within the Plan Area (Figure 2-4). An estimated 76 percent of soils within the Plan Area are considered 'Best Prime Farmland'.[2] Farm development trends are that the number of farms is declining as the average farm size has increased, with the largest percentage of farms continuing to be farms that are 100 to 499 acres.

Commercial and Industrial Development
The vast majority of commercial and industrial development within and near Champaign County occurs within urban areas. That general trend is not expected to change, given the County's policies to limit development within agricultural areas and to preserve agricultural areas. In the rural zoning districts, County zoning regulations allow only for establishment of certain types of low intensity commercial and industrial development that do not require public sanitary sewer, do not create traffic conflicts, and that are compatible with agricultural operations and other neighboring land uses.

Limits on Residential Development in Rural Areas
With certain permit limitations in place since 1999, piecemeal residential development continues to occur in rural areas. This type of development can create issues for adjacent lands, the transportation network, services infrastructure, natural environment and wildlife habitat, among others. The limited available of groundwater in portions of the Plan Area often presents challenges for large rural subdivisions. Since 1999, development of rural residential subdivisions has been regulated by County 'Rural Residential Overlay' requirement which entails a public hearing and detailed review of the residential development proposal as it relates to site suitability and agricultural compatibility.

Public Safety and Emergency Services
Remote rural locations in the Plan Area which are located more than five miles from fire protection services and necessarily receive a different level of service for fire protection and emergency services. Fire protection and infrastructure provision are important in protecting the health and safety of residents. Maintaining the shortest distance to these services is important.

Future Land Use
Adopted municipal comprehensive plans are available for 12 municipalities in the Plan Area. The *Champaign County Land Resource Management Plan* includes a future land use map and land use management areas map for unincorporated Champaign County. These land use plans are intended to guide decisions regarding accommodating expected housing, commercial, industrial land, and infrastructure requirements of an increasing population base.

Inventory of Structures
All structures within the Plan Area were grouped into seven general categories based on occupancy type and use:

- Residential — single family dwellings, multi-family dwellings, mobile homes, temporary lodging, institutional dormitories, and nursing homes
- Commercial — structures used for retail trade, wholesale trade, personal and repair services, professional/technical/business services, banks, hospitals, medical offices/clinics, entertainment & recreation, theaters, and parking
- Industrial — structures used for light industry, heavy industry, food/drug/chemical production, high technology, and construction
- Agricultural — structures whose main purpose is to support agricultural production
- Religion — churches and some non-profit organizations
- Government — government buildings providing general services, government emergency response agencies
- Education — schools/libraries and colleges/universities

Table 2-1. Structures in Plan Area by General Occupancy Type

	Total Structures	Residential	Commercial	Industrial	Agricultural	Religion	Government	Education
Plan Area Total	61,905	60,234	1,215	151	42	125	82	56
Unincorporated	12,767	12,545	142	35	29	13	1	2
Village of Allerton	129	128	1	0	0	0	0	0
Village of Bondville	204	203	0	1	0	0	0	0
Village of Broadlands	152	150	1	0	0	0	0	1
City of Champaign	22,287	21,500	607	50	7	53	40	30
Village of Fisher	702	696	4	0	1	0	0	1
Village of Foosland	46	44	2	0	0	0	0	0
Village of Gifford	372	366	5	0	0	0	1	0
Village of Homer	506	496	3	1	0	1	2	0
Village of Ivesdale	129	127	1	0	0	0	1	0
Village of Longview	69	68	1	0	0	0	0	0
Village of Ludlow	168	168	0	0	0	0	0	0
Village of Mahomet	2,485	2,441	29	6	1	6	1	1
Village of Ogden	325	320	3	2	0	0	0	0
Village of Pesotum	247	246	1	0	0	0	0	0
Village of Philo	548	543	3	0	0	1	1	0
Village of Rantoul	4,351	4,240	77	23	0	6	5	0
Village of Royal	136	136	0	0	0	0	0	0
Village of Sadorus	187	182	3	1	0	0	1	0
Village of Savoy	2,392	2,354	30	2	1	4	1	0
Village of Sidney	479	475	3	0	0	0	1	0
Village of St. Joseph	1,409	1,390	10	2	0	4	3	0
Village of Thomasboro	481	475	2	2	0	0	1	1
Village of Tolono	1,252	1,238	7	1	1	4	1	0
City of Urbana	10,085	9,703	280	25	2	33	22	20
University of Illinois at Urbana-Champaign and Parkland College [1]								

Table 2-1 Notes:

1. Structures owned by the University of Illinois and Parkland College are omitted from Table 2.1 data.
2. Data regarding structures is current as of January, 2015.

Table 2-2. Estimated Structure Replacement Cost by Occupancy Type

	Average Cost Per Square Foot (dollars)	Average Size (square feet)	Average Replacement Cost (dollars)
Residential			
Single Family Dwelling *(Refer to Table 2-3)*			
Mobile Home	41.97	1,475	61,906
Multi Family Dwelling *(Refer to Table 4-4)*			
Temporary Lodging	189.42	135,000	25,571,700
Institutional Dormitory	203.86	25,000	5,096,500
Nursing Home	207.02	25,000	5,175,500
Commercial			
Retail Trade	109.60	110,000	12,056,000
Wholesale Trade	106.43	30,000	3,192,900
Personal and Repair Services	129.25	10,000	1,292,500
Professional/Technical/Business	175.24	80,000	14,019,200
Banks	253.94	4,100	1,041,154
Hospital	335.67	55,000	18,461,850
Medical Office/Clinic	241.31	7,000	1,689,170
Entertainment & Recreation	223.98	5,000	1,119,900
Theaters	167.98	12,000	2,015,760
Parking	76.21	145,000	11,050,450
Industrial			
Heavy	130.37	30,000	3,911,100
Light	106.43	30,000	3,192,900
Food/Drugs/Chemicals	206.74	45,000	9,303,300

Source: HAZUS 2.2 Software, based on 2009 RS Means Data

Table 2-3. Estimated Average Replacement Costs for Single Family Dwellings

Home Type	No Basement	Unfinished Basement	Finished Basement
Average Replacement Cost per Square Foot (dollars)			
1 Story Economy	84.03	25.50	8.80
2 Story Economy	90.11	14.35	5.80
3 Story Economy	90.11	14.35	5.80
Split Level Economy	83.59	14.35	5.80
1 Story Average	115.20	30.80	10.55
2 Story Average	112.40	19.75	6.90
3 Story Average	118.19	15.60	5.40
Split Level Average	104.01	19.75	6.90
1 Story Custom	143.55	50.40	19.50
2 Story Custom	141.49	28.95	11.65
3 Story Custom	147.21	21.05	8.65
Split Level Custom	131.78	28.95	11.65
1 Story Luxury	175.81	54.25	20.55
2 Story Luxury	168.80	31.75	12.55
3 Story Luxury	174.21	23.40	9.45
Split Level Luxury	156.91	31.75	12.55

Source: HAZUS 2.2 Software, based on 2009 RS Means Data

Table 2-4. Estimated Average Replacement Costs for Multi-Family Dwellings

Home Type	Average Replacement Cost Per Square Foot (dollars)	Average Size (square feet)	Average Replacement Cost (dollars)
Duplex	113.69	2,200	250,118
Triplex/Quads	99.95	4,400	439,780
Apartment 5-9 Units	179.48	8,000	1,435,840
Apartment 10-19 Units	168.80	15,000	2,532,000
Apartment 20-49 Units	184.58	40,000	7,383,200
Apartment 50+ Units	173.83	80,000	13,906,400

Source: HAZUS 2.2 Software, based on 2009 RS Means Data

Critical Facilities

Critical facilities are buildings or infrastructure considered as vital to protect from the adverse impacts of a natural hazard by means of mitigation. Within the Plan Area, if a facility met one or more of the following criteria, it was identified as a critical facility:

- a facility which is essential to managing and responding to a hazard event;
- a facility which houses or contains vulnerable populations, specifically children or the elderly;
- a large place of assembly; or
- a facility that contains hazardous materials.

The critical facilities within the Plan Area are listed in their general categories as follows:

Essential Facilities

Emergency Facilities, including: Police Stations; Fire Stations; Hospitals; Emergency Management Agencies / Emergency Service & Disaster Agencies

Utility Lifelines

Potable Water Facilities (e.g., water tower, public well station); Waste Water Facilities (e.g., public sewage treatment plant); Electrical Substations; Natural Gas Facilities; Natural Gas Pipelines; Radio & Television Stations

Transportation Lifelines

Railway Facilities & Railway Bridges; Bus Facilities; Highway Bridges & Highway Tunnels; Airports; Heliports

High Potential Loss Facilities

Military Installations; Dams & Levees; Hazardous Material Facilities

Facilities of Local Importance

Schools (excluding residential home schools); Day Care Centers; Nursing Homes; Retirement, Assisted and Supported Living Facilities; Subsidized Senior Apartments; Senior Centers; Libraries; Movie Theaters; Stadiums; Correctional Facilities; Selected Government Buildings

Table 2-5 lists critical facility by type located within each participating jurisdiction.

Table 2-5. Critical Facilities within Participating Jurisdictions

	Essential Facilities	Utility Lifelines	Transportation Lifelines	High Potential Loss Facilities	Facilities of Local Importance	Total Count of Critical Facilities
Plan Area Total [1]	67	104	795	153	198	1317
Unincorporated Champaign County	5	29	594	45	9	682
Village of Allerton	1	0	0	0	0	1
Village of Bondville	1	0	0	0	0	1
Village of Broadlands	1	1	2	0	1	5
City of Champaign	10	14	87	46	74	231
Village of Fisher	2	2	6	2	6	18
Village of Foosland	0	0	0	0	0	0
Village of Gifford	2	0	1	2	3	8
Village of Homer	3	1	1	0	4	9
Village of Ivesdale	3	2	1	1	0	7
Village of Longview	1	0	0	0	0	1
Village of Ludlow	2	2	1	0	2	7
Village of Mahomet	3	2	20	3	10	38
Village of Ogden	1	0	5	0	2	8
Village of Pesotum	2	1	6	0	1	10
Village of Philo	1	1	0	2	3	7
Village of Rantoul	4	38	15	12	21	90
Village of Royal	1	1	0	2	1	5
Village of Sadorus	1	2	1	0	1	5
Village of Savoy	1	2	2	3	5	13
Village of Sidney	2	1	5	0	1	9
Village of St. Joseph	2	1	7	1	6	17
Village of Thomasboro	2	1	4	0	2	9
Village of Tolono	4	0	0	3	4	11
City of Urbana	12	3	37	31	42	125
University of Illinois[2]						744
Parkland College[3]						10

Table 2-5 Notes:

1. The Plan Area Total excludes critical facilities listed for the University of Illinois or Parkland College.

2. Total number of critical facilities from the UIUC Facilities & Services Building List. The UIUC critical facilities are listed separately and are excluded from the counts for the municipalities in which they are located.

3. Total number of critical facilities confirmed with Parkland Public Safety Director. The Parkland College critical facilities are listed separately and are excluded from the City of Champaign counts.

Review of Plans, Studies, Reports, and Technical Information
Project staff consulted each Planning Team member, local government officials and representatives of each participating jurisdiction to identify and to provide updated information regarding existing plans, studies, reports, and technical information specific to each participating jurisdiction. Table 2.7 contains a list of comprehensive plans and reports specific to each participating local government jurisdiction. Resources reviewed with relevance to more than one participating jurisdiction within the Plan Area included the following:

- The FEMA Flood Insurance Study: Champaign County, Illinois and Incorporated Areas, dated October 2, 2013 (Flood Insurance Study Number 17019CV000A) is a reference regarding flood risk data based on updated digital flood insurance rate maps for local government jurisdictions participating in the HMP within the Plan Area.

- Draft Champaign County Hazardous Materials Commodity Flow Study, Champaign County Regional Planning Commission, as of May, 2015.

- FEMA Discovery Report, Upper Sangamon Watershed, 07130006, Champaign, Christian, DeWitt, Ford, Logan, Macon, McLean, Piatt, Sangamon, and Shelby Counties, Illinois, Report Number 01, Updated 2/19/2015

- 2007 Illinois Human-Caused Hazard Mitigation Plan

- 2013 Illinois Natural Hazard Mitigation Plan

- The Drought of 2012, A Report of the Governor's Drought Response Task Force, Illinois Department of Natural Resources and Illinois Environmental Protection Agency. This report, released in March, 2013, described selected policy and technology challenges and government limitations as observed following the 2012 drought in Illinois.

Incorporation of Existing Plans, Studies, Reports, and Technical Information
The planning mechanisms for participating jurisdictions are variable, with the two largest municipalities being home-rule, and remaining 24 local government jurisdictions as non-home rule and subject to powers specified in the State constitution. Fewer than half of participating local government jurisdictions within the Plan Area have an adopted a comprehensive land use plan, and relatively few have adopted a building code. The adopted codes, ordinances, and regulations are unique to each participating jurisdictions. Certain existing regional or multi-jurisdictional programs and guidelines relevant to accomplishing hazard mitigation actions are described in the next section.

Participating jurisdictions able to consider the prioritized hazard mitigation actions identified for their community, as feasible, in their local government/institution capital improvement plan, or budget mitigation actions, as may be feasible, in current work plans, will be more likely to succeed in implementing prioritized mitigation actions.

As the HMP is reviewed annually, the Planning Team will be aware of and suggest potential opportunities for incorporating the HMP into local planning mechanisms on behalf of each participating jurisdiction, such as proposing that prioritized hazard mitigation actions be considered for inclusion in an adopted local government comprehensive land use plan, sustainability plan, and subarea plans, such as a watershed improvement plan, as these are reviewed and updated.

Authorities, Policies, Programs, and Resources Available to Accomplish Hazard Mitigation

Outdoor Warning Siren Systems
Outdoor Warning Siren Systems, regardless of the local government jurisdiction in which they are located or which agency activates them, has but one purpose: to warn people who are located outdoors that a tornado is approaching and they must seek shelter. The sirens are not and have never been designed to inform people indoors of a tornadic event. Within the Plan Area, outdoor warning sirens are positioned in certain highly populated areas. The City of Champaign, City of Urbana, University of Illinois and Savoy serve as one node. The following villages operate and maintain their sirens independent of one another: Rantoul, Mahomet, St. Joseph, Gifford, Tolono, Thomasboro, Philo, Ogden, Sadorus, Sidney, Broadlands, Royal, Homer, Pesotum, Ivesdale, and Fisher.

Unincorporated areas of the County and the outlying communities of Bondville, Foosland, Ludlow, Longview, Allerton, Seymour, and Penfield are not served by an outdoor tornado warning siren.

Emergency Warning Radios
In the Plan Area, most large employers, retailers, schools and places of public assembly, and facilities that house vulnerable populations (e.g., hospitals, nursing homes, jails) area have acquired one or more NOAA emergency warning radios to provide warning of severe storms, tornados, dangerous winter storm conditions and other hazards.

Severe Weather Spotters
The Champaign County Emergency Management Agency supports the volunteer efforts of the National Weather Service (NWS) Severe Weather Spotters (aka 'Storm Spotters') throughout the County. NWS utilizes the information provided by Spotters to support its severe weather warning operations, e.g., to verify radar-indicated or public reports of severe weather.

StormReady® Designation
Within the Plan Area, Champaign County, City of Champaign, City of Urbana, Village of Savoy, and Village of Mahomet are designated StormReady® communities, and Parkland College is a StormReady® campus, meeting StormReady® requirements established by the NWS, including:

- establish a 24-hour emergency operations center;
- have more than one way to receive severe weather warnings and forecasts and to alert the public;
- create a system that monitors weather conditions locally;
- meet criteria established by NWS regarding promoting the importance of public readiness; and
- develop a formal hazardous weather plan, including training of severe weather spotters and emergency exercises.

Building Code Standards
Certain larger HMP jurisdictions have adopted versions of the International Residential Code (for one- and two-family dwellings) and the International Building Code (for all other buildings). The 2006 International Code Series building codes feature fire- and life-safety provisions that address wind and roof construction standards (for snow load). Safe rooms (e.g., tornado shelters) are not addressed in the 2006 International Code series. The 2009 International Building Code addresses storm shelters and references the new International Code Council's ICC 500 Standard for Storm Shelters.

Local government jurisdictions within the Plan Area with no adopted building code are subject to requirements of the Illinois Residential Building Code Act (815 ILCS 670/1 *et seq*.). This Act requires the identification of a building code as new homes are constructed. Notably, the Act does not obligate a local government jurisdiction to enforce the requirements contained within the Act.

Manufactured Home Safety
Within the Plan Area, and throughout Illinois, federal and state programs are in place to regulate construction of and installation (tie-down) of manufactured homes. A manufactured home is subject to separate construction standards established by the U.S. Department of Housing and Urban Development (HUD). Manufactured homes constructed after June 15, 1976 are required to comply with the National Manufactured Home Construction and Safety Standards, as established by HUD.

In Illinois, no federal or state requirements require that a safe room or a shelter be provided for a manufactured home or a manufactured home park. A local government jurisdiction may adopt a requirement that a safe room or a shelter be provided, or regulate the location of manufactured homes or require added on-site inspection procedures; however, the HUD construction standards may not be altered. The Act requires that equipment and installation standards must be met, including a requirement that installation be completed in accordance with manufacturer specifications. Certification that installation complies with the state Tie-Down Code is required to be filed with IDPH following installation. Additional certification requirements apply to manufactured school classroom units.

The Illinois Department of Public Health (IDPH) enforces the Illinois Mobile Home Act and Manufactured Home Tie down Code only upon receipt of a complaint once a manufactured home is in place.

Public Utilities Protection
Ameren IP, a primary supplier of electricity to customers in the Plan Area, operates a tree-trimming and tree-removal program in urban areas in an effort to ensure that above-ground electric wires are clear of tree limbs and falling tree dangers.

The larger Plan Area jurisdictions have adopted subdivision code regulations requiring new developments to bury electrical service and other utilities underground in order to lessen vulnerability of utilities(e.g., during a tornado or during an ice storm).

Local Media Outreach
Local television and radio stations provide emergency warning and public service announcements in advance of severe storms and severe winter storm events. Local television and radio stations provide emergency warning and public service announcements to warn motorists of flash flood potential and warn of flooded roadways.

Road Treatment in Advance of Expected Ice Condition
IDOT and the larger jurisdictions maintain fleets of trucks and drivers to spread bulk rock salt (or other anti-icing agents) on major roads in advance of (and during) severe storms expected to produce icing on roads. Typically arterial roads are completed first, followed by collector roads, sub-collector roads and school zone areas that may not be situated along these more heavily

traveled roadways. Additional areas receiving rock salt applications prior to and during winter storm events include roadway curves, hills and local street intersections.

Local Government Comprehensive Land Use Plans
Twelve municipalities, as noted in Table 2-6, have adopted a comprehensive land use plan. The County has adopted a land resource management plan. The more recently updated comprehensive land use plans tend to designate stream corridors for open space or recreational use.

Zoning and Subdivision Regulations
The adopted zoning regulations of municipal and county jurisdictions within the Plan Area typically include minimum setback requirements along streams or rivers. The adopted subdivision regulations of the municipal and county jurisdictions within the Plan Area typically address minimum building site and drainageway standards (e.g., that each lot have a building site of sufficient size above the 100-year floodplain; or that roads leading to a development site meet minimum access standards).

Mutual Aid Agreements
The participating local government jurisdictions of the Plan Area entered into intergovernmental mutual or automatic aide agreements. All fire departments within the Plan Area participate in mutual or automatic aid agreements.

Fire Protection and Emergency Services
The provision of fire protection and emergency ambulance services is an important consideration during the review of proposed rural residential subdivisions.

The Plan Area is divided into Fire Protection Districts (FPDs) serving smaller villages and the unincorporated areas and municipal fire departments which serve the cities of Champaign, Urbana, Rantoul, Savoy and Bondville.

Fire suppression capability of each FPD and municipal fire department is rated by the Insurance Services Office (ISO) Commercial Risk Services Incorporated, and is based on the Fire Suppression Rating Schedule, a national standard to determine fire suppression capabilities of individual fire protection districts or fire departments. ISO ratings measure on a scale of 1-10, with 1 being the best and 10 representing no fire protection, the ability of a fire protection district to suppress fire and minimize damage. ISO ratings measure three features of fire protection: fire alarms, engine companies (fire departments), and water supply.

Most smaller FPDs within the Plan Area have a dual rating. The first number is the rating for fire protection in urban areas and up to five miles travel distance from the fire station. The second number refers to fire protection beyond the five mile radius. Table 2-6 lists ISO ratings for Fire Protection Districts and Fire Departments within the Plan Area.

Table 2-6. ISO Ratings for Fire Protection Districts and Fire Departments within Plan Area

Department/District	Station Location(s)	ISO Rating
Allerton FPD	Village of Allerton	8/9
Broadlands-Longview	Village of Broadlands/Village of Longview	7
Carroll FPD	City of Urbana (1)	5/9
Champaign FD	City of Champaign (6)	2
Corn Belt FPD	Village of Mahomet	5/9
Eastern Prairie FPD	City of Champaign (1)	7/9
Edge-Scott FPD	Urbana Township	4/7
Gifford FPD	Village of Gifford	6/9-10
Homer FPD	Village of Homer (2)	7/9
Ivesdale FPD	Village of Ivesdale	5/8
Ludlow FPD	Village of Ludlow	7/9
Ogden-Royal FPD	Village of Ogden, Royal	6
Pesotum FPD	Village of Pesotum	8/9
Philo FPD	Village of Philo	6
Rantoul FD	Village of Rantoul (2/1 satellite)	4/9
Sadorus FPD	Village of Sadorus	8/9
Sangamon Valley FPD	Villages of Fisher, Dewey, Foosland (3)	7/9
Savoy FD	Village of Savoy	4
Scott FPD	Scott Township	6/9
Sidney FPD	Village of Sidney	7
St. Joseph-Stanton FPD	Village of St. Joseph	5/9
Thomasboro FPD	Village of Thomasboro	6/9
Tolono FPD	Village of Tolono (2)	6/9
Urbana FD	City of Urbana (4)	2

Source: RPC Staff contacts with individual FPD Chiefs, September - October, 2007,and communication with Chief Ivesdale FPD, James Brewer, August, 2011

Table 2-7 contains a summary assessment regarding each participating local government authority, community programs, plans, and resources available to potentially accomplish implementation of selected hazard mitigation actions within the Plan Area.

Table 2-7. Local Government Authorities, Plans, Programs, and Resources

Participating Local Government Jurisdiction	Local Government Authorities, Programs, and Resources
Village of Allerton	Regular monthly meetings of the Village Board of Trustees are held the 3rd Tuesday of the month at 7:00 pm at the Village Hall, 108 N. Vermilion, Allerton Building Code: No Comprehensive Land Use Plan: No Zoning Code: Yes Floodplain Development Regulations: Yes FEMA National Flood Insurance Program: Yes
Village of Bondville	Regular monthly meetings of the Village Board of Trustees are held the 2nd Monday of the month at 7:00 pm at the Village Hall, 102 S. Walnut, Bondville Building Code: No Comprehensive Land Use Plan: Yes Zoning Code: Yes Floodplain Development Regulations: No FEMA National Flood Insurance Program: No Stormwater Management Regulations in Subdivision Ordinance: Yes
Village of Broadlands	Regular monthly meetings of the Village Board of Trustees are held on the 1st Wednesday of the month at 7:00pm at the Village Hall, 107 S. Lincoln, Broadlands. Website: https://broadlandsspectator.wordpress.com Building Code: No Comprehensive Land Use Plan: No Zoning Code: Yes Floodplain Development Regulations: Yes FEMA National Flood Insurance Program participant: Yes
Unincorporated Champaign County	Regular meetings of the Champaign County Environment and Land Use Committee are typically held at 6:30 pm on the first Thursday after the first Monday of the month at Brookens Administrative Center, 1776 E. Washington, Urbana. Website: www.co.champaign.il.us Building Code: No Champaign County Land Resource Management Plan: Yes Zoning Code: Yes Minimum Subdivision Standards in Subdivision Ordinance: Yes Floodplain Development Regulations: Yes FEMA National Flood Insurance Program participant: Yes National Weather Service StormReady® community: Yes

<table>
<tr><td>City of Champaign</td><td>Regular City Council meetings are held on the 1st & 3rd Tuesdays of the month at 7:00pm. City Council Study Sessions are held on the 2nd & 4th Tuesdays of the month at 7:00 pm at the City Building: 102 N. Neil, Champaign. Website: www.ci.champaign.il.us

<table>
<tr><td>Building Code: 2006 International Residential Code and 2006 International Building Code</td><td>Yes</td></tr>
<tr><td>Champaign Tomorrow Comprehensive Plan</td><td>Yes</td></tr>
<tr><td>Zoning Code</td><td>Yes</td></tr>
<tr><td>Champaign Growing Greener - Environmental Sustainability Plan</td><td>Yes</td></tr>
<tr><td>Stormwater Management Regulations</td><td>Yes</td></tr>
<tr><td>Floodplain Development Regulations</td><td>Yes</td></tr>
<tr><td>FEMA National Flood Insurance Program participant</td><td>Yes</td></tr>
<tr><td>FEMA Community Rating System program participant</td><td>Yes</td></tr>
</table></td></tr>
<tr><td>Village of Fisher</td><td>Regular monthly meetings of the Village Board of Trustees are held the 2nd Thursday of each month at 7:00 pm at the Village of Fisher Community Center, 100 E. School St., Fisher. Website: www.fisher.il.us

<table>
<tr><td>Building Code</td><td>No</td></tr>
<tr><td>Comprehensive Land Use Plan</td><td>Yes</td></tr>
<tr><td>Zoning Code</td><td>Yes</td></tr>
<tr><td>Floodplain Development Regulations</td><td>Yes</td></tr>
<tr><td>FEMA National Flood Insurance Program participant</td><td>Yes</td></tr>
<tr><td>Stormwater Management Regulations in Municipal Code</td><td>Yes</td></tr>
</table></td></tr>
<tr><td>Village of Foosland</td><td>Regular monthly meetings of the Village Board of Trustees are held on the 2nd Monday of the month at 7:00 pm at the Village Community Center, 10 Third St, Foosland

<table>
<tr><td>Building Code</td><td>No</td></tr>
<tr><td>Comprehensive Land Use Plan</td><td>No</td></tr>
<tr><td>Zoning Code</td><td>No</td></tr>
<tr><td>Floodplain Development Regulations</td><td>Yes</td></tr>
<tr><td>FEMA National Flood Insurance Program participant</td><td>Yes</td></tr>
</table></td></tr>
<tr><td>Village of Gifford</td><td>Regular monthly meetings of the Village Board of Trustees are held on the 1st Thursday of each month at 7:00 pm at the Gifford State Bank Board Room, 304 S. Main St., Gifford. Website: www.villageofgifford.com

<table>
<tr><td>Building Code</td><td>Yes</td></tr>
<tr><td>Comprehensive Land Use Plan</td><td>No</td></tr>
<tr><td>Zoning Code</td><td>Yes</td></tr>
<tr><td>Stormwater Management Regulations in Subdivision Ordinance</td><td>Yes</td></tr>
<tr><td>Floodplain Development Regulations</td><td>No</td></tr>
<tr><td>FEMA National Flood Insurance Program</td><td>No</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>Village of Homer</td><td>Regular monthly meetings of the Village Board of Trustees are held on the second Monday of each month at 7:00 pm at the Village Hall: 500 E. Second St., Homer. Website: www.homervillage.com

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Stormwater Management Regulations in Subdivision Ordinance</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>No</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>No</td></tr></table></td></tr>
<tr><td>Village of Ivesdale</td><td>Regular monthly meetings of the Village Board of Trustees are held on the 3rd Monday of the month at 7:00pm CST and 7:30 DST, at the Ivesdale Village Hall in downtown Ivesdale.

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>Yes</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>No *</td></tr></table>
* The Village president indicates that Ivesdale intends to reestablish its status as a participant in the NFIP.</td></tr>
<tr><td>Village of Longview</td><td>Regular monthly meetings of the Village Board of Trustees are held on the 3rd Wednesday of the month at 7:00pm at the Village Community Building, 202 E. Logan, Longview.

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>Yes</td></tr><tr><td>National Flood Insurance Program</td><td>Yes</td></tr></table></td></tr>
<tr><td>Village of Ludlow</td><td>Regular monthly meetings of the Village Board of Trustees are held on the 1st Monday of the month at 7:00 pm at the Ludlow Community Center, 202 E. Thomas, Ludlow.

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>Yes</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>Yes</td></tr></table></td></tr>
</table>

<table>
<tr><td>Village of Mahomet</td><td>Regular monthly meetings of the Village Board of Trustees are held the 4th Tuesday of the month at 6:00 pm at the Village Administration Building, 503 E. Main Street, Mahomet. Website: http://mahomet.govoffice.com

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>Yes</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Stormwater Management Regulations in Subdivision Ordinance</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>Yes</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>Yes</td></tr></table></td></tr>
<tr><td>Village of Ogden</td><td>Regular monthly meetings of the Village Board of Trustees are held the 1st Thursday of the month at 7:00 pm at the Village Hall, 101 W. Main Street, Ogden.

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>Yes</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>Yes</td></tr></table></td></tr>
<tr><td>Village of Pesotum</td><td>Regular monthly meetings of the Village Board of Trustees are held on the 1st Wednesday of the month at 6:30 pm at the Village Hall, 103. E. Lincoln Street, Pesotum. Website: www.pesotum.org

<table><tr><td>Building Code: National Building Code of the Building Officials and Code Administrator (BOCA)</td><td>Yes</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>No</td></tr><tr><td>National Flood Insurance Program</td><td>No</td></tr></table></td></tr>
<tr><td>Village of Philo</td><td>Regular monthly meetings of the Village Board of Trustees are held the 2nd Wednesday of the month at 7:00 pm at the Village Hall, 127 W. Washington, Philo. Website: www.villageofphilo.com

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>No</td></tr><tr><td>National Flood Insurance Program</td><td>No</td></tr></table></td></tr>
</table>

<table>
<tr><td>Village of Rantoul</td><td>Regular monthly meetings of the Village Board of Trustees are held on the 2nd Tuesday of the month at 6:15 pm at the Village Hall, 333 S. Tanner Street, Rantoul. Website: www.village.rantoul.il.us

<table><tr><td>Building Code: 2006 International Residential Code And 2006 International Building Code</td><td>Yes</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>Yes</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>Yes</td></tr></table></td></tr>
<tr><td>Village of Royal</td><td>Regular monthly meetings of the Village Board of Trustees are held on the 1st Monday of the month at 6:00 pm at the Village Hall in downtown Royal.

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>Yes</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>Yes</td></tr></table></td></tr>
<tr><td>Village of Sadorus</td><td>Regular monthly meetings of the Village Board of Trustees are held on the 1st Wednesday of the month at 7:00 pm at the Village Hall, 115 E. Market Street, Sadorus. Website: www.sadorus.com

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>No</td></tr><tr><td>National Flood Insurance Program</td><td>No</td></tr></table></td></tr>
<tr><td>Village of Savoy</td><td>The Village Board of Trustees meet on the First & Third Wednesdays of the month at 7:00 pm, with a Village Board of Trustees Study Session on the Second Wednesday of each month at 7:00 pm. Meeting location is the Savoy Municipal Center, 611 N. Dunlap, Savoy. Website: www.village.savoy.il.us

<table><tr><td>Building Code: 2003 International Residential Code and 2003 International Building Code</td><td>Yes</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>No</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>No</td></tr><tr><td>National Weather Service StormReady® community</td><td>Yes</td></tr></table></td></tr>
</table>

<table>
<tr><td>Village of Sidney</td><td>Regular monthly meetings of the Village Board of Trustees are held the 1st Monday of the month at 7 pm at the Sidney Village Community Building, 221 S. David Street, Sidney. Website: http://villageofsidney.com

<table><tr><td>Building Code: 2006 International Residential Code and 2006 International Building Code</td><td>Yes</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>Yes</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>Yes</td></tr></table></td></tr>
<tr><td>Village of St. Joseph</td><td>Regular monthly meetings of the Village Board of Trustees are held the 2nd and 4th Tuesdays of the month at 7:00 pm at the Village Hall, 207 E. Lincoln, St. Joseph. Website: www.stjosephillinois.org

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>Yes</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>Yes</td></tr></table></td></tr>
<tr><td>Village of Thomasboro</td><td>Regular monthly meetings of the Village Board of Trustees are held the 1st Monday of the month at 7:00 pm at the Village Hall, 101 W. Main Street, Thomasboro. Website: www.thomasboro.us

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>Yes</td></tr><tr><td>National Flood Insurance Program</td><td>Yes</td></tr></table></td></tr>
<tr><td>Village of Tolono</td><td>Regular monthly meetings of the Village Board of Trustees are held on the 1st and 3rd Tuesdays of the month at 6:30 pm at the Village Hall, 507 W. Strong Street, Tolono. Website: www.villageoftolono.info

<table><tr><td>Building Code</td><td>No</td></tr><tr><td>Comprehensive Land Use Plan</td><td>No</td></tr><tr><td>Zoning Code</td><td>Yes</td></tr><tr><td>Floodplain Development Regulations</td><td>No</td></tr><tr><td>FEMA National Flood Insurance Program</td><td>No</td></tr></table></td></tr>
</table>

<table>
<tr><td>City of Urbana</td><td>Regular meetings of the City of Urbana Council are held on the 1st and 3rd Mondays of the month at 7:00 pm at the City Hall, 400 S. Vine Street, Urbana
Website: www.city.urbana.il.us

<table>
<tr><td>Building Code: 2009 International Residential Code and 2009 International Building Code</td><td>Yes</td></tr>
<tr><td>Comprehensive Land Use Plan</td><td>Yes</td></tr>
<tr><td>Zoning Code</td><td>Yes</td></tr>
<tr><td>Sustainable Water Management Plan (2013-2020)</td><td>Yes</td></tr>
<tr><td>Climate Action Plan (2015-2020)</td><td>Yes</td></tr>
<tr><td>Floodplain Development Regulations</td><td>Yes</td></tr>
<tr><td>FEMA National Flood Insurance Program</td><td>Yes</td></tr>
</table></td></tr>
</table>

Table 2-8. Institutions of Higher Education Authorities, Programs, and Resources

Participating Institutions of Higher Education	Authorities, Programs, and Resources
University of Illinois at Urbana-Champaign	Public Safety Program supported by UIUC Board of Trustees Subject to 2006 International Residential Code and 2006 International Building Code.[1]
Parkland College	Public Safety Program supported by Parkland College Board of Trustees Subject to 2006 International Residential Code and 2006 International Building Code.[1]

Table 2-8 Notes:

1. UIUC and Parkland College do not have the legislative authority to produce a comprehensive land use plan. Both, instead, have adopted a campus master plan.

2. The Illinois Capital Development Board (CDB) is the construction management agency for state construction projects including university and college buildings. CDB has adopted the International Building Codes for use. Building construction at UIUC and Parkland is generally exempt from County or municipal construction permitting requirements.

Chapter 2 Notes:

1. The population projection estimate is based on the Champaign-Urbana Urbanized Area Transportation Study, Long Range Transportation Plan: Sustainable Choices 2040. CCRPC Champaign-Urbana Urbanized Area Transportation Study, December, 2014. http://cuuats.org/lrtp/documents/long-range-transportation-plan-sustainable-choices-2040-final

2. These are prime farmland soils identified in the Champaign County Land Evaluation and Site Assessment System that under optimum management have 91% to 100% of the highest soil productivities in Champaign County, on average, as report in the *Bulletin 811 Optimum Crop Productivity Ratings for Illinois Soils.*

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This Chapter provides descriptive hazard profiles and risk assessments to characterize the potential damage, loss, or other impacts from a specific hazard to the people and assets of each participating jurisdiction.

Natural Hazards

The Planning Team selected seven types of natural hazards identified in the 2013 Illinois Natural Hazard Mitigation Plan as relevant to the Plan Area for inclusion in the Champaign County Multi-Jurisdictional Hazard Mitigation Plan (HMP):

- severe storms
- tornadoes
- severe winter storms
- floods
- extreme heat
- earthquakes
- drought

The Illinois Natural Hazard Mitigation Plan (INHMP) assesses relative risk and impacts of various natural hazards at risk of occurring across Illinois based on factors of historical probability, vulnerability, severity of impact, and population.[1] The INHMP ranks these factors for each natural hazard on a weighted, five-part scale with levels ranging from 'Low' to 'Severe.' Table 3-1 lists the assigned ratings to natural hazards occurring in Champaign County.

Table 3-1. INHMP Ratings Assigned to Natural Hazards Occurring in Champaign County

Natural Hazard	Rating for Natural Hazards Occurring in Champaign County
Severe Storms	Severe
Tornadoes	High
Severe Winter Storms	High
Floods	Elevated
Extreme Heat	Elevated
Earthquakes	Elevated
Drought	Elevated

Source: INHMP

The Plan Area includes portions of two municipalities located partially within Champaign County and partially within an adjacent county.[2]

Technical Hazards

For the purpose of this plan, technical hazards refer to hazards caused by humans: whether by human error, improper safety precautions, or ill intent; as well as equipment malfunction or failure. The Planning Team selected two types of technical hazards to include in the HMP, based on recommendations by the Champaign County EMA Manager and the project team:

- hazardous material storage and transport
- active shooter scenario at an educational facility

Federal Disaster Declarations within Plan Area

Table 3-2 contains a summary of Federal Disaster Declarations for significant disaster events that have occurred to date as a result of natural hazards occurring within the Plan Area. Appendix A provides additional detail regarding each declaration.

Table 3-2. Federal Disaster Declarations within Plan Area

Year	Disaster Declaration #	Natural Hazard Event Type(s)
1968	DR-242 [1]	Tornadoes, Severe Storms, Floods
1974	DR-427 [1]	Tornadoes
1990	DR-860	Ice Storm
1994	DR-1025	Severe Storms, Flash Floods
1996	DR-1110	Severe Storms, Tornadoes
1999	EM-3134 [2]	Winter Snow Storm
2002	DR-1416	Severe Storms, Tornadoes, Floods
2013	DR-4157	Tornadoes

Source: FEMA

Table 3-2 Notes:

1. Initial declarations were based on recommendations by the Office of Emergency Preparedness, the predecessor of FEMA. FEMA was established in 1979.

2. Federal Disaster Declarations within the Plan Area have included two types: ‘EM’ denotes an ‘Emergency Declaration’ and ‘DR’ denotes a ‘Major Disaster Declaration.’

SEVERE STORMS - HAZARD PROFILE

Within the Plan Area, the natural hazard category of 'Severe Storms' received INHMP's highest ranking of severity. For planning purposes, the 'severe storms' hazard includes:

- thunderstorm wind
- damaging lightning
- hail storms

Location

The entire Plan Area is equally at risk from severe storms.

Extent

The extent of severe storms describes the characteristics of this natural hazard regardless of the people and property it affects.

Thunderstorm Wind:

The *Climate Atlas of Illinois* defines a thunderstorm as '…a local storm produced by cumulonimbus clouds and always accompanied by lightning and thunder, and often by strong gusts, heavy rain, and hail.'[3] The National Weather Service (NWS) estimates that 10 percent of thunderstorms are severe storms, which produce hail at least one inch in diameter, consecutive wind gusts that are 58 miles per hour or greater, or produce a tornado.

In Illinois, thunderstorms typically occur as warm, moist air from the Gulf of Mexico comes in contact with cool air moving east from the Rocky Mountains. Thunderstorms are most likely to occur in the spring and summer months and usually in the late afternoon or evening. They can form in single cells, in clusters, or in lines and are typically 15 miles in diameter.

Damaging Lightening:

Lightning, as described by FEMA, is caused when electrical energy builds up and is discharged between positively and negatively charged areas. According to the NWS, lightning can strike up to ten miles away from where it is raining. Only 25 percent of lightning strikes are cloud-to-ground; however, lightning still poses a significant threat during severe storms.

Hail Storms:

According to the INHMP, hail storms occur an average of 74 times per year in Illinois. Severe storms are capable of producing round balls of frozen rain called hail, which occur when water droplets are carried above the freezing level by updrafts. The water droplets freeze and once the updraft can no longer support their weight, the hailstones drop. Table 3-3 describes hail classifications.

SEVERE STORMS - HAZARD PROFILE

Table 3-3. Hail Size Classification

Size (Inches)	Description
½	Marble Size
¾	Penny Size
7/8	Nickel Size
1	Quarter Size
1 ¼	Half Dollar Size
1 ½	Ping Pong Ball Size
1 ¾	Golf Ball Size
2	Egg Size
2 ½	Tennis Ball Size
2 ¾	Baseball Size
3	Teacup Size
4	Grapefruit Size
4 ½	Softball Size

Source: NWS

History

Table 3-4 specifies Federal Disaster Declarations on record as the result of severe storms in combination with one or more natural hazards as occurring in the Plan Area.

Table 3-4. Federal Disaster Declarations within Plan Area for Severe Storms

Year	Disaster Declaration #	Natural Hazard Event Type(s)
1968	DR-242	Tornadoes, Severe Storms, Floods
1994	DR-1025	Severe Storms, Flash Floods
1996	DR-1110	Severe Storms, Tornadoes
2002	DR-1416	Severe Storms, Tornadoes, Floods

Source: FEMA

Table 3-5 lists the National Climatic Data Center (NCDC) recorded severe storm events occurring within the Plan Area.

Table 3-5. Number of Severe Storm Events within Plan Area

Event Type	Total Number of Events on Record at NCDC	Number of Recorded Events Occurring January 1, 2008 – November 30, 2014
Thunderstorm Winds [1]	235	75
Lightning [2]	12	11
Hail Storms [3]	146	52

Source: NCDC

SEVERE STORMS - HAZARD PROFILE

Table 3-5 Notes:

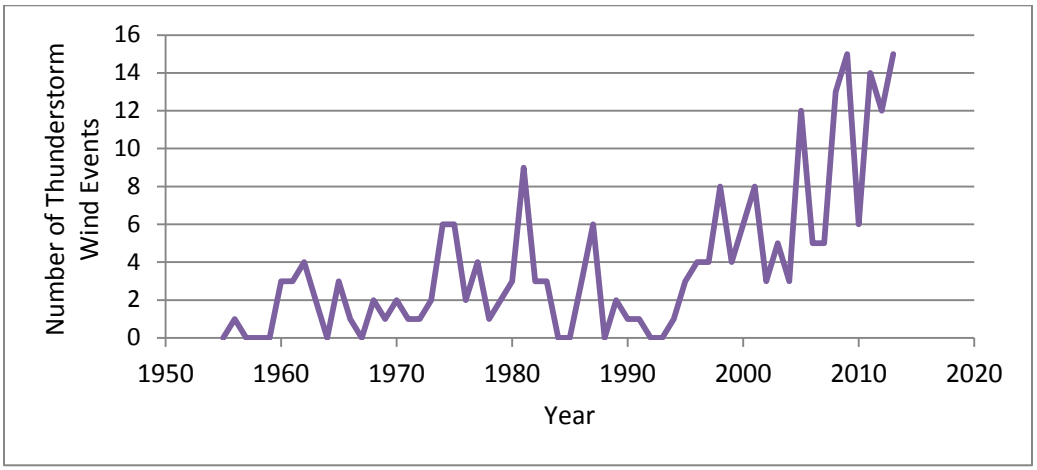
1. Thunderstorm wind events are based on NCDC recorded data available beginning in 1955 and through 2014.

2. Lightning events are based on NCDC records available for the years 1996 through 2014.

3. Hail storm events are based on NCDC records for the years 1955 through 2014.

Thunderstorm Winds:

Figure 3-1. Number of Thunderstorm Wind Events by Year in Plan Area



Source: NCDC

Hail Storms:

Table 3-6. Number of Hail Storms by Jurisdiction within Plan Area (1955-2014)

Jurisdiction	Number of Hail Events
Unspecified - Champaign County	39
Village of Mahomet	20
City of Champaign	17
Village of Philo	11
Village of Ivesdale	7
Village of Rantoul	7
Village of Sidney	5
City of Urbana	5
Village of Fisher	4
Village of Ogden	4
Village of Pesotum	4

continued

Table 3-6. continued

Village of St. Joseph	4
Village of Allerton	3
Village of Sadorus	3
Village of Gifford	2
Village of Homer	2
Village of Tolono	3
Village of Broadlands	2
Village of Savoy	2
Village of Royal	1
Village of Thomasboro	1

Source: NCDC

Future Severe Storms Events

Table 3-7 summarizes NCDC frequency data regarding severe storms events within the Plan Area through November, 2014. Based on this history of occurrences, an estimate of the probability of future occurrences of a severe storms event is 100 percent for any given year.

Table 3-7. Frequency of Severe Storms within Plan Area

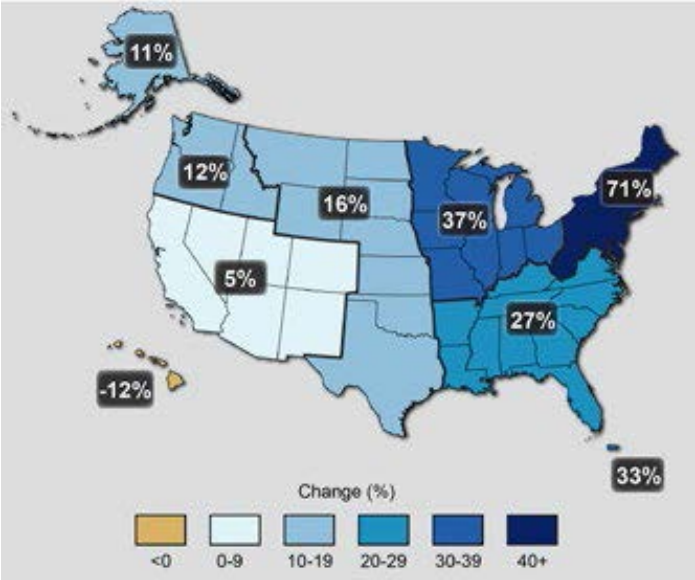
Severe Storms Type	Number of Recorded Events Within Specific Time Period	Average Number of Occurrences per Year
Thunderstorm Winds	235 Thunderstorm Wind events over a 59-year period	3.98
Damaging Lightning	12 Lightning events over a 18-year period	0.67
Hail Storms	146 Hail Storm events over a 59-year period	2.47

The U.S. Global Change Research Program publication *'Climate Change Impacts in the United States: The Third National Climate Assessment'* includes observations of changing climate patterns across the United States attributed primarily due to human activities, and includes projections regarding precipitation patterns for the Midwest region as follows:

> "Average U.S. precipitation has increased since 1900 … More winter and spring precipitation is projected for the northern United States … over this century.
>
> Heavy downpours are increasing nationally, especially over the last three to five decades. Largest increases are in the Midwest and Northeast. Increases in the frequency and intensity of extreme precipitation events are projected for all U.S. regions." [4]

SEVERE STORMS - HAZARD PROFILE

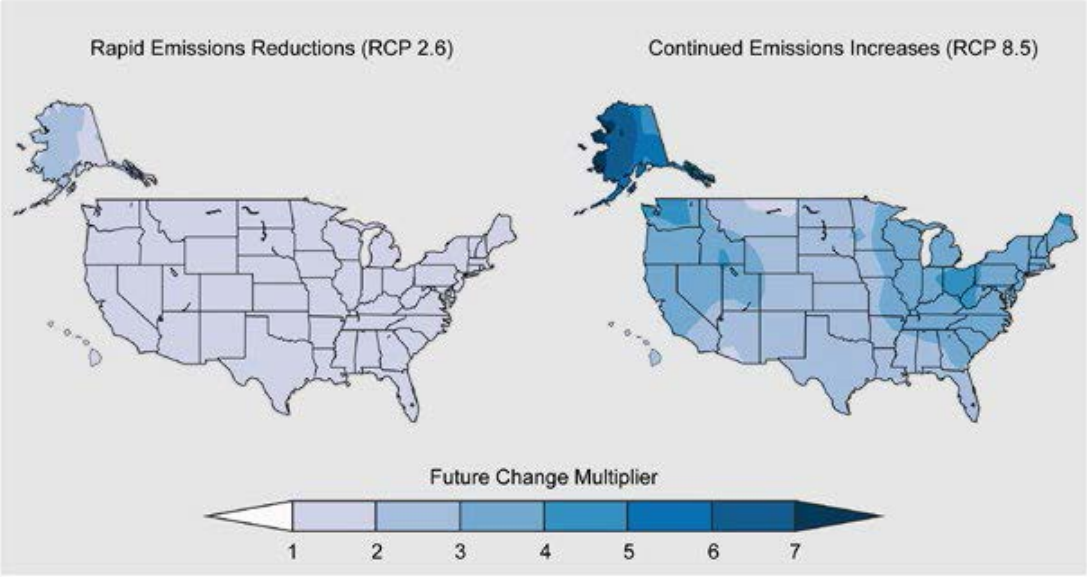
Figure 3-2. Observed Change in Very Heavy Precipitation



Source: USGCRP Climate Change Impacts in the United States

The study reported observations of change in the rate of heavy precipitation events, defined as the heaviest one percent of all daily precipitation events from 1958-2012. As shown in Figure 3-2, for the Midwest region, a 37 percent increase in heavy precipitation events—a larger than natural variation--can be expected.[5] As shown in Figure 3-3, the study projects that with continued emissions increases, the state of Illinois can expect to experience three to four times the number of heavy precipitation events by 2081-2100, compared to 1981-2000. Even with rapid reductions in emissions, Illinois could experience twice the number of heavy precipitation events in the same time period.[6]

Figure 3-3. Projected Change in Heavy Precipitation Events



Source: USGCRP Climate Change Impacts in the United States

SEVERE STORMS – RISK ASSESSMENT

Impacts

This section describes 'impacts' or the types of consequences of effects of severe storms events can have on the Plan Area and its assets. Severe storms events have a wide array of potential consequences due to having multiple hazard elements. Rain is associated with reduced visibility which can lead to an increase in vehicular accidents, storm water system backup, flooding, and crop damage.

Thunderstorm Winds:

Thunderstorm winds can cause downed power lines, injury, fatalities, and damage to property, trees, and crops.

Of the total 226 recorded thunderstorm wind events recorded as occurring within the Plan Area, 88 thunderstorm winds events caused injury, death, or property damage. Appendix A lists details regarding these damaging thunderstorm winds events.

To date, the most damaging recorded thunderstorm winds event in the Plan Area occurred on September 13, 2004 in the Village of Ludlow, causing $2.2 million in property damage. With regard to injuries, to date, the most harmful event occurred on June 29, 1987 in an unspecified location within the Plan Area.

Damaging Lightning:

Lightning has the ability to damage property, start fires, cause power outages, and cause injury or fatality.[7]

Since the beginning of 1996, there was one reported occurrence of lightning causing injury in the Plan Area:

> "Lightning struck a television antenna on a home in Mahomet on July 14, 1997. It traveled through the roof and knocked a man out of his wheelchair. He only suffered minor injuries and was treated and released from a local hospital. The lightning strike caused approximately $3,500 in damage to the roof."

Although this is the only event involving an injury, there have been 12 lightning strike events in the Plan Area since 1993, causing an estimated total of $628,500 in property damage.[8] The most damaging lightning event in the Plan Area to date occurred April 19, 2011 in unincorporated Champaign County, causing an estimated $300,000 in property damage.

Observations received by Advisory Group reviewers of the adopted HMP indicated that damaging lightning strikes often burn buildings or destroy electrical devices in buildings throughout the Plan Area, and that damaging lightning is typically under-reported.

Hail Storms:

Hail is known to damage buildings, vehicles, and crops, and in rare cases may cause human injury. Hail can cause slick surfaces, creating a risk of personal injury and vehicular accidents.[9]

SEVERE STORMS – RISK ASSESSMENT

One notable hail storm in Champaign and Vermilion Counties occurred on May 18, 2000. This was one of two reported hail events on NCDC record as causing property damage in the Plan Area. NCDC estimated this event resulted in over $4 million dollars of damage, $24,000 of which was within the Plan Area. Thousands of cars sustained heavy damage including broken windshields, and hundreds of homes suffered broken windows or damaged siding. A high school located in nearby Vermilion County (outside the Plan Area) sustained an estimated $300,000 in damage, and the Illinois State Patrol vehicles housed in Pesotum (within the Plan Area) suffered an estimated $24,000 in damages. There were no reported injuries related to this hail event.

Also on record at NCDC is a hail event occurring on May 21, 2014. On that date, significant hail damage occurred at Willard Airport in Savoy, including damage to several vehicles as well as minor damage to a B-17 aircraft. Property damage as a result of that hail event was an estimated $800,000.

Vulnerability Assessment

The populations and structures situated within all Plan Area jurisdictions share similar or equal risks to damages or injuries associated with 'Severe Storms' events.

Potential Health and Safety Threat

Both hail storms and damaging lightning are capable of injuring anyone who is outside during a severe storm. Though it is rare for hail to cause injury or death, damaging lightning is known to cause both as well as start fires which can lead to secondary threats. Damaging lightning is also capable of traveling through electrical outlets and striking people or objects indoors.

Potential Damage to Property

All structures in the Plan Area are vulnerable to severe storms. Hail most notably damages vehicles causing dents in the body of the vehicle, cracking or smashing the windows, or scratching paint. Hail can also create dents or soft spots on roofs with shingles, which permits water damage.

As mentioned above, lightning strikes can cause fires which are capable of completely destroying a structure. The maximum potential damage to a structure, therefore, is equal to its full replacement cost. Strong winds associated with severe storms are capable of snapping branches off of trees, causing damage to property.

INHMP estimates an annual property damage cost for Champaign County at $89,435 related to severe storms.[10]

Potential Economic Impacts

The types of potential economic impacts that can result from severe storms in the Plan Area include:

SEVERE STORMS – RISK ASSESSMENT

- Cost of emergency response and cleanup (thunderstorm winds; hail storms; damaging lightning)
- Loss of revenue for an economic establishment that is partially or completely destroyed by fire (damaging lightning)
- Loss of revenue for economic establishments whose power service is interrupted as a result of fallen limbs and downed power lines (thunderstorm winds; damaging lightning)
- Disruption of transportation routes as a result of downed tree debris (thunderstorm winds; damaging lightning)
- Loss of revenue for an economic establishment while they repair broken windows and/or roofs (hail storms)
- Loss of revenue for economic establishments which depend on vehicles that are considered inoperable as the result of broken windows (hail storms)
- Crop damage (hail storms)

TORNADOES - HAZARD PROFILE

The INHMP categorizes the risk of tornadoes to the Plan Area as "High," its second highest ranking. The INHMP ranks Champaign County tenth in Illinois for the number of tornadoes per square mile from 1950 to 2012.

Location

The entire Plan Area is equally at risk from tornadoes.

Extent

The 'extent' of a tornado refers to the magnitude and descriptive characteristics of a tornado hazard regardless of the people and property it affects.

NWS defines a tornado as a "violently rotating column of air" which is formed during a thunderstorm by the change in direction of wind. Before a thunderstorm event a change in wind direction and speed creates a "horizontal spinning effect in the lower atmosphere," and during the thunderstorm an updraft causes a vertical shift in the rotating air, creating a two to six mile wide area of rotation perfect for the formation of a tornado.

Tornadoes are most common in the Midwest and southeastern parts of the country. Tornadoes most frequently occur between March and August, but can occur any time of the year. The intensity of tornadoes, including their wind speed and the type of damage they cause, are categorized by the Enhanced Fujita Scale, created and implemented by the NWS in February, 2007.

Table 3-8. Enhanced Fujita Scale

Category	Wind Speed (mph)	Description
EF0	65-85	Light damage. Peels surface of off some roofs; some damage to gutters or siding; branches broken off trees; shallow rooted trees pushed over.
EF1	86-110	Moderate damage. Roofs severely stripped; Mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	Devastating damage. Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	> 200	Incredible damage. Strong frame houses leveled off foundations and swept away, automobile-sized missiles fly through the air in excess of 100 m (109 yd); high-rise buildings have significant structural deformation; incredible phenomena will occur.

Source: NWS

TORNADOES - HAZARD PROFILE

History

Table 3-9 specifies Federal Disaster Declarations on record as the result of a tornado in combination with one or more natural hazards as occurring in the Plan Area.

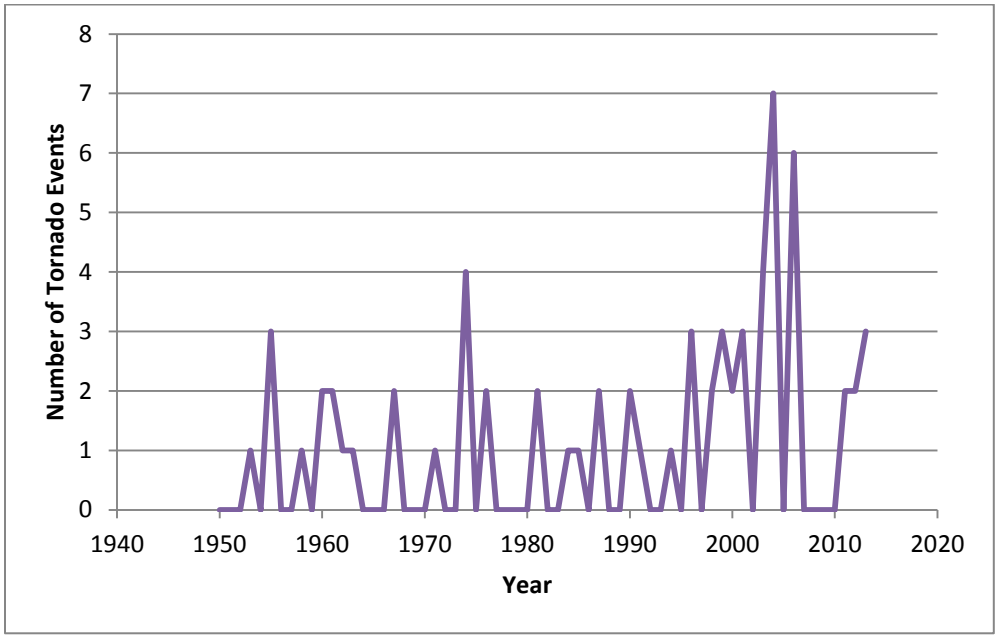
Table 3-9. Federal Disaster Declarations within Plan Area for Tornadoes

Year	Disaster Declaration #	Natural Hazard Event Type(s)
1968	DR-242	Tornadoes, Severe Storms, Floods
1996	DR-1110	Severe Storms, Tornadoes
2002	DR-1416	Severe Storms, Tornadoes, Floods

Source: FEMA

The Plan Area experienced a total of 65 tornadoes from 1950, the earliest year that NCDC storm event database collected tornado data, through November, 2014.

Figure 3-4. Number of Tornado Events by Year within Plan Area

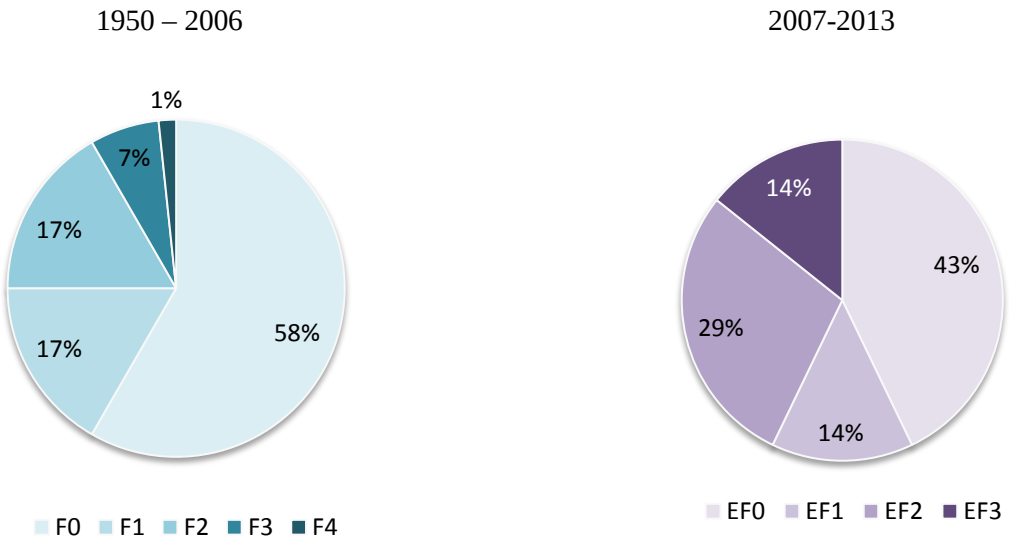


Source: NCDC

TORNADOES - HAZARD PROFILE

Figure 3-5 indicates the intensity of historic tornadoes within the Plan Area. The seven events occurring after 2007 are recorded using the EF scale, and the events before 2007 were recorded using the F scale. Because the scales differ in regards to speed, the events are separated.

Figure 3-5. Intensity of Tornadoes within the Plan Area



Source: NCDC

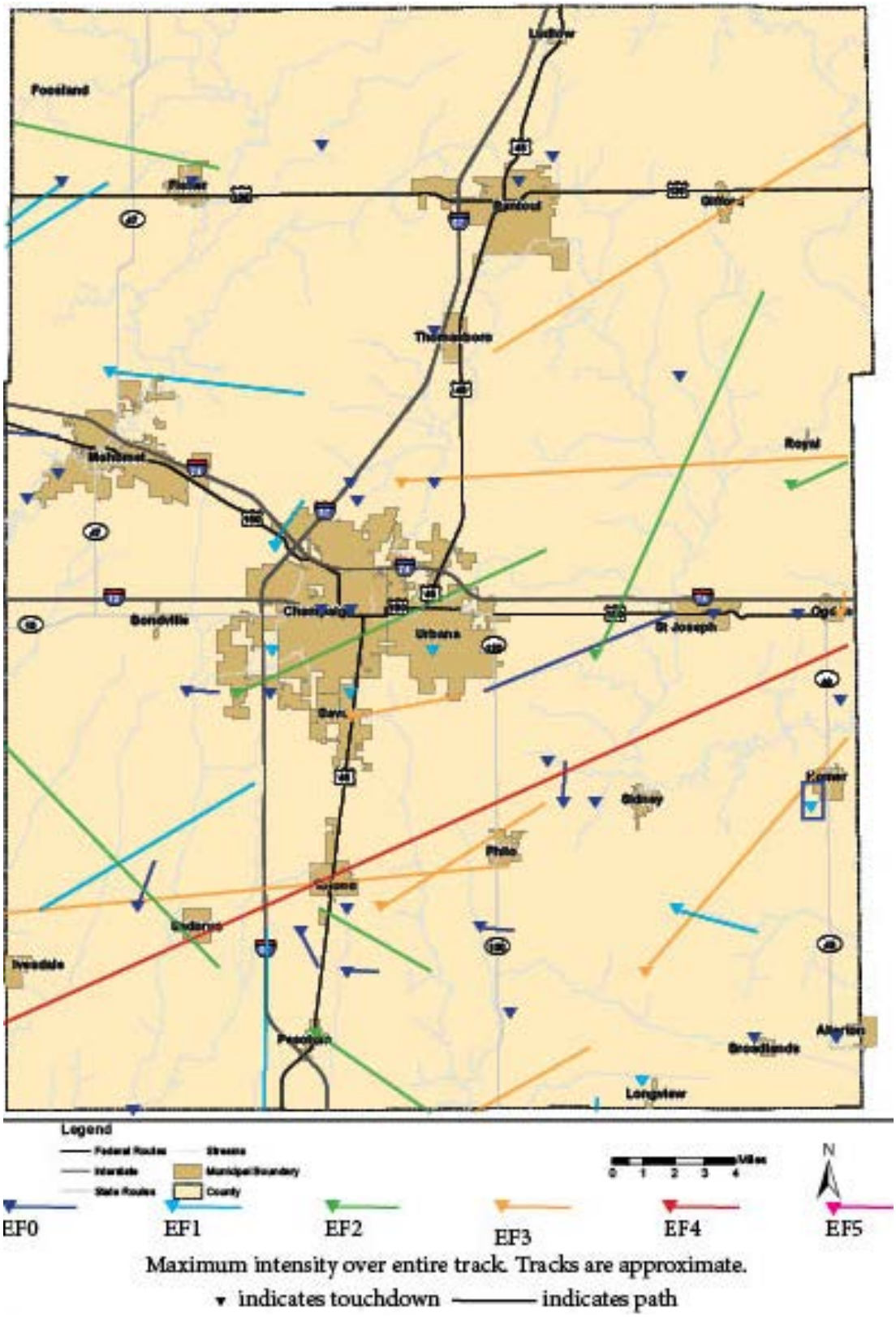
Figure 3-6 displays the travel paths of each tornado event in the Plan Area from 1950 through 2014.

Future Tornadoes within Plan Area

NCDC data regarding frequency of recorded tornado events within the Plan Area indicates that, from 1950 through November 2014 (a period of approximately 64 years), a total of 65 tornado events reported. Based on the historic frequency of tornadoes within the Plan Area, an estimated probability of future occurrences of a tornado within the Plan Area is 100 percent for any given year.

TORNADOES - HAZARD PROFILE

Figure 3-6. Travel Paths of Tornadoes Reported within Plan Area (1950 to 2014)



Source: NWS

TORNADOES – RISK ASSESSMENT

Impacts

This section describes 'impacts' or the types of consequences of effects a tornado can have on the Plan Area and its assets. Table 3-10 contains a summary of all tornadoes within the Plan Area beginning in 1950 and through 2014.

Table 3-10. Impacts of Tornadoes within Plan Area (1950-2014)

Decade	# of Tornadoes	Injuries	Fatalities	Property Damage ($)
1950s	5	5	0	25.0 M
1960s	8	11	0	852.5 K
1970s	8	11	1	3.5 M
1980s	6	0	0	575.0 K
1990s	12	26	1	11.5 M
2000s	22	2	0	540.0 K
2010s	7	7	0	60.8 M

Source: NCDC

1996 – On April 19, 1996, a tornado touched down near Savoy, and then in Ogden.

According to the National Weather Service, the tornado briefly touched down one mile north of Savoy destroying three homes under construction, before touching down again one mile south of Urbana. In Urbana, the tornado destroyed 30 homes, damaged 83 homes and five businesses, and injured 12 people. Damages from this portion of the event were an estimated $7 to $11 million.

The tornado continued toward Ogden, touching down half a mile southwest of the village, where it continued traveling through the center of Ogden. The tornado destroyed 68 homes, 12 businesses, three churches, a library, and a grade school. This portion of the event left one woman dead and 13 people injured.

2013 – NWS described the most recent tornado event in Champaign County, which occurred November 17, 2013:

"A tornado touched down in an open field about one mile southeast of Thomasboro at 12:45 PM CST and rapidly moved to the northeast. In less than a minute it increased in intensity, causing damage to three nearby farms and pushing two farm houses off their foundations. The tornado moved through open fields for about two miles at which time it widened to nearly 1/4 mile wide and became wrapped in rain. It destroyed three homes, several outbuildings, and damaged a few other homes before it moved into the town of Gifford. The rain-wrapped tornado was about 1/2 mile wide when it moved through the center of Gifford. Nearly 30 homes were destroyed, more than 40 suffered major damage, and around 125 had minor damage. Around 15 businesses sustained moderate to major damage and the roof of a school was peeled back. Hundreds of vehicles were damaged or destroyed. The tornado tracked for another five miles to the northeast, destroying three homes and numerous outbuildings, damaging several other homes, and snapping many

trees and power poles. Six people were injured in Champaign County, with damage estimated around $60 million."

Figure 3-7. Damage to Gifford by EF-3 Tornado as Viewed on November 18, 2013

Source: Photo by IEMA on NOAA website, http://www.crh.noaa.gov/images/ilx/events/17nov13/iema-gifford.jpg

Vulnerability Assessment

The populations and structures situated within all Plan Area jurisdictions share similar or equal risks to damages or injuries associated with tornado events.

Potential Health and Safety Threat

Tornadoes are capable of causing injury or the death of people living in any part of the Plan Area. Tornadoes possess the power to throw a person a long distance, turn ordinary objects into projectiles, and cause the collapse of structures providing shelter to those in its path.

TORNADOES – RISK ASSESSMENT

Potential Damage to Property
Tornadoes are capable of minimal to complete destruction of residential homes, businesses, and infrastructure. The maximum potential damage to a structure, therefore, is equal to its full replacement cost.

The INHMP estimates an annual property damage cost for Champaign County at $677,795 due to tornado events.[11]

Potential Economic Impact
The types of potential economic impacts that can result from a tornado in the Plan Area are described below:

- Financial hardships endured by survivors as a result of loss of lives during a tornado event
- Financial hardships due to personal injuries or animal injuries resulting from a tornado
- Cost of emergency response and cleanup as a result of tornado damage
- Loss of revenue for economic establishments that are damaged or destroyed by a tornado
- Loss of revenue for economic establishments whose utility services are interrupted as a result of a tornado
- Disruption of transportation routes due to debris

SEVERE WINTER STORMS – HAZARD PROFILE

For HMP planning purposes, the 'Severe Winter Storms' hazard includes: blizzards; heavy snow storms; and ice storms.

Location:
The entire Plan Area is equally at risk from severe winter storms.

Extent:
'The Cold, Hard Facts about Winter Storms' describes the severe winter storms experienced in Illinois, and indicates that the Central Illinois area is situated ideally for potential severe freezing rain or ice storms to occur.[12]

The INHMP contains general descriptions of severe winter storm types across the state. A blizzard is the most dangerous of all winter storms, combining low temperatures, heavy snowfall and winds of at least 35 miles per hour, reducing visibility to less than a quarter-mile. In the central Illinois area, a heavy snow storm will typically produce eight inches or more of snow in 12 hours or less. For other parts of the state and country, the amount of snow and the time period required to classify an event as a heavy snow storm vary. An ice storm occurs when moisture falls and freezes immediately upon impact to a thickness of one-quarter inch or more.

NWS categorizes severe winter storms for the purposes of providing early warning, which is important for minimizing their potential impacts. NWS issues the following types of warnings regarding severe winter storms:

Table 3-11. National Weather Service Winter Weather Warnings

Warning Type	Issued by NWS when…
Winter Weather Advisory	… a significant winter storm or hazardous winter weather is occurring, imminent, and is an inconvenience.
Winter Storm Warning	… a significant winter storm or hazardous winter weather is occurring, imminent, or likely and is a threat to life and property.
Heavy Snow Warning	… if significant snowfall is expected; criteria vary depending on location.
Blizzard Warning	… winds are 35 mph or greater, with blowing snow reducing visibility to a quarter-mile or less for at least three hours, and when dangerous wind chill temperatures are expected in the warning area.

Source: NWS

History
Table 3-12 specifies Federal Disaster Declarations on record as the result of a 'Severe Winter Storms' event within the Plan Area.

Table 3-12. Severe Winter Storm Federal Disaster Declarations within Plan Area

Year	Disaster Declaration #	Natural Hazard Event Type(s)
1990	DR-860	Ice Storm
1999	EM-3134	Winter Snow Storm

Source: FEMA

SEVERE WINTER STORMS – HAZARD PROFILE

Based on available NCDC data regarding severe winter storm events within the Plan Area, a total of 33 severe winter storm events occurred in Champaign County which comprises most all of the Plan Area over the past 18-year period (November, 1996 –November, 2014). These events included 12 heavy snow events, four ice storms, two blizzards, and 15 events designated as 'winter storms.'

Future Severe Winter Storms Events

NCDC data indicates that, from 1996 through November 2014 (a period of approximately 18 years), a total of 33 severe winter storm events occurred within the Plan Area. Based on recorded frequencies of severe winter storms events for the Plan Area and the region, an estimate of the probability of future occurrences of a severe winter storm event occurring within the Plan Area is 100 percent for any given year.

SEVERE WINTER STORMS – RISK ASSESSMENT

Impacts

Deaths from dangerously low temperatures, and injuries and fatalities from hazardous driving conditions are the main threats posed by severe winter storms. Winter storms are also capable of causing property damage, including costly damage to electrical utilities. Destruction of electrical utility infrastructure not only affects the utility companies, but can cause loss of revenue for businesses if they experience power service interruption.

'The Cold, Hard Facts about Winter Storms' describes characteristics and magnitude of severe winter storms in Illinois and claims that severe winter storms in Illinois produce more total damage than any other form of short-term severe weather, including tornadoes, lightning, and hail.[13]

Although severe winter storm events are capable of contributing as a cause of accidents and cold-weather exposure fatalities and injuries, there are no fatalities or injuries due to severe winter storm events are recorded as occurring within the Plan Area. However, on a statewide basis, NCDC winter weather data records available indicate that a total of 28 recorded fatalities were attributed to 'extreme cold/windchill' or 'cold/wind chill' over the past 18-year period.

Within the Plan Area, a winter storm on February 1, 2011 was estimated to have caused $50,000 in property damage. This was the only severe winter storm event recorded by NCDC as having caused damage in the 18 years of tracking of severe winter storms events.

Vulnerability Assessment

The populations and structures situated within all Plan Area jurisdictions share similar or equal risks to damages or injuries associated with 'Severe Winter Storms' events.

Potential Health and Safety Threat

Winter storms, especially the heavy snow fall and the cold temperatures associated with them, can cause injury or death. All residents of the Plan Area are potentially vulnerable to the effects of severe winter storms. These storms can include extremely low temperatures which are harmful to the human body with prolonged exposure.

SEVERE WINTER STORMS – RISK ASSESSMENT

Winter storms can also involve accumulation of snow and/or ice which can create slick, dangerous roads. Vehicular accidents are common after winter storms which produce significant amounts of snow and particularly ice. Blizzards reduce visibility, making travel even more dangerous.

Potential Damage to Property
All structures in the Plan Area are exposed to the threat of winter storms. When temperatures are below zero degrees, water pipes can freeze and burst, causing expensive water damage to buildings. Ice storms can cause build ups of ice which destroys trees and causes damage to overhead power lines.

The INHMP estimates an annual property damage cost for Champaign County at $31,398 related to severe winter storms.[14]

Potential Economic Impact
The types of potential economic impacts that can result from a severe winter storm event in the Plan Area are described below:

- Costs of clearing roads of snow and ice
- Cleanup costs of trees downed in ice storms
- Repair costs of electrical utility lines downed in ice storms
- Loss of revenue for economic establishments whose power service is interrupted as a result of ice or snow storms
- Disruption of transportation routes

FLOODS – HAZARD PROFILE

The INHMP states that flooding is the second most common natural hazard in the United States, following fire. A simple definition of flooding is an overflow of water onto land that is normally dry. IEMA identifies the following flood types: riverine floods, flash floods, and overland floods.

Location

All participating jurisdictions in the Plan Area are equally at risk from 'overland floods' or 'flash floods.' Areas within the Plan Area considered at risk from 'riverine' or 'overbank' floods are those portions of the participating jurisdictions that are situated within the 1% floodplain, based on FEMA digital Flood Insurance Rate Maps.

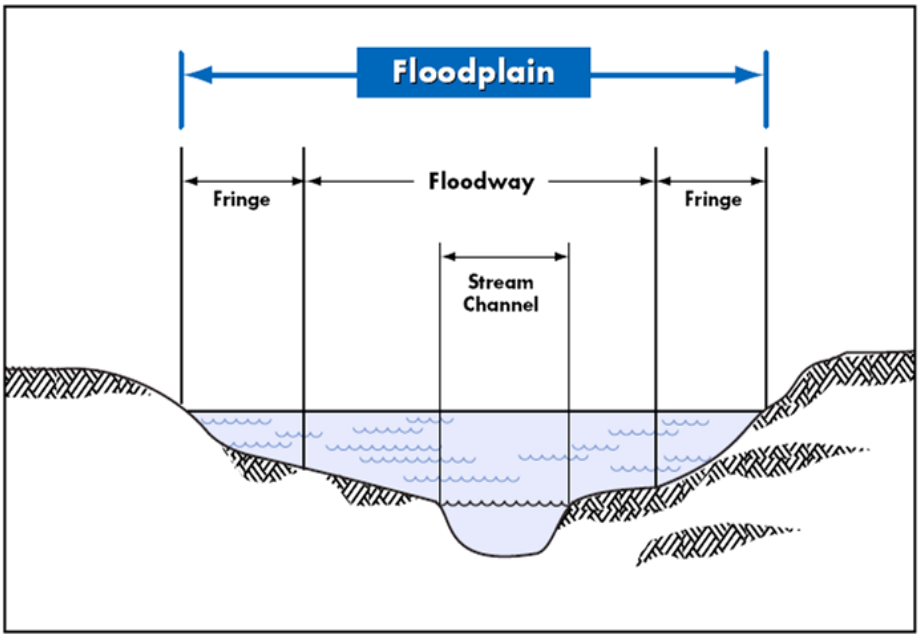
Extent

Riverine or Overbank Floods

Riverine or overbank floods occur when water from rainfall or snow melt flows at a quantity and speed that a river, stream, or creek cannot absorb. The result is that the areas immediately surrounding these bodies of water can become inundated with water. Riverine floods may develop slowly over the course of several days or weeks, as precipitation accumulates.

The 1% flood (also referred to as the '100-year flood' or the 'base-flood') is the standard used by the NFIP in determining whether flood insurance is required. FEMA's Digital Flood Insurance Rate Maps indicate the 1% floodplain as 'Zone A.' Figure 3-8 shows the relationship between a river and its floodplain.

Figure 3-8. One Percent Floodplain



Source: IDNR

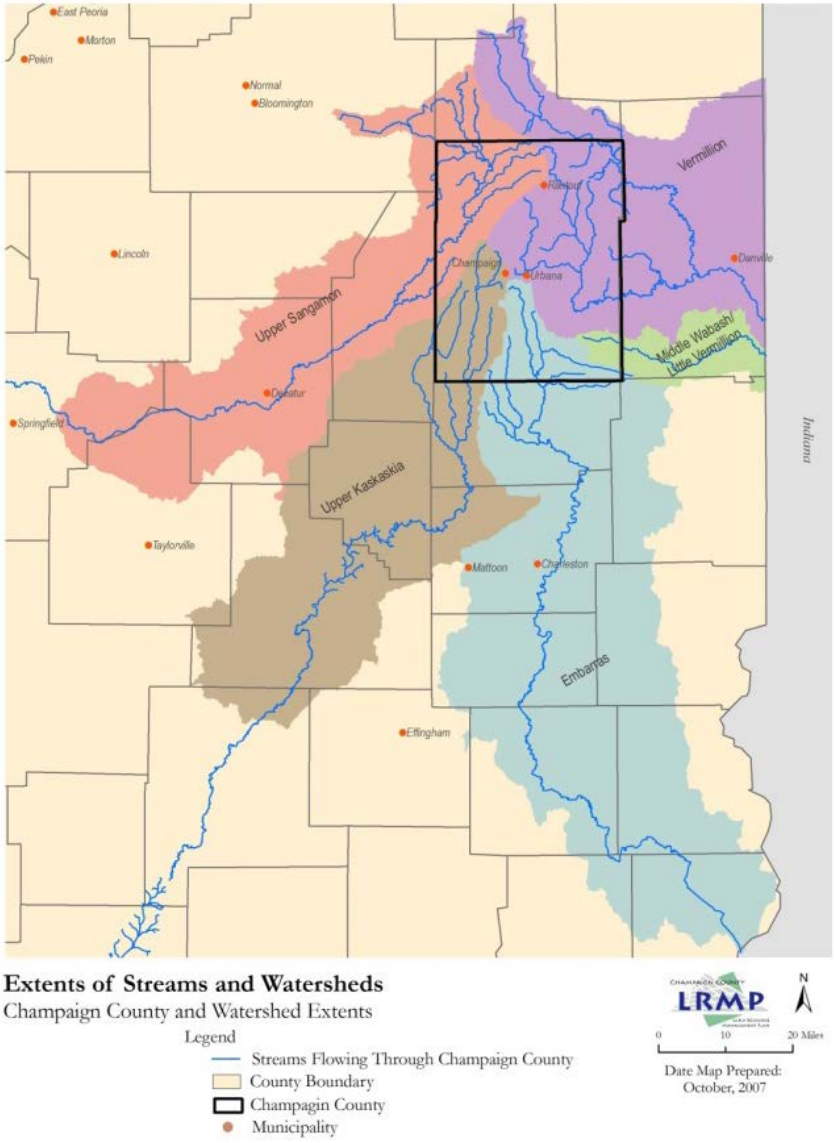
FLOODS – HAZARD PROFILE

USGS indicates that variable factors determine whether or not a 100-year storm will produce a 100-year flood. These factors include:

- extent of rainfall in the watershed
- soil saturation before the storm
- relation between the size of the watershed and duration of the storm.[15]

Figure 3-9 indicates the location of watersheds in the Plan Area and in the context of central Illinois. The Plan Area contains the headwaters of five different watersheds: Kaskaskia River, Vermillion River (Wabash Basin), Wabash River, Embarras River, and Sangamon River.

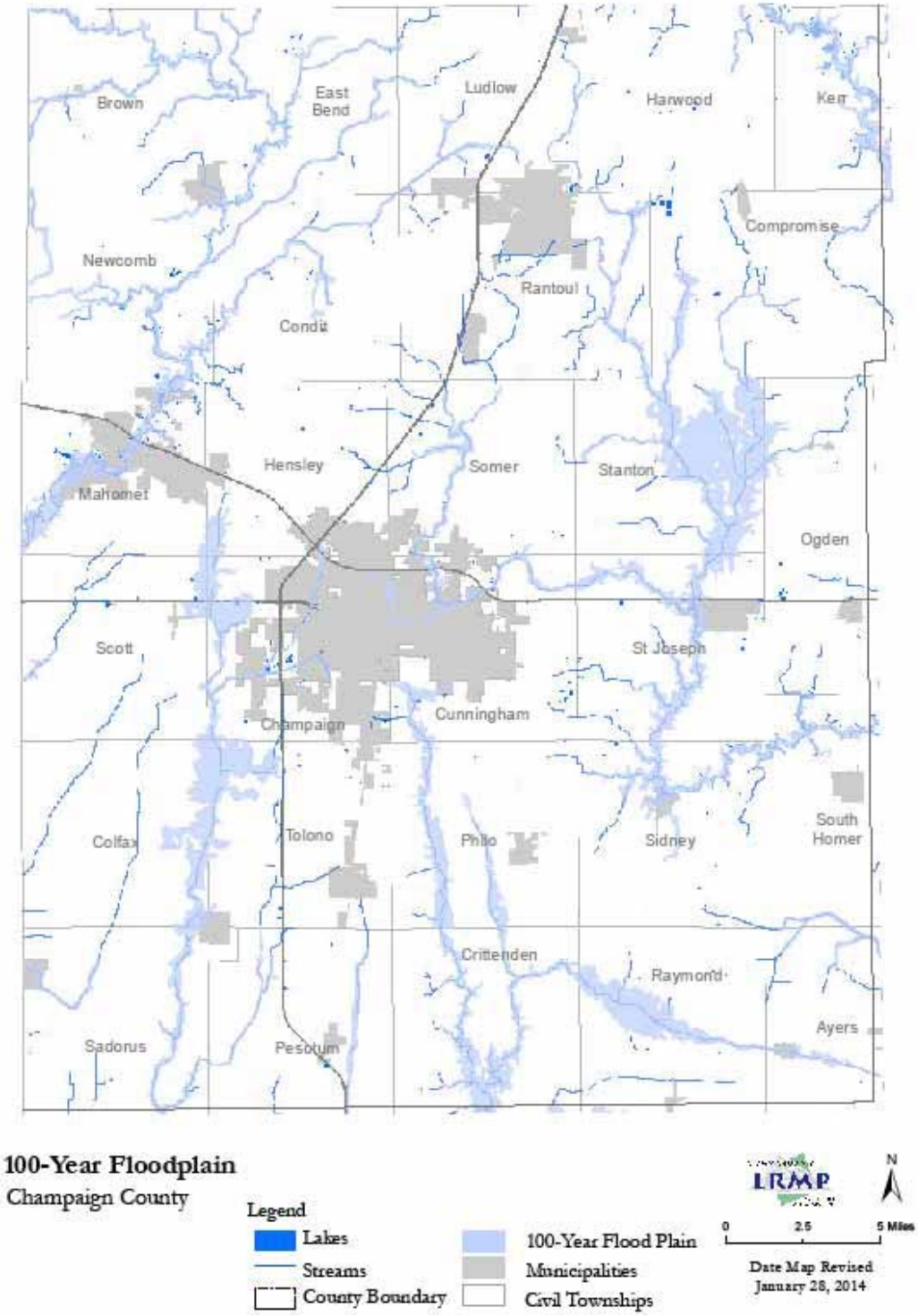
Figure 3-9. Five Watersheds within Plan Area



FLOODS – HAZARD PROFILE

Figure 3-10 is a map of the 1% Floodplain (referred to as 100-Year Floodplain) within the Plan Area based on FEMA DFIRMs effective as of October 2, 2013.

Figure 3-10. One Percent Floodplain Areas within the Plan Area



FLOODS – HAZARD PROFILE

Flash Floods:
Flash floods are quickly developing floods that occur as the result of the rapid accumulation of large quantities of precipitation, usually from intense thunderstorms. Flash floods are particularly dangerous because of their quick onset and possibility of occurring with little warning. While intense precipitation is the most common cause of flash flooding, dam failure can cause the most catastrophic flash floods. Figure 3-11 is a photograph of the aftermath of a quick onset flash flood and how a road can be rendered impassable.

Figure 3-11. Local Example of Flash Flooding (2008)

Source: The News-Gazette

Overland Floods and Ponding:
Overland floods and ponding occur outside of rivers or streams as the result of water accumulating in poorly draining soils or in low lying areas. Overland flooding may be the result of heavy precipitation, snow melt, or broken water lines, amongst other causes. Overland flooding can lead to the accumulation and pooling of water, a phenomenon known as ponding. Figure 3-12 depicts an example of ponding in a wooded area.

Portions of the Plan Area are at risk from some amount of flash flooding and overland flooding, depending on local ground elevations and the ability of stormwater sewers to handle large amounts of precipitation. The low relief of the Plan Area, its position at the

intersection of drainage divides, and its glacially derived soils cause it to be poorly drained. When flash flooding or overland floods occur, flood depths in the majority of impacted areas typically are less than five feet.

Figure 3-12. Example of Ponding

Source: Medina County SWCD

History

The Plan Area has been a part of two federally declared flood disasters:

- In 1994, large scale flooding in 16 Illinois counties, including Champaign, Piatt, and Vermilion Counties, led to a federal emergency declaration. Heavy rains fell over a two-day period in April of that year and resulted in excess of $50 million in damages to homes, businesses, and property in the County. This is the most damaging flood in recent years affecting the Plan Area and other Central Illinois areas.

- Most recently, occurring between April 21 and May 3, 2002, a series of severe storms produced tornadoes and flooding that caused widespread damage to 68 counties in Central and Southern Illinois, including Champaign, Piatt, and Vermilion Counties.

NCDC data indicates that from May, 1996 through November, 2014 a total of 41 floods, including 39 'flash flood' events and two 'flood' events, are recorded as occurring within the Plan Area.

The USGCRP observed trends in annual river flood magnitude, measured in percent change per decade, from the 1920s through 2008. There were increases of varying degree across the state of Illinois. Nearest the Plan Area, increases of 6% to 9% in river flood magnitude were noted during the study time period (1920s through 2008).[16]

FLOODS – HAZARD PROFILE

Future Flood Events

Flash Floods or Ponding Floods
Certain portions of the Plan Area are at risk from some amount of flash flooding and overland flooding, especially low relief surface areas, poorly drained soils, lower ground elevation areas, or areas where the ability of stormwater sewers to handle large amounts of precipitation is limited. Specific to areas that currently endure these types of challenges, based on recorded frequencies of flash flood and ponding events, an estimate of the probability of future occurrences of a flash flood or ponding flood event occurring is 100 percent for any given year.

Riverine Floods
Though unlikely, it is possible to have two 100-year flood events, or even two 500-year flood events occur within years, or even months, of each other. The IDNR Office of Water Resources *Floodplain Management in Illinois Quick Guide* warns:

> "Many people don't understand just how risky the floodplain can be. There is a 26% chance that a home in the Floodplain will flood during a 30-year mortgage period. The chance that a major fire will occur during the same period is only 1%!" [17]

Tables 3-13 and 3-14 provide details regarding the terms used to describe the frequencies and expected probabilities that a riverine or overbank flood may occur.

3-13. Riverine Flood Recurrence Intervals and Probabilities of Occurrences

Recurrence interval (years)	Probability of occurrence in any given year	Percent chance of occurrence in any given year
100	1 in 100	1
50	1 in 50	2
25	1 in 25	4
10	1 in 10	10
5	1 in 5	20
2	1 in 2	50

Source: USGS

Table 3-14. Interchangeable Terms for Flood Events

Common Term	Term Based on Probability
10-year flood	10% flood
50-year flood	2% flood
100-year flood	1% flood
500-year flood	0.2% flood

FLOODS – RISK ASSESSMENT

Impacts of Floods

Flash Floods or Ponding
Flash flood waters move at extremely rapid speeds. They can damage crops, move boulders, uproot trees, destroy bridges and infrastructure, and cause severe erosion. Ponding, which is caused by overland flooding, can damage crops and contribute to erosion, as well as disrupt transportation by making roads impassable.

Riverine or Overbank Floods
Principal flood problems that tend to occur in the Plan Area as a result of riverine or overbank floods are described in detail in the FEMA *Flood Insurance Study: Champaign County, Illinois and Incorporated Areas*.[18] Appendix C contains an excerpt from the Flood Insurance Study entitled 'Principal Flood Problems.'

Repetitive Loss Structures
'Repetitive loss structure' is a term used by the National Flood Insurance Program (NFIP) to refer to a structure for which two or more losses of at least $1,000 have been paid under the NFIP within any 10-year period since 1978. Available data regarding repetitive loss structures in the Plan Area is dated January 31, 2015. FEMA Guidance specifies that flood insurance claim information is subject to The Privacy Act of 1974, as amended. The Act prohibits public release of policy holder names, or names of financial assistance recipients and the amount of the claim payment or assistance. Based on this data, Table 3-15 displays the types and quantity of repetitive loss structures in the Plan Area.

Table 3-15. Repetitive Loss Structures within Plan Area

Type of Structure	Number of Structures	Location (within or nearby the jurisdiction shown below)
Single Family Residence	1	Village of Broadlands
	3	City of Champaign
	1	Village of Fisher
	2	Village of Sidney
	3	Village of St. Joseph
Other Type of Residential	4	City of Champaign
Multi-Family Residential	3	Village of St. Joseph
Non Residential	3	City of Champaign

Source: FEMA

Vulnerability Assessment

Flash Floods or Ponding
Certain portions of the Plan Area are at risk from some amount of flash flooding and overland flooding, especially low relief surface areas, poorly drained soils, lower ground elevation areas, or at areas where the ability of stormwater sewers to handle large amounts of precipitation is limited.

FLOODS – RISK ASSESSMENT

Vulnerability Assessment

Riverine or Overbank Floods
A risk assessment using the FEMA HAZUS modeling program was used to estimate the impacts of a 1% flood event in the Plan Area. Inputs to the HAZUS model included 2010 U.S. Census data and FEMA digital Flood Insurance Rate Maps effective October 2, 2013. The risk of a riverine or overbank flood event is greatest for the following jurisdictions within the Plan Area:

- Village of Broadlands
- City of Champaign
- Village of Fisher
- Village of Ivesdale
- Village of Mahomet
- Village of Sidney
- Village of St. Joseph
- City of Urbana
- Unincorporated Champaign County

Appendix D provides the jurisdiction-specific results of the risk assessment to estimate the impacts of a 1% flood event. The following information describes the risk assessment results regarding projected impacts of a riverine or overbank flood event to the Plan Area in general.

Potential Damage to Property
HAZUS estimates that about 705 structures will be at least moderately damaged in a 1% flood event. Table 3-16 summarizes the expected damage by occupancy for the buildings in the Plan Area.

Table 3-16. Expected Building Damage by General Occupancy Type

	Number Damaged by Percentage of Damage to Structure						
	1-10%	11-20%	21-30%	31-40%	41-50%	50%+	Total
Agriculture	54	52	12	6	8	12	144
Commercial	9	16	9	1	0	0	35
Education	0	0	0	0	0	0	0
Government	2	5	0	0	0	1	8
Industrial	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0
Residential	31	90	239	64	86	8	518
Total	96	163	260	71	94	21	705

Source: Hazus

Potential Damage to Critical Facilities
In total, 21 critical facilities out of the 2,071 in the Plan Area are projected to sustain damage in the 1% flood event. Table 3-17 provides a count for the number of critical facilities damaged in each category.

Table 3-17. Projected Count of Damaged Critical Facilities within Plan Area

Critical Facility Type	Number Damaged
Essential Facilities	1
Transportation Lifelines	12
Utility Lifelines	3
High Potential Loss Facilities	5
Facilities of Local Importance	0
Total	21

Source: Hazus

Essential Facilities

In the event of a 1% flood, HAZUS estimates that there will be some damage to one essential facility in the Plan Area. An emergency operations center located in Sidney is projected to sustain heavy damage totaling approximately 1.6 million dollars. The projection is that this facility will be non-functional and will not be fully restored for an estimated 630 days. In the event of a 1% flood, there is no projected damage to police, fire department, or hospital facilities in within any jurisdiction in the Plan Area.

Transportation and Utility Lifelines

A 1% flood event also has the potential to damage transportation and utility lifelines. The estimated damage to transportation infrastructure is minimal. The only projected damage to transportation infrastructure is a small amount of damage to 12 highway bridges. HAZUS estimates this damage to be around $8,000.

The HAZUS model projects that three wastewater facilities will be affected, rendering two temporarily inoperable, and will sustain an estimated total of $46,072 in damages. These three facilities include the sewage treatment plants in Fisher, the Sangamon Valley sewage treatment plant in Mahomet, and the Urbana-Champaign Sanitary District in Southwest Champaign.

High Potential Loss Facilities

A total of five high potential loss facilities are expected to sustain damage in a 1% flood event. Greenwood Lake Dam, Homer Lake Dam, and Spring Lake Dam will be damaged. Two hazardous material facilities will also be damaged in this flood event. Herff Jones Cap and Gown located in the City of Champaign and an Ameren Illinois electric substation facility located in the City of Urbana sustain damage in this event.

Facilities of Local Importance

HAZUS does not predict any damage to facilities of local importance in the Plan Area in the event of a 1% flood.

FLOODS – RISK ASSESSMENT

Potential Economic Impact

Building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood. These values are not available from a Level 2 'User Defined Facility' HAZUS analysis, so they were estimated using a Level 1 HAZUS analysis.

Within the Plan Area, the total building-related losses are an estimated $69.70 million. Less than 1% of the estimated losses were related to the business interruption. Residential occupancies made up 40.3% of the total loss. Table 3-18 provides a summary of the losses associated with the building damage in the Plan Area.

Table 3-18. Projected Building-Related Economic Loss Estimates within Plan Area
(Millions of Dollars)

Category	Area	Residential	Commercial	Agricultural	Others	Total
Building Loss						
	Building	17.49	1.55	4.74	0.20	23.98
	Content	10.58	4.40	11.07	1.18	27.23
	Inventory	0.00	5.65	12.47	0.00	18.12
	Subtotal	28.07	11.60	28.28	1.38	69.33
Business Interruption						
	Income	0.00	0.09	0.00	0.00	0.09
	Relocation	0.05	0.01	0.00	0.00	0.06
	Rental Income	0.00	0.00	0.00	0.07	0.07
	Wage	0.00	0.08	0.00	0.07	0.15
	Subtotal	0.05	0.18	0.00	0.14	0.37
All	Total	28.12	11.78	28.28	1.52	69.70

Source: Hazus

EXTREME HEAT – HAZARD PROFILE

The INHMP ranks the risk of extreme heat to the Plan Area as 'elevated,' which is the median of five ranks. The INHMP defines 'extreme heat' as '…temperatures that hover 10 degrees or more above the average high temperature for several weeks.'

Location

The entire Plan Area is equally at risk from extreme heat.

Extent

Extreme heat is a natural hazard with deadly potential, since it can kill by pushing the human body beyond its limits. Extreme heat is most dangerous to children, the elderly, and those who are sick or overweight. Heat becomes dangerous when it exceeds the body's ability to cool itself by sweating. This is especially common with conditions of high humidity level plus extreme heat. Table 3-19 provides a description of common heat-related terms.

Table 3-19. Extreme Heat Terms

Heat Wave	Prolonged period of excessive heat, often combined with excessive humidity.
Heat Index	A number in degrees Fahrenheit (F) that tells how hot it feels when relative humidity is added to the air temperature. Exposure to full sunshine can increase the heat index by 15 degrees.
Heat Cramps	Muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe of heat related medical problems, they are often the first signal that the body is having trouble with the heat.
Heat Exhaustion	Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs. This results in a form of mild shock. If not treated, the victim's condition will worsen. Body temperature will keep rising and the victim may suffer heat stroke.
Heat Stroke	Heat stroke is life-threatening. The victim's temperature control system, which produces sweating to cool the body, stops working. The body temperature can rise so high that brain damage and death may result if the body is not cooled quickly.
Sun Stroke	Another term for heat stroke.

Source: FEMA

NWS uses the following categories for the purposes of issuing early warnings, which is important for minimizing the impacts of extreme heat:

- *Excessive Heat Outlook*: when the potential exists for an excessive heat event in the next three to seven days. An outlook is used to indicate that a heat event may develop. It is intended to provide information to those who need considerable lead time to prepare for the event, such as public utilities, emergency management and public health officials.

- *Excessive Heat Watch*: when conditions are favorable for an excessive heat event in the next 12 to 48 hours. A watch is used when the risk of a heat wave has increased, but its occurrence and

EXTREME HEAT – HAZARD PROFILE

timing is still uncertain. It is intended to provide enough lead time so those who need to set their plans in motion can do so, such as those in charge of implementing individual city excessive heat event mitigation plans.

- *Excessive Heat Warning/Advisory*: when an excessive heat event is expected in the next 36 hours. Both are issued when an excessive heat event is occurring, is imminent, or has a very high probability of occurrence. The warning is used for conditions posing a threat to life or property. An advisory is for less serious conditions that cause significant discomfort or inconvenience and, if caution is not taken, could lead to a threat to life and/or property.

Heat index is the perceived temperature that is felt when factoring in the air temperature and the relative humidity. Table 3-20 shows the heat index levels associated with heat-related illnesses.

Table 3-20. Heat Index and Heat Sickness

Heat Index	Possible Heat Disorders for People in Higher Risk Groups
130º or higher	Heat stroke/sun stroke, highly likely with continued exposure.
106º - 130º	Sun stroke/heat cramps or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity.
90 º -108º	Sun stroke, heat cramps and heat exhaustion possible with prolonged exposure and/or physical activity.
80 º - 90º	Fatigue possible with prolonged exposure and/or physical activity.

Source: NWS

History

NCDC data records indicate that within the Plan Area, four 'excessive heat' events occurred, with the initial 'excessive heat' occurrence reported in 2010. NCDC data indicates that from 2010 through 2012 a total of four extreme heat events occurred within the Plan Area. [19]

Future Extreme Heat Events

It is difficult to accurately predict the probability of a future extreme heat event, even with reported NCDC history of occurrences. NCDC data indicates that from 2010 through 2012 a total of four 'excessive heat' events occurred within the Plan Area. Based on this frequency of reported events and the frequency of reported 'excessive heat' events within the Central Illinois region and statewide, an estimate of the probability of an extreme heat event occurring within the Plan Area is 25% in any given year.

EXTREME HEAT – RISK ASSESSMENT

Impacts

The impacts of extreme heat vary from year to year. To date, no damage to property or injuries or fatalities has been officially recorded by NCDC as a result of excessive heat events.

EXTREME HEAT – RISK ASSESSMENT

Vulnerability Assessment

Climate Change Impacts in the United States: The Third National Climate Assessment describes the impacts of climate change for the United States. The assessment indicates that the average temperature in most areas of the United States has increased more than 1.5 degrees Fahrenheit from 1991 to 2012. The average temperature for the Plan Area increased by 1 to 1.5 degrees over the 22-year period 1991 - 2012. [20] Appendix D contains an excerpt from the Assessment regarding observed U.S. temperature change.

The report projects surface air temperature increases for the United States under two different assumptions. The results represent the average increase from 2071 to 2099 relative to 1970-1999. The first scenario involves a significant reduction in heat trapping gases, and the second assumes continuing trends in global emissions. In the case of substantial emissions reductions, the entire state of Illinois is projected to have an increased surface air temperature of four to five degrees Fahrenheit, and in the case of continued emissions that increase becomes 8 to 9 degrees Fahrenheit.[21]

The report includes projections to indicate, that under circumstances of rapid reductions in heat trapping gases, the Plan Area could see a 7 to 8 degree Fahrenheit increase on the coldest days, and an increase of up to three degrees Fahrenheit on the hottest days in 2081-2100 relative to 1986-2005. If emissions continue to increase, the Plan Area could see an increase of more than 15 degrees Fahrenheit on the coldest days and 10 to 15 degrees Fahrenheit on the hottest days.[22]

Potential Health and Safety Threat

All residents of the Plan Area are at risk from an extreme heat event. Extreme heat can cause fatigue, heat cramps, sun stroke, and even death. Elderly populations and small children are most vulnerable when it comes to extreme temperatures.

Potential Damage to Property

Extreme heat does not usually damage structures. Prolonged periods of extreme heat often lead to very dry conditions, which can damage crops. The combination of extreme heat and dry weather during corn pollination or during the flowering and pod fill stages of soybean crops, can cause significant yield losses.

Potential Economic Impact

The potential impacts include heightened energy demands and utility costs to cool structures during periods of extreme heat.

DROUGHT –HAZARD PROFILE

The Climate Atlas of Illinois defines drought as: 'a period of abnormally dry weather sufficiently long to cause serious impacts on agriculture, water supplies, and other activities in the affected area.'

Location
All communities and locales in Plan Area are at equal risk from drought. Most often, drought affects geographical areas that are larger than the Plan Area.

Extent
Drought is a temporary climatic phenomenon which can affect small areas or entire regions, caused by a lower than average amount of precipitation over an extended period of time. According to the INHMP, weather conditions, soil moisture, runoff, water table conditions, water quality and streamflow are all natural factors that are important in determining drought. High temperature, high wind and low relative humidity can significantly aggravate its severity. There is no single universally accepted definition of drought. The INHMP offers four operational definitions:

Table 3-21. Operational Drought Definitions

• Meteorological Drought	a period of well-below-average precipitation that spans from a few months to a few years
• Agricultural Drought	a period when soil moisture is inadequate to meet the demands for crops to initiate and sustain plant growth
• Hydrological Drought	a period of below-average streamflow and/or depleted reservoir storage (i.e., streamflow, reservoir and lake levels, ground water)
• Economic Drought	a reference to the supply and demand of water. Some years there is an ample supply of water and in other years there is not enough to meet human and environmental needs

Source: INHMP

History
NCDC data indicates three occurrences of drought on record for the Plan Area, all reported for reported occurrences in 2012. A summary of drought occurrences and drought-like conditions regionally and statewide follows.

- 1983 – By mid-June, all 102 counties in Illinois were affected by drought, and subsequently designated as state disaster areas.
- 1988 – A drought impacted nearly half of the state, including the Plan Area, and caused significant crop losses.
- 2005 – The Plan Area was hit by a drought conditions which were particularly hard on farmers, and the drought is among the top three most severe droughts for which records exist.
- 2007 – The Plan Area was included in a group of 61 counties that were declared a natural disaster area due to a drought which occurred as the result of well below average rain between April 1 and December 31 of 2007.
- 2012 – most of Illinois, including the Plan Area, endured a drought which lasted from July until September of 2012. In July a 'severe' drought was declared, and later during the month it

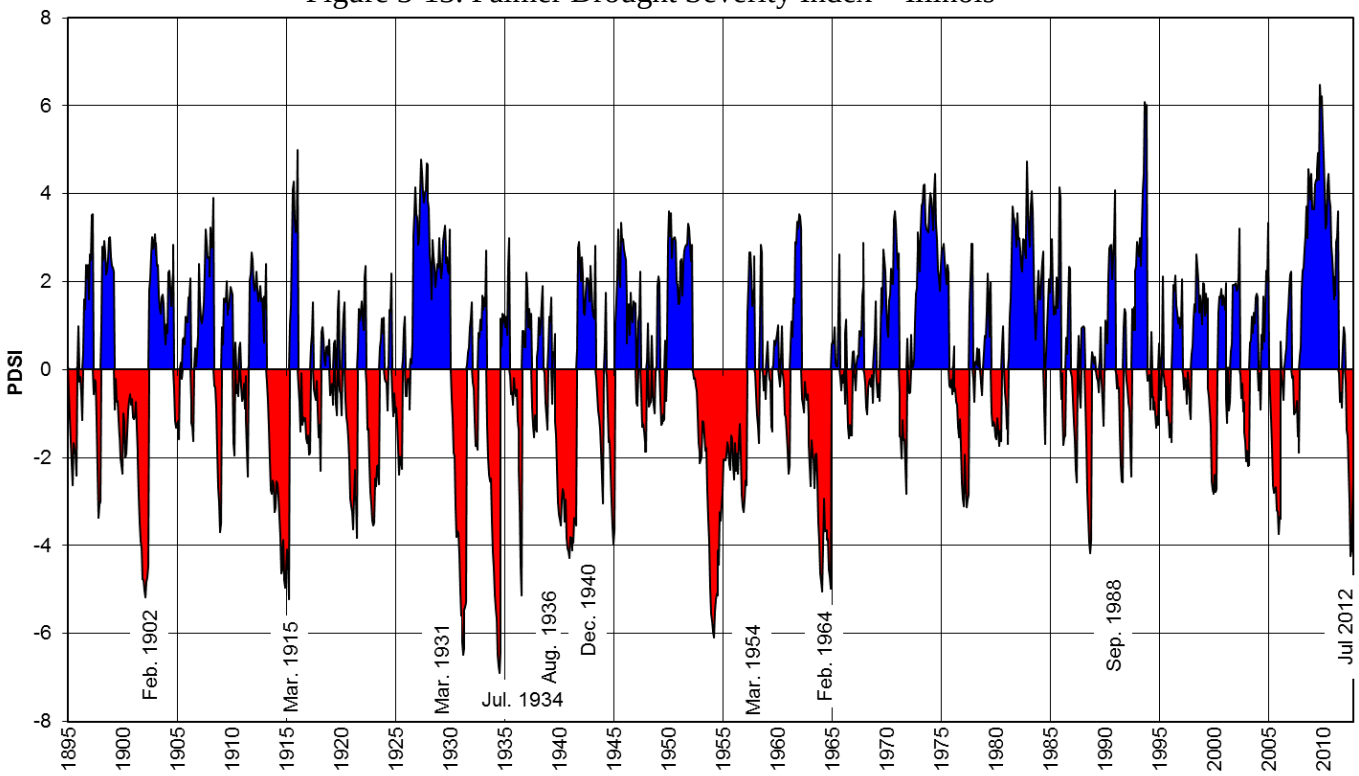
was upgraded to ‘extreme.’ During August conditions improved marginally and the drought was declassified from ‘extreme’ to ‘severe.’ A portion of the Salt Fork near St. Joseph hit its lowest point on record. Soy beans and corn were severely affected during this time. By early September, the drought was eased to a ‘moderate’ rating with 2 to 4 inches of rain resulting from Hurricane Isaac. The drought took a serious toll on crops in the Plan Area, estimated at $72.6 million in damages.

The Palmer Drought Severity Index is used to assess the severity of dry or wet spells of weather. The index is based on the principles of a balance between moisture supply and demand, excluding man-made changes. Palmer Drought Severity Index values generally ranges from -6 to +6, with values in the magnitude of +7 or -7 only rarely occurring. Negative index values denote dry spells and positive values indicating wet spells. Index values to indicate ‘normal’ to ‘extreme drought’ conditions are as follows:

0 to -0.5 = normal;
-0.5 to -1.0 = incipient drought
-1.0 to -2.0 = mild drought
-2.0 to -3.0 = moderate drought
-3.0 to -4.0 = severe drought
greater than - 4.0 = extreme drought

Drought trends in Illinois, including the recorded ‘extreme drought’ occurrences (with an index value of greater than -4.0) are indicated on the Palmer Drought Severity Index shown in Figure 3-13.

Figure 3-13. Palmer Drought Severity Index – Illinois



Source: ISWS

DROUGHT –HAZARD PROFILE

Future Drought Events

State Climatologist Jim Angel indicates that a drought is difficult to forecast with present technology and available knowledge:

> "The persistence of drought from one season to the next in Illinois is not as high as in other parts of the U.S., especially the West where multi-year droughts are common. Therefore, the ability to predict the onset or continuation of a drought is more problematic. Recent advances in our understanding of large-scale atmospheric and oceanic circulation features, such as El Niño and the Pacific Decadal Oscillation, may lead to some small degree of skill in predicting drought one or two seasons ahead. On the longer scale of multi-decades, no skill has been shown in forecasting drought, even with the application of so-called drought/solar cycles. As global and regional climate models improve we may begin to realize the ability to predict changes in frequency, intensity, or location of drought."[23]

A ballpark estimate of the probability of a drought occurring within the Central Illinois region including the Plan Area based solely on the recorded frequency of previous drought occurrences in Illinois is 10 percent.

DROUGHT – RISK ASSESSMENT

Impacts

The main impacts of drought are the potential damage it can cause to crops and the reduction of water supply. Drought is recognized as threatening to the Plan Area since it contains a large amount of agricultural land.

Vulnerability Assessment

A significant number of outlying rural residents in the Plan Area rely on private water wells to shallow aquifers that are vulnerable to drought conditions. Rural residents with no alternate plan for obtaining water during a drought may need to haul water in the event their well runs dry.

The USGCRP report, 'Climate Change Impacts in the United States: The Third National Climate Assessment' indicates that 'under high emissions scenarios' widespread drought is projected to become more common over most of the central and southern United States.[24]

Potential Health and Safety Threat

Droughts do not typically pose health and safety risks, except to those residents of the Plan Area who rely on well water. For those residents, a temporary alternative water source must be found.

Potential Damage to Property

Droughts do not pose a direct threat to structures in the Plan Area, but the dry conditions can increase the risk of fires. The majority of damage from drought is crop damage. All agricultural land in the Plan Area is vulnerable to droughts.

The INHMP estimates an annual property damage cost for Champaign County at $330,000 related to droughts. This estimate does not include those portions of the Plan Area situated outside

of Champaign County, specifically portions of Allerton and Ivesdale located in Vermilion and Piatt Counties respectively.

Potential Economic Impact
The potential economic impacts of drought include the loss of revenue for farmers whose crops are destroyed by drought.

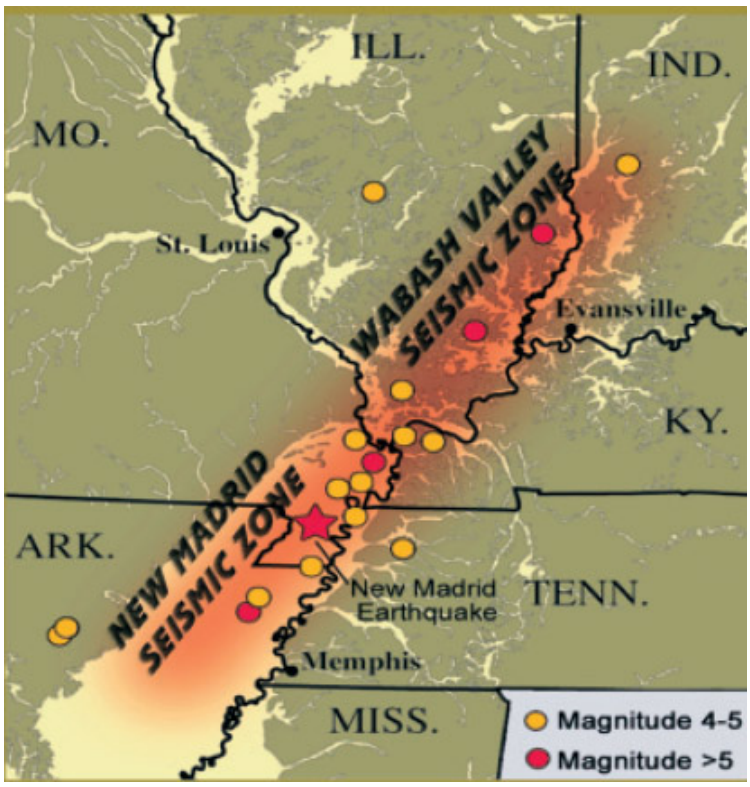
EARTHQUAKES – HAZARD PROFILE

Earthquakes occur when there is an abrupt shift in massive rock plates along fractures in the earth called faults. When these massive sections of rock move along a fault, the energy released causes the earth to shake. The point at which an earthquake occurs beneath the surface of the earth is called the hypocenter. The epicenter of an earthquake is located directly above the hypocenter on the surface of the earth.

Location

All locations within the Plan Area are at equal risk from earthquake damage from a large earthquake occurring in the New Madrid Seismic Zone (situated southwest of Illinois) and the Wabash Valley Seismic Zone (situated along the southeastern edge of Illinois).

Figure 3-14. New Madrid Seismic Zone and Wabash Valley Seismic Zone



Source: http://www.showme.net/~fkeller/quake/images2/wabashnm.jpg

Extent

The size of an earthquake event is described in two ways: by its magnitude and intensity. Magnitude is a measure of the seismic energy that an earthquake generates. Magnitude is often calculated using a seismograph and is reported using the Richter Scale, and reported as a number between 1 and 10, followed by a decimal. The Richter Scale is a base 10 logarithmic scale, meaning a magnitude 4.0 earthquake is ten times more intense than a magnitude 3.0, and a 5.0 is ten times more intense than 4.0, etc. An earthquake's intensity is the measure of an earthquake's impact on people, manmade structures, and natural structures. The most commonly used intensity scale is the Modified Mercalli Intensity Scale. Table 3-22 describes the 12 levels of the Modified Mercalli Intensity scale.

EARTHQUAKES – HAZARD PROFILE

Table 3-22. Modified Mercalli Intensity Scale

Mercalli Intensity	Equivalent Richter Magnitude	Witness Observations
1	1.0 to 2.0	Felt by very few people; barely noticeable.
2	2.0 to 3.0	Felt by a few people, especially on upper floors.
3	3.0 to 4.0	Noticeable indoors, especially on upper floors, but may not be recognized as an earthquake.
4	4.0	Felt by many indoors, few outdoors. May feel like a heavy truck passing by.
5	4.0 to 5.0	Felt by almost everyone, some people awakened. Small objects moved. Trees and poles may shake.
6	5.0 to 6.0	Felt by everyone. Difficult to stand. Some heavy furniture moved, some plaster falls. Chimneys may be slightly damaged.
7	6.0	Slight to moderate damage in well built, ordinary structures. Considerable damage to poorly built structures. Some walls may fall.
8	6.0 to 7.0	Little damage to specially built structures. Considerable damage to ordinary buildings, severe damage to poorly built structures. Some walls collapse.
9	7.0	Considerable damage to specially built structures, buildings shifted off of foundations. Ground cracked noticeably. Landslides.
10	7.0 to 8.0	Most masonry and frame structures and their foundations destroyed. Wholesale destruction. Large landslides.
11	8.0	Few, if any, structures standing. Bridges destroyed. Wide cracks in ground. Rails bent.
12	8.0 or greater	Total Damage. Lines of sight distorted. Objects thrown into the air. The ground moves in waves or ripples. Large amounts of rock may move position.

Source: USGS

Refer to Figure 3-16 for an example of intensity 'ratings' in the Plan Area with regard to a Magnitude 5.4 earthquake occurring at the Wabash Valley Seismic Zone. In the example provided, the intensity experienced in the Plan area was described as weak, with 'light' shaking and no damage.

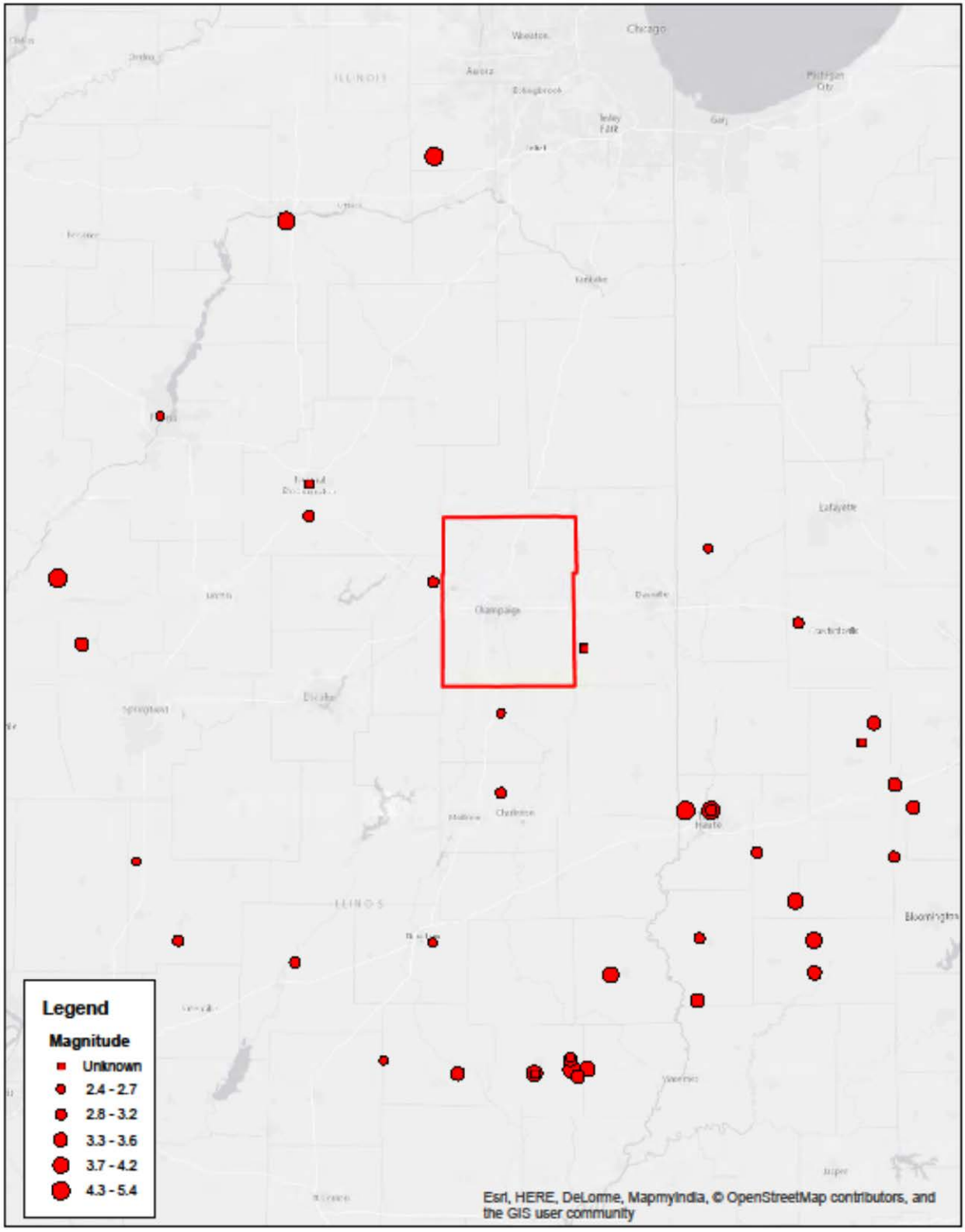
History

There is no NCDC recorded history of damage caused by earthquakes in the Plan Area. Illinois State Geological Survey (ISGS) records indicate there were 41 earthquakes within a 100-mile radius of the Plan Area. Figure 3-15 shows the locations of these events, and a summary is provided in Appendix F.

According to the INHMP, there have been over 560 earthquakes in Illinois over the past two centuries, but very few of these have caused any damage or injuries. Most of reported earthquake damage has occurred in Southern Illinois. While there is no history of damage, the New Madrid Seismic Zone (NMSZ) and the Wabash Valley Seismic Zone (WVSZ), depicted in Figure 3-14, are both capable of producing earthquakes which could damage property and cause injuries or fatalities in the Plan Area.

EARTHQUAKES – HAZARD PROFILE

Figure 3-15. Location of Earthquakes with Epicenters within 100 miles of Plan Area

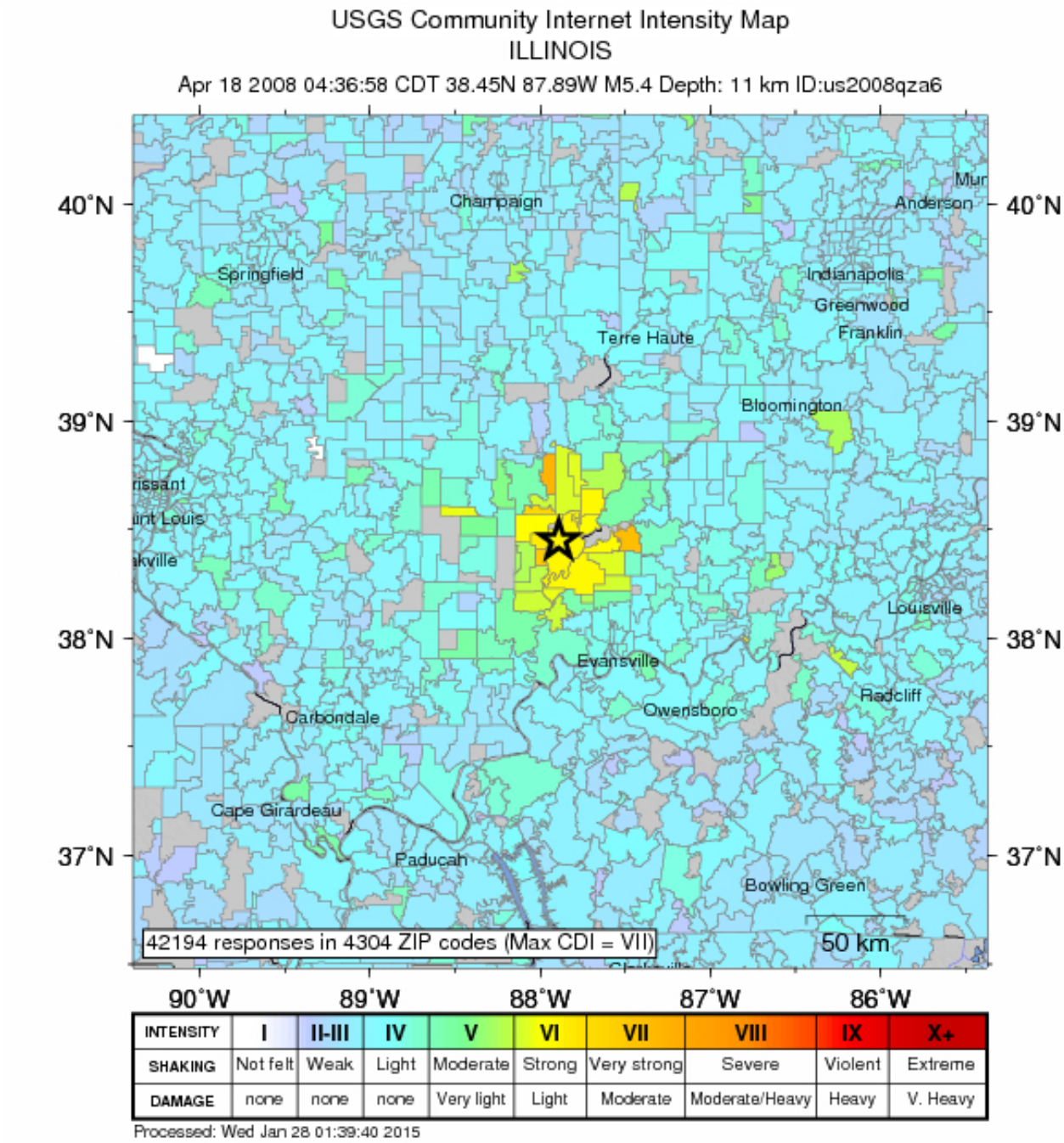


Source: ISGS

EARTHQUAKES – HAZARD PROFILE

Most recently, an earthquake felt in Champaign County occurred at 4:40 a.m. on April 18, 2008. The earthquake originated in the WVSZ and measured 5.4 on the Richter Scale. The earthquake was felt in 16 states. Figure 3-16 shows the intensity experienced by persons throughout the state as a result of this earthquake. As depicted by this figure, the strength of the earthquake in the Plan Area ranged from weak to light.

Figure 3-16. Community Intensity Map of the April 18, 2008 Earthquake



Source: NWS

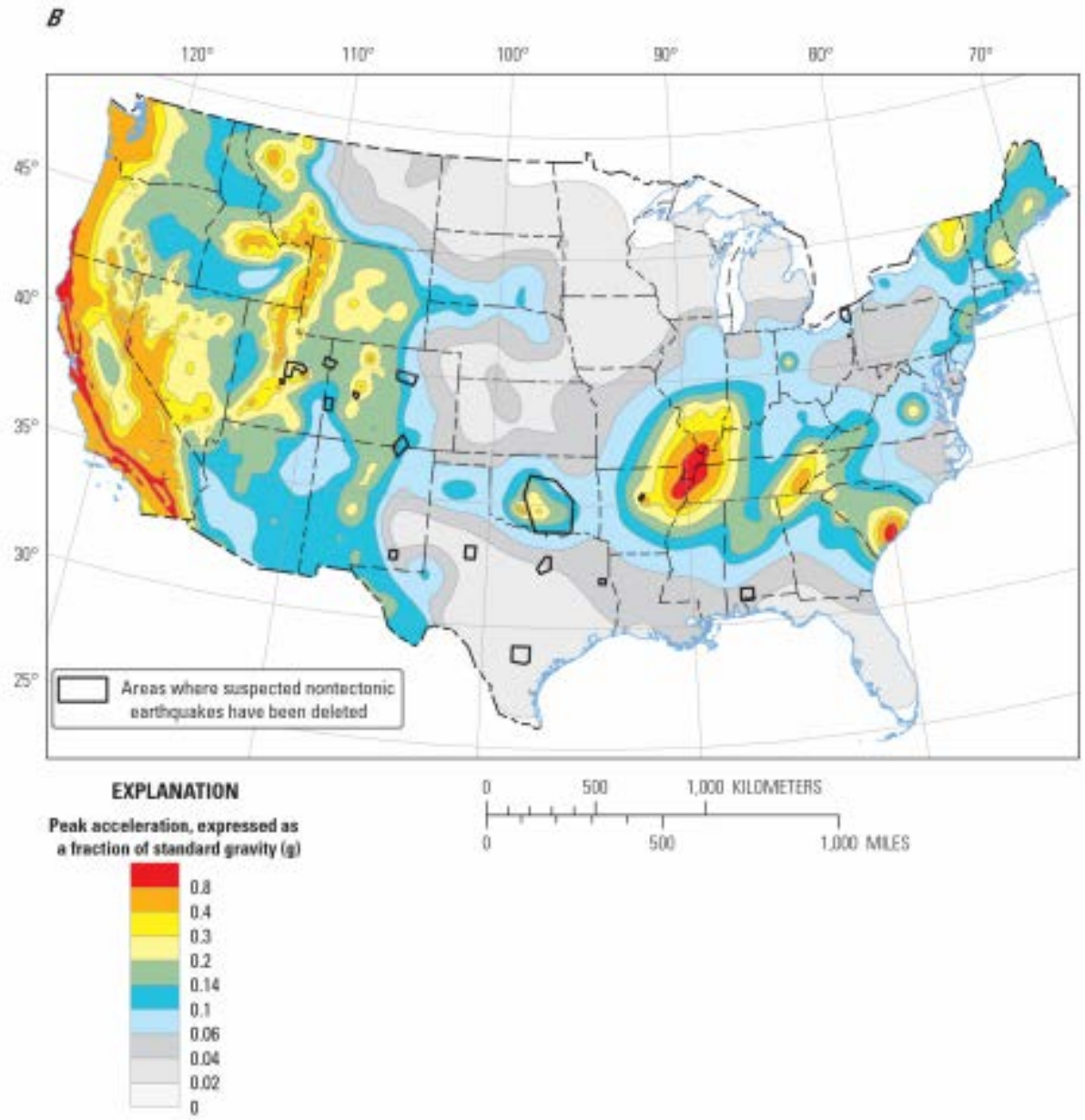
EARTHQUAKES – HAZARD PROFILE

Future Earthquake Events

Estimates of the probability of future earthquake events within the Plan Area (and, more broadly, in Illinois traditionally are based on studies of earthquake activity that has occurred in the New Madrid Seismic Zone and the Wabash Valley Seismic Zone.

The USGS produced a National Seismic Hazards Mapping Project in 2014, which estimates the earthquake risk across the country in terms of "peak acceleration with a 2% probability of being exceeded within a 50 year window." Figure 3-17 shows the severity of a possible earthquake event, and indicates the Plan Area is at risk for a peak acceleration of 6-14% gravity in the event of a large recurring earthquake in the New Madrid Seismic Zone. This event would be classified as Modified Mercalli Intensity VI.

Figure 3-17. Peak Acceleration of Possible New Madrid Earthquake



Source: http://pubs.usgs.gov/of/2014/1091/pdf/ofr2014-1091.pdf

EARTHQUAKE – RISK ASESSMENT

Impacts

No occurrences of earthquakes within the Plan Area have been recorded and, to date, no property damage as a result of an earthquake is on record as having been reported.

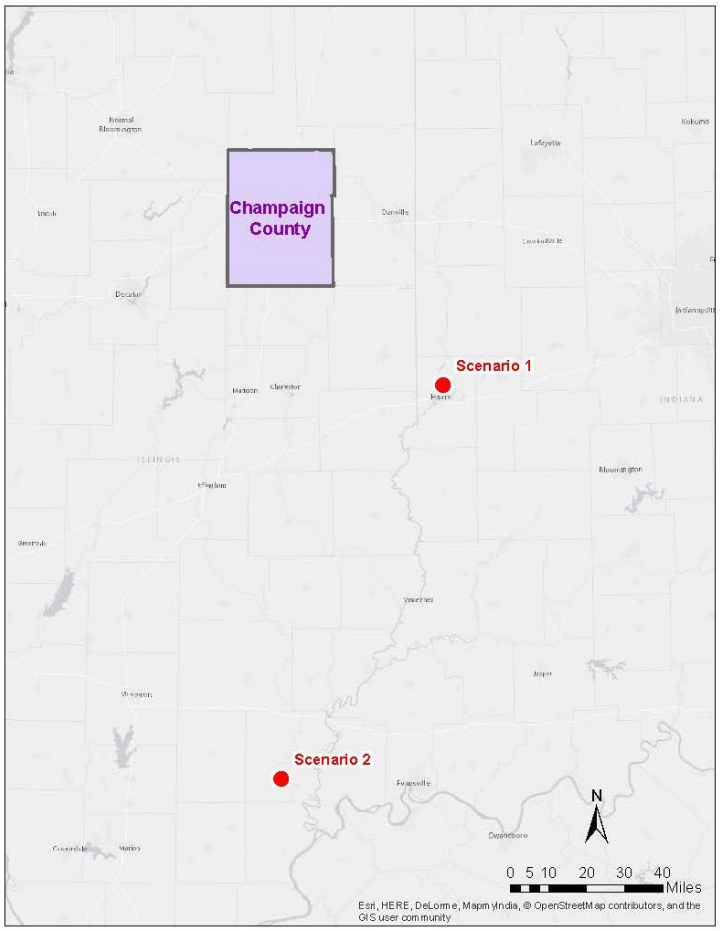
Vulnerability Assessment

A risk assessment was conducted using the HAZUS model to obtain an analysis of the vulnerability of the Plan Area to an earthquake. For comparative purposes, two scenarios were analyzed to assess the Plan Area vulnerability to earthquake damage.

- Scenario 1: All historic sites of recorded earthquakes nearby the Plan Area were identified. The HAZUS model provided an estimate of the effects of a Magnitude 5.4 earthquake occurring at the historic location of the nearest previously occurring earthquake to the Plan Area. Such an earthquake occurred in September 1909 in Terre Haute, Vigo County, Indiana. The epicenter of this earthquake was located at a latitude of 39.50 N and a longitude of -87.40 W, approximately 43 miles east of the Plan Area.

- Scenario 2: The HAZUS model provided an estimate of the effects of a Magnitude 5.4 earthquake occurring along the fault in the Wabash Valley Seismic Zone, with the epicenter of this earthquake located at a latitude of 38.00 N and a longitude of -88.20 W. The closest point of this fault zone would be located approximately 106 miles south of the Plan Area.

Figure 3-18. Locations of Scenario Earthquake Epicenters



EARTHQUAKE – RISK ASESSMENT

Scenario 1: Magnitude 5.4 at Historic Earthquake Point East of Plan Area

Casualties
The HAZUS model indicated four possible categories of 'Injury Severity' due to an earthquake, and provided casualty estimates for the Scenario 1 earthquake occurrence at three different times of day: at 2:00 a.m. when residential occupancy load is highest, 2:00 p.m., when educational, commercial and industrial sector loads are maximized, and 5:00 p.m., which represents peak travel time. Table 3-23 describes each of these injury categories.

Table 3-23. HAZUS Model Injury Severity Definitions and Results

Injury Severity	Injury Description	2 a.m. Scenario	2 p.m. Scenario	5 p.m. Scenario
Severity 1	Injuries requiring basic medical aid without requiring hospitalization	7	9	7
Severity 2	Injuries requiring a greater degree of medical care and hospitalization, but not expected to progress to a life threatening status	1	1	1
Severity 3	Injuries that pose an immediate life threatening condition if not treated adequately and expeditiously.	0	0	0
Severity 4	Instantaneously killed or mortally injured	0	0	0

Source: HAZUS

Building Damage
The HAZUS model provided an estimate for the number of buildings of each occupancy type that would be damaged in the Scenario 1 earthquake event. The model categorized damaged buildings into four damage categories: Slight; Moderate; Extensive; and Complete, with the definition of each of these damage categories variable based on construction type. Table 3-24 describes levels of damage to wood, light frame buildings. Table 3-25 is an estimate, both by occupancy type and by damage level, of the number of buildings expected to be damaged in the event of a Scenario 1 earthquake in the Plan Area.

Table 3-24. Levels of Damage to Wood, Light-Frame Buildings

Damage Level	Damage Description
Slight	Small plaster or gypsum board cracks at corners of door and window openings and wall-ceiling intersections; small cracks in masonry chimneys and masonry veneer.
Moderate	Large plaster or gypsum-board cracks at corners of door and window openings; small diagonal cracks across shear wall panels exhibited by small cracks in stucco and gypsum wall panels; large cracks in brick chimneys; toppling of tall masonry chimneys.
Extensive	Large diagonal cracks across shear wall panels or large cracks at plywood joints; permanent lateral movement of floors and roof; toppling of most brick chimneys; cracks in foundations; splitting of wood sill plates and/or slippage of structure over foundations; partial collapse of room-over-garage or other soft-story configurations; small foundations cracks.
Complete	Structure may have large permanent lateral displacement, may collapse, or be in imminent danger of collapse due to cripple wall failure or the failure of the lateral load resisting system; some structures may slip and fall off the foundations; large foundation cracks.

Source: Hazus

EARTHQUAKE – RISK ASESSMENT

Table 3-25. Expected Building Damage Count by Severity and Occupancy Type for Scenario 1 Earthquake Event

	Number of Buildings for Each Damage Level				
Occupancy Type	Slight	Moderate	Extensive	Complete	Total
Agricultural	1	0	0	0	1
Commercial	32	10	1	0	43
Education	1	0	0	0	1
Government	2	1	0	0	3
Industrial	4	1	0	0	5
Other Residential	237	72	3	0	312
Religion	3	1	0	0	4
Single Family	681	184	22	2	889
Plan Area Total	961	269	26	2	1,258

Source: HAZUS

Building-Related Economic Losses

Table 3-26 displays the estimated economic losses associated with buildings and their activities that will occur as a result of the Scenario 1 earthquake event.

Table 3-26: Building-Related Economic Losses in the Event of Scenario 1 Earthquake Event (Values in Millions)

Structural Damage Cost	$ 5.99
Non-Structural Damage Cost	$ 8.85
Content Damage Cost	$1.30
Inventory Loss	$ 0.02
Relocation Loss	$ 2.59
Capital Related Loss	$ 0.96
Wage Losses	$ 1.39
Rental Income Loss	$ 1.44
Total:	$ 22.54

Source: HAZUS

Critical Facility Damage

Essential Facilities

Table 3-27 shows the number of essential facilities and the predicted functionality of these facilities the day after a Scenario 1 earthquake event.

EARTHQUAKE – RISK ASESSMENT

Table 3-27. Functionality of Essential Facilities at Day One following Scenario 1 Earthquake Event

Type of Facility	Number of Facilities	With At Least Moderate Damage >50%	With Functionality >50% at Day One
Police Station	21	0	21
Hospital	25	0	25
Emergency Operation Center	9	0	9
Fire Station	41	0	41
School	164	0	164

Source: HAZUS

Table 3-28 displays the total estimated number of beds for the hospitals in the Plan Area, as well as the number of beds estimated to be available at certain milestone dates after the earthquake.

Table 3-28. Functionality of Hospitals following Scenario 1 Earthquake Event

	At Day 1		At Day 7		At Day 30	
Total # of beds	# of beds	%	# of beds	%	# of beds	%
2,069	1,960	95.0	2,028	98.0	2,069	100.0

Source: HAZUS

Utility Lifelines

HAZUS predicts that 0 potable water facilities or waste water facilities will sustain even moderate damage as a result of the earthquake, and that all facilities will be operating at more than 50% after Day One. HAZUS does not predict that any households will be without water after this event. Table 3-29 indicates the estimated number of leaks and breaks in utility system pipelines as a result of the earthquake.

Table 3-29. Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (km)	Number of Leaks	Number of Breaks
Potable Water	8,012	13	3
Waste Water	4,807	9	2
Natural Gas	3,205	3	1
Oil	0	0	0

Source: HAZUS

EARTHQUAKE – RISK ASESSMENT

The HAZUS model predicts that no households will be without electric power as a result of the earthquake. The following chart summarizes the expected economic cost of the damage to the various utility systems in the Plan Area.

Table 3-30. Estimated Direct Economic Losses for Utilities
(Values in Millions)

Potable Water	Waste Water	Oil System	Natural Gas	Electric Power	Communication	Total
$0.19	$ 0.21	$ 0.00	$ 0.01	$ 0.07	$ 0.00	$ 0.48

Source: HAZUS

Transportation Lifelines
The HAZUS model predicts moderate damage to transportation lifelines in the HMP planning area. Table 3-31 summarizes the estimated damage to the transportation facilities.

Table 3-31. Estimated Direct Economic Losses for Transportation Lifelines
(Values in Millions)

	Highway	Railway	Bus Facility	Airport
Segments	$ 0	$ 0.00	-	-
Bridges	$ 0.05	$ 0.00	-	-
Facilities	$ 0	$ 0.03	$ 0.01	$ 0.10
Total	$ 0.05	$ 0.03	$ 0.01	$ 0.10

Source: HAZUS

High Potential Loss Facilities and *Facilities of Local Importance*
The HAZUS methodology does not allow for the estimation for high potential loss facilities and Facilities of Local Importance, as these are unique across different locales, and HAZUS does not attempt to predict average characteristics for these facilities as it does with residences or other types of structures.

Debris Generation
The HAZUS model predicts that the earthquake will generate 0.01 million tons of debris, comprised of 77% Brick/Wood and 23% Reinforced Concrete/Steel. This debris will require 520 truckloads, at 25 tons per truck, to clean up after the earthquake.

Fires Following the Earthquake
HAZUS estimates that there will be no fires resulting from the earthquake.

Shelter Requirement
HAZUS estimates the number of households that are expected to be displaced from their homes due to the earthquake and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 19 households to be displaced due to the earthquake. Of these, 14 people (out of a total population of 207,704) will seek temporary shelter in public shelters.

EARTHQUAKE – RISK ASESSMENT

Scenario 2: Magnitude 5.4 in the Wabash Valley Seismic Zone

Casualties
The HAZUS model reviewed four possible categories of 'Injury Severity' due to an earthquake, and provided casualty estimates for the Scenario 2 earthquake occurrence at three different times of day: at 2:00 a.m. when residential occupancy load is highest, 2:00 p.m. when educational, commercial and industrial sector loads are maximized, and 5:00 p.m. which represents peak travel time. Table 3-32 describes these injury categories.

Table 3-32. HAZUS Model Injury Severity Definitions and Results

Injury Severity	Injury Description	2 a.m. Scenario	2 p.m. Scenario	5 p.m. Scenario
1	Injuries requiring basic medical aid without requiring hospitalization	7	9	7
2	Injuries requiring a greater degree of medical care and hospitalization, but not expected to progress to a life threatening status	1	1	1
3	Injuries that pose an immediate life threatening condition if not treated adequately and expeditiously.	0	0	0
4	Instantaneously killed or mortally injured	0	0	0

Source: HAZUS

Building Damage and Building-Related Economic Losses
The HAZUS model provided an estimate for the number of buildings of each occupancy type damaged in the Scenario 2 earthquake event. The HAZUS model predicts no significant amount of building damage within the Plan Area as a result of a Scenario 2 earthquake event, and no significant amount of estimated economic losses associated with buildings in the Plan Area and their activities occurring as a result of the Scenario 2 earthquake event.

Critical Facility Damage

Essential Facilities
The HAZUS model predicts that all essential facilities in the Plan Area will be functioning at 100% one day after the Scenario 2 earthquake event.

The HAZUS model estimate of the total number of beds for the hospitals in the Plan Area, and the number of beds to be available at certain milestone dates after the Scenario 2 earthquake event. There are 2,069 hospital beds in the Plan Area, and only 1,960 are estimated to be available the day of the earthquake. After 30 days, 2,028 beds are expected to be available. After one month, all beds are expected to be available for use.

Utility Lifelines
The HAZUS model predicts that no potable water facilities or waste water facilities will sustain even moderate damage as a result of the Scenario 2 earthquake event, and that all facilities will be operating at more than 50% after Day One. Table 3-33 indicates the estimated number of leaks and breaks in utility system pipelines as a result of the Scenario 2 earthquake event.

Table 3-33. Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (km)	Number of Leaks	Number of Breaks
Potable Water	8,012	4	1
Waste Water	4,807	3	1
Natural Gas	3,205	1	0
Oil	0	0	0

Source: HAZUS

Table 3-34 summarizes the expected economic cost of the damage to the various utility systems in the Plan Area in the event of a Scenario 2 earthquake event.

Table 3-34. Estimated Direct Economic Losses for Utilities
(Values in Millions)

Potable Water	Waste Water	Oil System	Natural Gas	Electric Power	Communication	Total
$0.02	$ 0.01	$ 0.00	$ 0.00	$ 0.00	$ 0.00	$ 0.03

Source: HAZUS

Transportation Lifelines
In the event of a Scenario 2 earthquake, the HAZUS model predicts no significant damage to transportation lifelines in the Plan Area, and assigns no significant economic cost as a result of damage to transportation lifelines in the Plan Area.

High Potential Loss Facilities and *Facilities of Local Importance*
The HAZUS methodology does not allow for the estimation for high potential loss facilities and Facilities of Local Importance, as these are unique across different locales, and HAZUS does not attempt to predict average characteristics for these facilities as it does with residences or other types of structures.

Debris Generation
The HAZUS model predicts that the Scenario 2 earthquake event will not generate a significant amount of debris.

Fires Following the Earthquake
The HAZUS model estimates that there will be no fires resulting from the Scenario 2 earthquake.

Shelter Requirement
The HAZUS model estimates no displaced households due to a Scenario 2 earthquake event. Nobody is expected to seek temporary shelter.

HAZARDOUS MATERIALS STORAGE AND TRANSPORT – HAZARD PROFILE

A hazardous material is any substance or material which has the potential to cause harm to humans, animals, or the environment, either by itself or through interaction with other factors.

Locations

The potential for damage exists in any environment within the Plan Area where these materials are stored or used.

Extent

Adverse effects related to hazardous materials incidents vary greatly depending on the material involved and the amount released.

Accidents at fixed sites are usually contained to the facility itself because of strict regulations and precautionary measures in place in case of such an event. The immediate concern in these situations is the safety of individuals at the site of the accident, followed by the safety of emergency responders and anyone in close proximity to the incident site. Some materials are harmful to inhale, ingest or touch. Other materials can cause a secondary hazard such as a fire or explosion. In some cases, there is a high cost associated with the clean-up of contaminated soil and groundwater.

Hazards from incidents involving hazardous materials release are primarily associated with the transport of hazardous materials via trucks, railway, or pipeline. The following data is from the *Hazardous Materials and Commodity Flow Study for Champaign County* (HMCFS) under development for the Plan Area.[25]

Trucks

The Plan Area's roadway network includes 3 interstate highways: Interstate 57, Interstate 74, and Interstate 72 and several other major US and State routes including US Route 45, US Route 150, IL Route 10, IL Route 47, IL Route 130. Commercial truck volumes on these routes are significant. Truck traffic volume on interstate highways are approximately 20 to 30 percent of the total daily traffic volumes. On US Routes the range is between 4 and 9 percent.

Railroads

Railroads are increasingly used for goods movement as long distance rail transportation is cheaper and reliable. Hazardous material transportation by rail in the U.S. is recognized to be the safest method of moving large quantities of chemicals over long distances. Five railroad companies own the majority of the rail road tracks in the Plan Area: Canadian National, Union Pacific, Penn Central, CSX Transportation, and Norfolk Southern. Canadian National Railroad Company is owner of the longest stretch of railroad tracks in the Plan Area, followed by Norfolk Southern, and Union Pacific.

Canadian National Railroad Company data regarding percentages of the type of hazardous materials transported in 2013: 48% of hazmat was 'Class 3: Flammable and Combustible Liquids', followed by 19% of 'Class 2: Gases' and 17% of 'Class 8: Corrosive' materials.

HAZARDOUS MATERIALS STORAGE AND TRANSPORT – HAZARD PROFILE

Union Pacific Railroad Company data regarding percentages of the type of hazardous materials transported in 2013: 37% of hazmat was 'Class 3: Flammable and Combustible Liquids', followed by 26% of 'Class 2: Gases' and 23% of 'Class 8: Corrosive' materials.

Norfolk Southern Railroad provided data shown in Table 3-35 indicating typical hazardous material commodities shipped through the Plan Area in 2013.

Table 3-35. Types of Hazardous Material Commodities Shipped via Rail

Hazardous Materials Shipping Name	
Elevated Temperature Liquid	Flammable Liquid
Alcohols	Methyl Methacrylate
Petroleum Gases	Propane
Flammable Liquid	Isobutene
Phosphoric Acid Solution	Pentanes
Solid Hazardous Waste	Heptane
Vinyl Acetate, Stabilized	Ferric Chloride
Petroleum Crude Oil	Nitric Acid
Butane	Gasoline
Butyl Acrylates	Environmentally Hazardous
Hydrogen Peroxide	

Source: HMCFS

Pipelines:
Hazardous materials transported through pipelines are predominantly used for energy generation. The most common hazardous materials transported through pipelines include crude oil, natural gas, and liquefied natural gas. No information was available on the quantity of hazardous materials transported through pipelines.

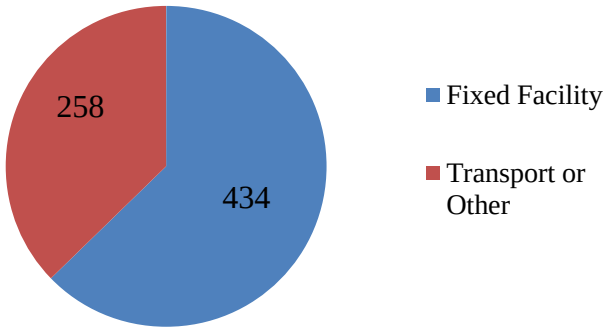
History
To date, no large-scale hazardous material release incident at a fixed site or during transport resulting in multiple deaths or injuries [to persons] has been reported as occurring within the Plan Area.

A total of 692 minor hazardous materials release incidents are on record as occurring within the Plan Area during the period October 21, 1987-July 12, 2014. Figure 3-19 is an overview of types of hazardous materials release incidents reported during this period within the Plan Area.[26] A review of the hazardous materials release incidents data indicates that either gasoline or diesel fuel are leaked or spilled in most incidents that involve an underground storage tank.

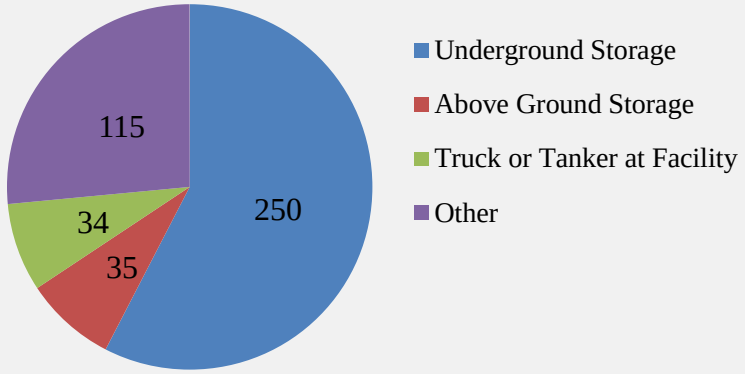
As of 2014, 132 facilities in the Plan Area have reported storing at least one 'Extremely Hazardous Substance' on site.[27]

HAZARDOUS MATERIALS STORAGE AND TRANSPORT – HAZARD PROFILE

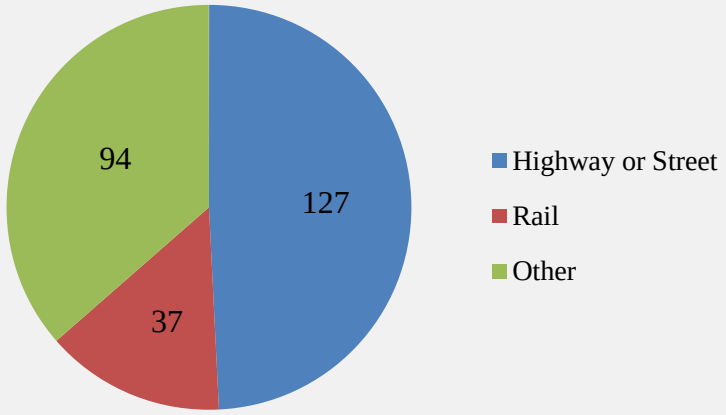
Figure 3-19. Hazardous Material Release Incidents (October 1987–July 2014)



Fixed Facility Incidents:



Transport/Other Incidents:



HAZARDOUS MATERIALS STORAGE AND TRANSPORT –HAZARD PROFILE

Future Hazardous Materials Incidents

The probability of future occurrences of a hazardous materials incident is not determined. Hazardous materials incidents can often be attributed to human error in the sealing of containers, failure to thoroughly inspect equipment, or vehicular accidents. These factors are nearly impossible to predict.

HAZARDOUS MATERIALS STORAGE AND TRANSPORT –RISK ASSESSMENT

Potential Health and Safety Threat

Hazardous material incidents can cause short-term or long-term health concerns and in some instances death. The release of certain hazardous materials requires evacuation of residents in close vicinity as a safety precaution.

Potential Economic Impact

Based on the scale and severity of each hazardous materials release incident, local law enforcement personnel, firefighters, hazardous materials response teams, and emergency management personnel must respond to try to stabilize the release and protect the public health and safety of citizens. The types of potential economic impacts that can result from a hazardous material incident in the Plan Area include:

- cost of emergency response and cleanup of site
- cost of remediation in rare cases
- disruption of transportation routes
- cost of repairs or replacement of property and infrastructure

ACTIVE SHOOTER – HAZARD PROFILE

The Federal Bureau of Investigations (FBI) defines an active shooter as 'an individual engaged in killing or attempting to kill people in a confined and populated area.' The Planning Team chose to profile the active shooter hazard due to the number of active shooter events around the country, and because they agreed it is important to identify and implement practical mitigation actions to address the possibility of an active shooter scenario as feasible.

Locations

Active Shooter scenarios usually occur in public spaces where a large number of people gather. According to an FBI study of 160 Active Shooter Incidents from 2000-2013, 45.6% of these incidents occurred in commercial areas, 24.4% at educational facilities, 10.0% on Government or Military property, 9.4% in open space, 4.4% at residences, 3.8% at houses of worship, and 2.5% at healthcare facilities.

The initial area of focus selected for the identification and implementation of hazard mitigation actions will be educational facilities within the Plan Area. Figure 3-19 shows the location of all educational facilities within the Plan Area, including the main campus areas of Parkland College and the University of Illinois at Urbana-Champaign.

Extent

The foremost consequence of an active shooter event is injury or death resulting from the actions of the perpetrator. Costly property damage is another result of such an attack. In addition to these initial impacts, active shooter events instill fear and grief in a community. These feelings persist long after the event takes place, and are devastating to individuals, families, and communities.

History

There have been no active shooter events at educational facilities within the Plan Area. The nearest active shooter event occurred in 2008 at Northern Illinois University in DeKalb, Illinois, 120 miles north of the Plan Area.

During the 14-year period studied by the FBI, a total of 37 events occurred at educational facilities. Of these events, four took place at elementary schools, six at middle/junior high schools, 14 at high schools, and 12 at a higher education facility, and one at an Amish schoolhouse which was comprised of varied age levels. Table 3-36 displays the number of fatalities and injuries, exclusive of the shooter, based on facility type.

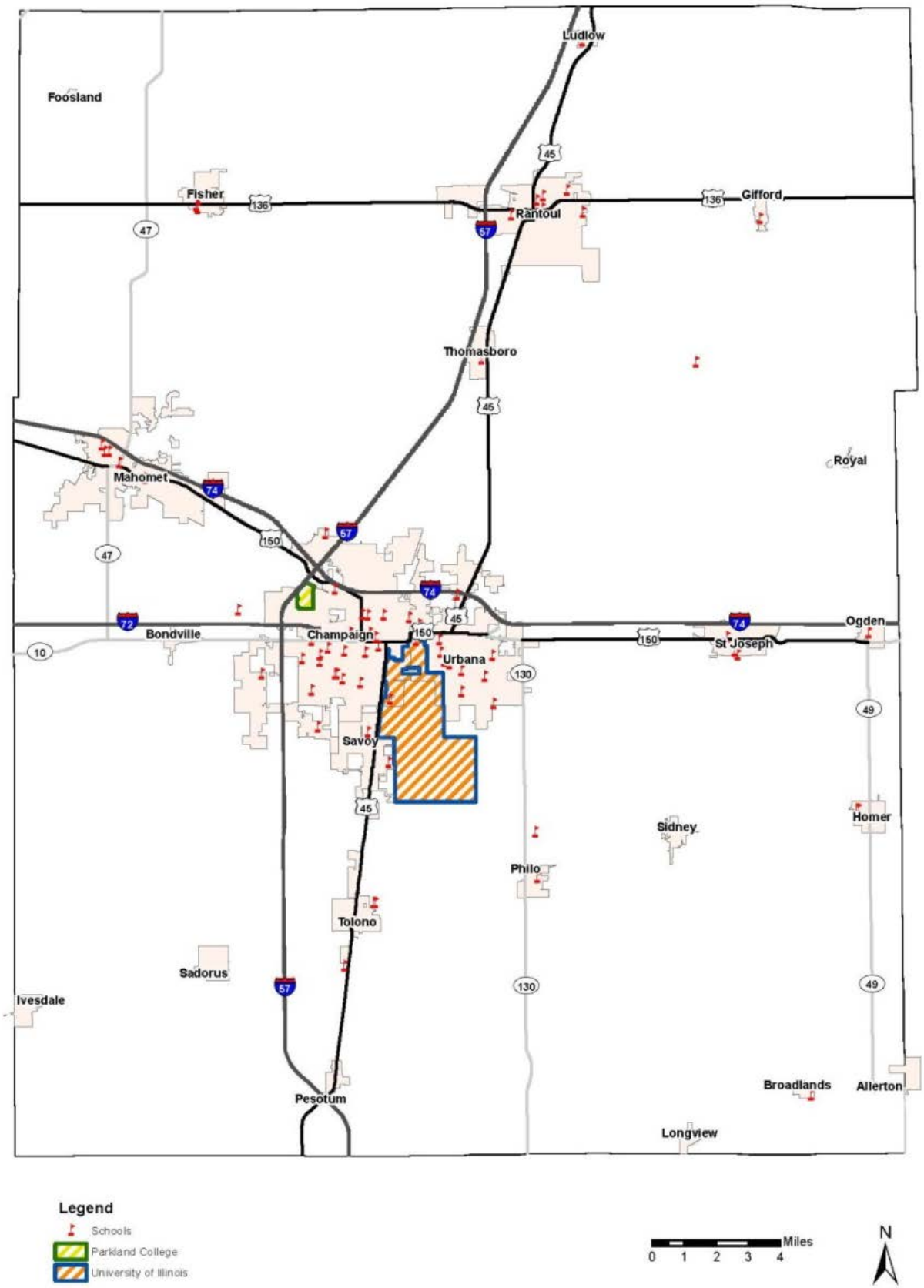
Table 3-36. Active Shooter Events at Educational Facilities

Type of Facility	Number of Events	Total Fatalities	Total Injuries
Elementary	4	29	10
Middle/Junior High School	6	1	4
High School	14	22	41
Higher Education	12	60	60
Other	1	5	5
Total	37	117	120

Source: FBI

ACTIVE SHOOTER – HAZARD PROFILE

Figure 3-19. Location of Educational Facilities within Plan Area



ACTIVE SHOOTER – HAZARD PROFILE

The most deadly attack took place in August 2007 at Virginia Polytechnic Institute and University (Virginia Tech). Seung Hui Cho killed 32 students and faculty and injured 17 others before committing suicide.

Arguably the most devastating of these Active Shooter events occurred December 14, 2012 at Sandy Hook Elementary School in Newton, Connecticut. After killing his mother at home, Adam Lanza killed 26 people at the elementary school (20 students and six adults). Two other adults were wounded before Lanza committed suicide.

Future Active Shooter Events

Technical hazards are much more difficult to predict than natural hazards. The U.S. Department of Homeland Security supports this by saying 'in many cases there is no pattern or method to the selection of victims by an active shooter, and these situations are by their very nature Unpredictable and evolve quickly.'

ACTIVE SHOOTER – RISK ASSESSMENT

Potential Health and Safety Threat

Active shooter scenarios lead to injuries and often times death. On top of physical injuries, victims and witnesses are left with emotional damage.

Potential Damage to Property

Active shooter events cause damage to property in the form of shattered windows and doors, compromised structural components, and building contents as a result of stray bullets.

Potential Economic Impact

The types of potential economic impacts that can result from an active shooter scenario in the Plan Area are described below:

- cost of emergency response and cleanup of the scene
- cost of repairs to the building, or in the case of Sandy Hook Elementary complete demolition and rebuilding
- medical bills and/or funeral costs for victims or victims' families

Chapter 3 Notes

1. The INHMP dated 2013 is based on data compiled between 1950 and 2012.

2. The Village of Ivesdale is situated mostly in Champaign County with a portion of its geographic area within Piatt County; and the Village of Allerton is situated partially in Champaign County with most of its geographic area within Vermilion County. INHMP ratings for natural hazards occurring in each adjacent county (Piatt County and Vermilion County) as listed for Champaign County in Table 3-1 are the same, with only the exceptions shown in the following table:

	Tornadoes	Floods	Drought
Champaign Co	High	Elevated	Elevated
Vermilion Co	High	Elevated	Elevated
Piatt Co	Elevated	High	High

3. Climate Atlas of Illinois, Stanley A. Changnon, James R. Angel, Kenneth E. Kunkel, and Christopher M.B. Lehmann, Illinois State Water Survey, March 2004.

4. Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: Climate Change Impacts in the United States: The Third National Climate Assessment. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2. – page 20.

5. Ibid, p. 37.

6. Ibid.

7. The INHMP states that lightning kills more people each year than tornadoes. Each year in the United States, approximately 1,000 people are injured and 60 are killed by lightning. These injuries and fatalities generally occur at outdoor recreational events and near trees. The economic impact of lightning in the United States is estimated at $5 billion every year. In Illinois, a total of 99 people have died as the result of lightning strikes over the past 50 years.

8. Based on Severe Storms data in the state of Illinois, as reported by INHMP.

9. According to the INHMP, no one in Illinois has died as the result of hail since 1950; however, 23 people have been injured. NCDC estimates that between 1950 and 2013 hail caused $101 million dollars in property damage and $6.9 million in crop damage statewide.

10. INHMP property damage estimates provided are presumed to be based on 2009 RS Means Construction Cost Data, and are specific to Plan Area within the limits of Champaign County only.

11. INHMP damage estimates regarding a tornado event excludes those portions of Allerton and Ivesdale located in Vermillion and Piatt Counties respectively.

12. ‘Cold Hard Facts about Winter Storms, Illinois State Climatologist Office, Illinois State Water Survey, UIUC, http://www.sws.uiuc.edu/atmos/statecli/Winter/coldhard.htm

13. Ibid.

14. Ice Storms, Blizzards, Winter Storms, and Heavy Snow data from NOAA National Climatic Data Center http://www.ncdc.noaa.gov/stormevents/choosedates.jsp?statefips=17%2CILLINOIS

14. This property damage estimate does not include the portions of the Villages of Allerton and Ivesdale which are in Vermillion and Piatt Counties respectively.

15. USGS, 'The USGS Water Science School,' http://water.usgs.gov/edu/100yearflood.html, last modified November 12, 2014.

16. Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: *Climate Change Impacts in the United States: The Third National Climate Assessment*. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2. – page 40.

17. IDNR, Office of Water Resources, *Floodplain Management in Illinois Quick Guide*, p. 17.

18. FEMA. *Flood Insurance Study: Champaign County, Illinois and Incorporated Areas.* Washington, D.C.: October 2, 2013.

19. During July 12-17, in 1995, a heat wave was responsible for many fatalities, and according to the INHMP, heat was listed as an underlying or contributing factor in the death of 702 individuals statewide. The NCDC database shows that there have been 12 heat-related deaths in the Central Illinois region from 1996 through December, 2014.

20. Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: *Climate Change Impacts in the United States: The Third National Climate Assessment*. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2. – p. 29.

21. Ibid., p. 39.

22. Ibid.

23. State Climatologist Office for Illinois, ISWS, http://www.isws.illinois.edu/atmos/statecli/Drought/drought_faq.htm

24. Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: *Climate Change Impacts in the United States: The Third National Climate Assessment*. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2. – p. 40.

25. Data available from the *Draft Hazardous Materials and Commodity Flow Study for Champaign County, Traffic Commodity Flow Study for Champaign County*, CCRPC, as of March, 2015.

26. From the database of Hazardous Materials Incidents reported in Champaign County, Champaign County Emergency Management Agency, as of July, 2014.
27. Based on the *Illinois Emergency Planning and Community Right to Know Act* (430 ILCS 100; 29 Ill. Adm. Code 620), a facility with an 'extremely hazardous substance' on site is required to report to file a Section 302 Notice, which is a letter from the facility that alerts emergency planners that an extremely hazardous substance is present at the facility in quantities in excess of the 'threshold planning quantity.' If a chemical is classified as hazardous, its threshold quantity is 10,000 pounds or more. If the chemical is an extremely hazardous substance (EHS), the threshold is 500 pounds or the threshold planning quantity, whichever is less.

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Chapter 4 contains the following HMP components:

- Local Hazard Mitigation Goals *§201.6(c)(3)(i)*
- Identification and Analysis of Mitigation Actions *§201.6(c)(3)(ii)*
- Identification and Analysis of Mitigation Actions: NFIP Compliance *§201.6(c)(3)(ii)*
- Implementation of Mitigation Actions: *§201.6(c)(3)(iii)* and Multi-Jurisdictional Mitigation Actions: *§201.6(c)(3)(iv)*

Introduction

In developing the HMP, Planning Team members identified the following broad goal statement as a guideline regarding the HMP long-term intent: "Protect life and properties within the Plan Area from the following natural hazards: severe storms; severe winter storms; floods; extreme heat; drought; and earthquake." Planning Team members reached consensus on four goals to describe the long-term ideals and intentions of the HMP:

1. Minimize avoidable deaths and injuries due to natural hazards.
2. Protect existing and new infrastructure from impacts of natural hazards.
3. Include natural hazard mitigation in local government plans and regulations.
4. Coordinate natural hazard mitigation efforts of participating jurisdictions.

Members identified objectives to provide specific implementation steps for achieving each goal. These objectives are consistent with those of the *State of Illinois Natural Hazard Mitigation Plan.*

As a part of the HMP update in 2015, in keeping with FEMA FY15 Hazard Mitigation Assistance Guidance, Planning Team members expanded the HMP goals and objectives to acknowledge and incorporate community resilience and climate change considerations. The updated HMP goals and accompanying objectives appear on the following page.

HMP Goals and Objectives

Goal 1 Minimize avoidable injuries and deaths due to natural hazards, including adverse effects associated with climate change and technical hazards.

- Objective 1-a Evaluate and strengthen the communication and mobility of emergency services.
- Objective 1-b Conduct a needs assessment to identify vulnerability of critical facilities to potential impacts of natural and technical hazards or potential impacts associated with climate change, and identify a strategy to address identified vulnerabilities.
- Objective 1-c Develop an ongoing strategy to educate the population regarding methods of protecting self and property from adverse impacts of natural and technical hazards including impacts associated with climate change.
- Objective 1-d Establish and maintain adequate warning systems for natural and technical hazards.
- Objective 1-e Encourage the provision of storm shelters, warming centers, and cooling centers for vulnerable populations.

Goal 2 Reduce or eliminate potential losses by encouraging local policies that break the cycle of damage, reconstruction, and repeated damage of infrastructure, once damaged or destroyed from impacts of natural or technical hazards.

- Objective 2-a Monitor infrastructure conditions for needed maintenance or improvements.

Goal 3 Improve the capability of participant populations to rapidly recover from disruption caused by natural hazards, adverse impacts associated with climate change, and technical hazards.

- Objective 3-a Update and improve the Champaign County Multi-Jurisdictional Hazard Mitigation Plan information base.
- Objective 3-b Improve the capability to rapidly recover from natural, man-made, or technological hazards.
- Objective 3-c Develop a strategy to ensure that water is available in the event of a drought.

Goal 4 Encourage interagency cooperation to foster community and regional resiliency with regard to planning to mitigate potential adverse impacts of natural hazards, impacts associated with climate change, and technical hazards.

- Objective 4-a Improve communication regarding ongoing efforts of participating jurisdictions to implement mitigation actions.
- Objective 4-b Update the Champaign County Multi-Jurisdictional Hazard Mitigation Plan every five years.

Identification and Analysis of Mitigation Actions

Comprehensive Range of Specific Mitigation Actions for Each Hazard
Planning Team members reviewed a comprehensive range of specific mitigation actions for each hazard and jurisdiction by reviewing groups of mitigation actions suggested by FEMA:

- preventive
- property protection
- natural resource protection
- structural projects
- public education and awareness

Preventive Measures
FEMA recommends 'preventive' mitigation actions be considered as administrative or regulatory actions or processes to influence the way land and buildings are developed and built. Examples of preventive mitigation actions follow:

Multi-Hazard
1. Adopt the latest International Building Codes.
2. Conduct tree trimming program for street trees so that they do not become safety hazards.

Severe Storms
1. Adopt higher wind resistant building codes.
2. Provide subsidies for wind resistant construction.
3. Provide subsidies for construction of safe rooms in existing buildings.
4. Require that all newly constructed buildings have at least one safe room.
5. Modify building code to require stronger tie-down and anchoring methods for mobile homes.
6. Require underground utilities for new construction.

Floods
1. Adopt development regulations which limit building in the 100-year flood plain and in areas prone to ponding.
2. Acquire undeveloped land within the flood plain.
3. Acquire development rights within the flood plain.
4. Obtain updated floodplain map.
5. Develop drainage system maintenance standards.
6. Participate in Community Rating System for reduced flood insurance premiums through NFIP.

Severe Winter Storms
1. Require underground utilities for new construction.
2. Use tree or vegetation plantings along roadways as a natural barrier to snow drifts.
3. Apply anti-icing or de-icing substance to road surfaces prior to imminent ice storm.

Drought
1. Prepare and implement drought contingency plans to consider actions and needs during drought events, including a plan to ensure that rural residents who rely on shallow wells will have enough water during periods of drought.
2. Map areas with limited water supply and discourage development there.

Extreme Heat
1. Distribute fans.
2. Create a program to repair fans and air conditioners.
3. Encourage voluntary neighbor check programs.

Earthquakes
1. Adopt up-to-date seismic resistant building codes.
2. Incorporate structural and non-structural seismic strengthening actions into on-going capital improvement planning efforts.

Property Protection
FEMA defines 'property protection' mitigation actions that involve the modification of existing buildings or infrastructure to protect them from a hazard or removal from the hazard area. Examples of property protection mitigation actions considered by HMP participating jurisdictions include:

Multi-Hazard
1. Structural retrofits
2. Storm shutters
3. Shatter-resistant glass

Floods
1. Acquisition
2. Elevation
3. Relocation

Natural Resource Protection
'Natural resource protection' mitigation actions are those that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. Examples include:

Floods
1. Sediment and erosion control
2. Stream corridor restoration
3. Watershed management
4. Forest and vegetation management
5. Wetland restoration and preservation

Emergency Services
'Emergency services' mitigation actions, as defined by FEMA, are actions that protect people and property during and immediately after a disaster or hazard event. HMP participating jurisdictions considered the following ongoing or potential emergency service mitigation actions:

Multi-Hazard
1. Install outdoor warning sirens
2. Use NOAA all hazard radios
3. Voluntary text messaging alert systems

Structural Control Projects
FEMA defines a mitigation action category of 'structural control projects' as actions that involve the construction of structures to reduce the impact of a hazard. HMP participating jurisdictions considered the following as ongoing or potential structural control projects:

Multi-Hazard
1. Install emergency back-up generators in critical facilities

Floods
1. Storm sewer system improvements
2. Improvements to bridges, culverts and roads in floodprone areas

Public Education and Awareness
FEMA defines a category of mitigation actions as 'public education and awareness'. 'Public education and awareness' mitigation actions inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them.

Multi-Hazard
1. Outreach programs
2. Hazard information centers
3. School-age and adult education programs

Floods
1. Disclose real estate flood hazard information

For review purposes, a spreadsheet was developed for each participating jurisdiction to list all known ongoing natural hazard mitigation actions and proposed natural hazard mitigation actions, categorized into the six FEMA categories, noted in the above section. Planning team members and project staff indicated whether each mitigation action listed addressed the effects of natural hazards on: '*new*' buildings and infrastructure, '*existing*' buildings and infrastructure, or '*both*'.

Potential Impact to New Buildings and Infrastructure
Planning Team members reviewed specific mitigation actions for each participating jurisdiction that could address the impacts of hazards on *new buildings and infrastructure*. A review of the ongoing and proposed mitigation actions for each participating jurisdiction was undertaken to provide the status of each mitigation action, propose any adjustments to mitigation actions, and to consider whether the following types of mitigation actions could be included:

- develop and adopt a comprehensive land use plan
- support or participate in development and implementation of watershed management plan(s)
- enact subdivision requirement that utilities serving new developments must be underground
- adopt International Residential Code and International Building Code with most current standards for: wind- and seismic- resistance, maximum snow load, and safe rooms / shelters.
- prohibit or limit development in 100-Year Floodplain
- on participating jurisdiction website, provide online links to and/or otherwise disseminate available information regarding: natural hazard preparedness and mitigation measures, including effective construction standards
- encourage individual and business use of NOAA All Hazard Radios

Potential Impact to Existing Buildings and Infrastructure
Planning Team members reviewed specific mitigation actions that could address the impacts of hazards on existing buildings and infrastructure for each participating jurisdiction. As applicable and if considered as feasible for each participating jurisdiction, the following or other similar mitigation actions were included on each participating jurisdiction's list of ongoing and proposed mitigation actions:

- participate in National Flood Insurance Program
- participate in the Community Rating System Program
- continue regular maintenance of street trees
- become a Tree City or a Tree Campus

- become a NWS "StormReady® Community"
- develop a partnership with nonprofit or private agencies to establish or provide shelter or safe room use
- develop a plan for improvements to protect infrastructure situated within a 100-Year Floodplain (bridges, culverts or roads)
- on a participating jurisdiction website, provide online links to disseminate available information regarding: natural hazard preparedness and mitigation measures, including effective construction standards
- encourage individual and business use of NOAA All Hazard Radios

Preference Survey
During development of the HMP, the 'Mitigation Measures Preference Survey' was publicized to gather public input about potential hazard mitigation actions. The *Champaign County HMP Mitigation Measures Survey* was placed online at the HMP website and copies of the survey were provided to the primary contact of each participating jurisdiction. The primary contact for each participating jurisdiction was encouraged to place a link to the survey on the municipal website and to otherwise publicize the opportunity to complete the survey. The survey was available online over an eight-week period, November 24, 2008 through January 16, 2009.

The survey contained 40 questions. Participants were asked to indicate whether they "strongly agree," "agree," "disagree," or "strongly disagree" with a series of natural hazard mitigation actions.

Fifty-seven responses to the survey were received. Respondents most preferred implementing public awareness and public education mitigation actions; actions to protect critical facilities; and adopting building codes to require safe rooms and other standards to strengthen structures to be wind resistant.

NFIP Compliance
NFIP provides flood insurance to homeowners, renters and businesses in communities which participate in the NFIP. Home and business owners may buy coverage for their buildings and contents, and renters can purchase insurance to cover personal property. NFIP flood insurance is intended for residents and business owners, whether or not they live in a floodplain, as long as their community participates in the program—since approximately 25% of flooding insurance claims occur in areas not readily recognized as being vulnerable to flooding because they are outside mapped flood zones. Some private insurance companies and agents sell and service the policies which are backed by the federal government under FEMA's NFIP.

Participation in NFIP is based on an agreement between a community and FEMA. NFIP promotes three flood-related programs:

- ***floodplain identification and mapping*** NFIP participation requires community adoption of flood maps. Mapping flood hazards creates broad-based awareness of the flood hazards and provides the data needed to administer floodplain management programs and to actuarially rate new construction for flood insurance.

- ***floodplain management*** To participate in the NFIP, a community is required to adopt and enforce minimum floodplain management regulations that help mitigate the effects of flooding on new and improved structures.

- ***flood insurance*** Community participation in the NFIP enables property owners to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages.

Source: FEMA Local Multi-Hazard Mitigation Planning Guidance

Table 4-1 indicates a total of 14 local government jurisdictions within the Plan Area participate in the National Flood Insurance Program (NFIP). Each participating community agreed to adopt and enforce sound floodplain management practices to reduce future flood damage.

Table 4-1. Participation in NFIP and Location within Floodplain

Jurisdiction	*Does Jurisdiction Participate in NFIP?*	*Is Jurisdiction Within100-Year floodplain?*
Unincorporated Champaign County	Yes	Partially
Village of Allerton	Yes	No
Village of Broadlands	Yes	No
City of Champaign	Yes	Partially
Village of Fisher	Yes	Partially
Village of Foosland	Yes	No
Village of Ludlow	Yes	No
Village of Mahomet	Yes	Partially
Village of Ogden	Yes	No
Village of Rantoul	Yes	Partially
Village of Sidney	Yes	Partially
Village of St. Joseph	Yes	Partially
Village of Royal	Yes	Partially
City of Urbana	Yes	Partially
Village of Bondville	No	Partially
Village of Gifford	No	No
Village of Homer	No	No
Village of Ivesdale [1]	No	Partially
Village of Longview	No	No
Village of Pesotum	No	No
Village of Philo	No	No
Village of Sadorus	No	Partially
Village of Savoy	No	No
Village of Thomasboro	No	No
Village of Tolono	No	Partially

Table 4-1 Note:

1. The Village of Ivesdale President has indicated he believes the Village will act to re-establish its participation in the NFIP.

Figure 4-1 is a map to illustrate location of the 100-Year Floodplain and NFIP participation of municipalities within the Plan Area.

Figure 4-1. NFIP Participation within Plan Area

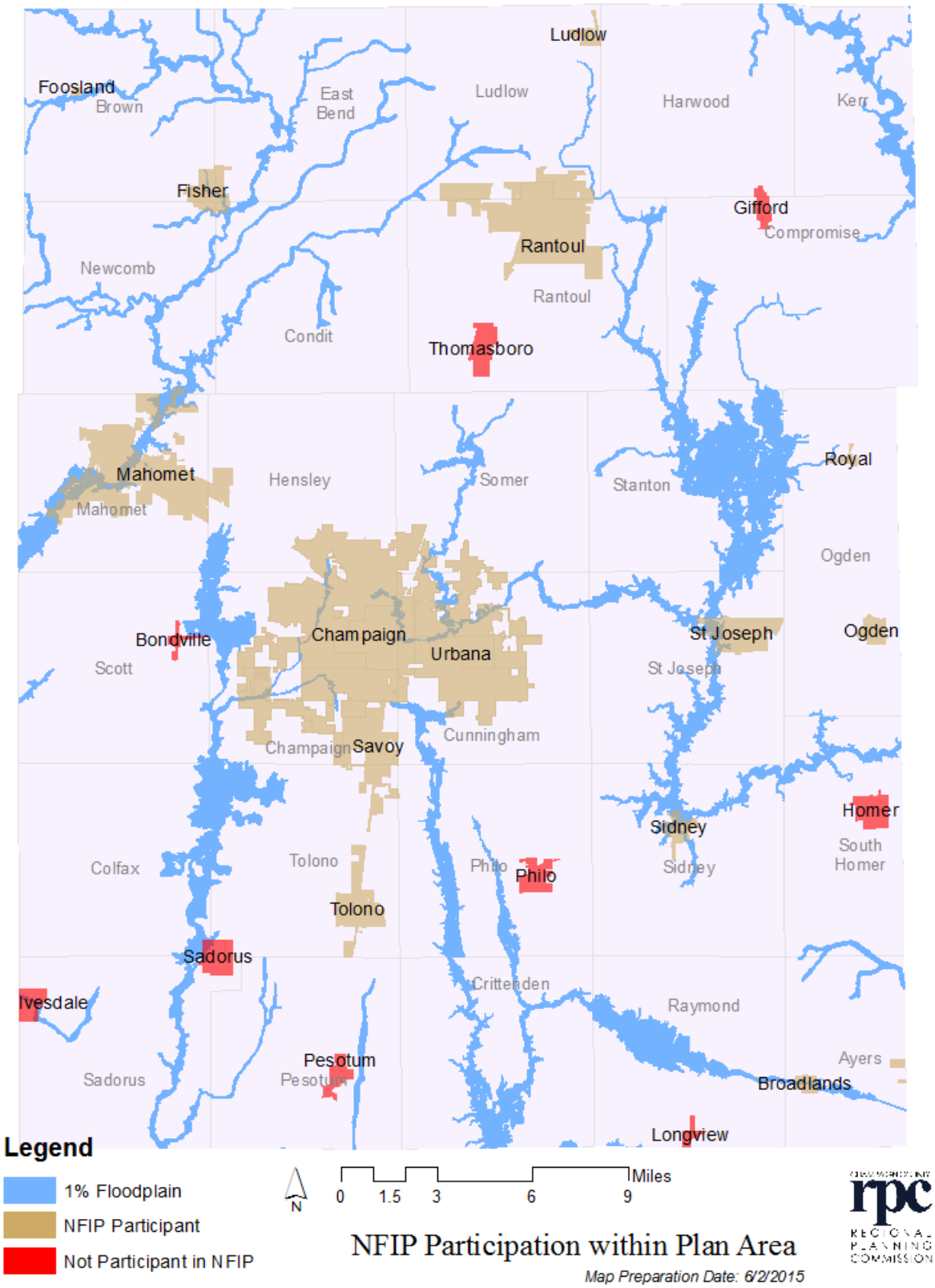

Figure 4-1 Note: The Village of Allerton is a NFIP participant, although not entirely visible in Figure 4.1.

Prioritizing Mitigation Actions

Method
Planning Team members agreed to use a prioritizing method that involves a 3-step analysis of each mitigation action. The analysis is completed by Planning Team members and project staff to prioritize all mitigation actions identified for each participating jurisdiction.

The prioritization method involved allocating points to each mitigation action. Each mitigation action was scored using the 3-step method, with each step yielding up to 14 points each. The maximum total score for any one mitigation action could be 42.

Step 1

The first analysis is one that assesses an 'action scope' for the mitigation action. Up to 14 points were allocated based on which category fits the subject mitigation action. Members determined which level each mitigation action fit into to: Level 1, Level 2, or Level 3. Next, if the mitigation action was determined to be a Level 1 or a Level 2 action, points were assigned based on Planning Team members' expertise and judgment as to the effectiveness of the mitigation action. Because Level 3 actions permanently eliminate or reduce property damages, injuries, or deaths in a specific area, Level 3 actions were assigned the highest amount of 14 points automatically.

A description of 'action scope' levels and the points to be assigned to each 'action scope' level follows:

Level 1 Actions Potential Score: 1 to 14 points

- Eliminate or reduce property damages, injuries and deaths from less significant natural hazards; or
- Educate the public on disaster preparedness and mitigation related to the less significant natural hazards (e.g., drought, or earthquake)

Level 2 Actions *Potential Score: 8 to 14 points*

- Reduce property damages in a specific area; or
- Have the potential to reduce property damages, injuries and deaths across a wide area; or
- Educate the public disaster on preparedness and mitigation

Level 3 Actions *Score: 14 points*

- Permanently eliminate property damages and/or eliminate or reduce injuries and deaths in a specific area; or
- Have a high probability to systematically reduce property damages, injuries and deaths across a wide area.

Step 2

Cost Effectiveness Rating *Potential Score: 1 to 14 points*
Members ranked each mitigation action qualitatively and subjectively, based on perceived cost-effectiveness of the mitigation action. In rating 'cost-effectiveness', a score of 14 points was possible, with lower scores denoting less cost-effectiveness and higher scores denoting greater cost-effectiveness.

Step 3

Feasibility Rating *Potential Score: 1 to 14 points*
Each action was assessed along 14 dimensions using a shortened version of FEMA's STAPLEE framework, referred to here as the 'STAPL Feasibility Chart'. If the

action was generally positive in a certain dimension, it was given a point. Total points available in the 'STAPL Feasibility Chart' ranges from 1 to 14. Figure 4-2 illustrates the STAPL Feasibility Chart used for the Step 3 feasibility rating.

Figure 4-2: STAPL Feasibility Chart Used in Step 3 of Prioritization Method

S (Social)		T (Technical)			A (Administrative)			P (Political)			L (Legal)		
Community Acceptance	Effect on Segment of Population	Technically Feasible	Long-Term Solution	Secondary Impacts	Staffing	Funding Allocation	Maintenance/ Operations	Political Support	Local Champion	Public Support	State Authority	Existing Local Authority	Potential Legal Challenge

Total Score
A total score was assigned to each mitigation action based on the 3-step prioritization process described above. Mitigation actions receiving the highest scores were rated as Priority 1; those receiving mid-range scores were rated as Priority 2; and mitigation actions receiving the lowest range of scores were rated as Priority 3.

Total Score: 0-27 = Priority 3
28-35 = Priority 2
36-42 = Priority 1

Hazard Mitigation Actions Prioritized by Jurisdiction
Each participating jurisdiction is responsible for voluntarily implementing, as resources may allow, the mitigation actions listed for their jurisdiction alone.

Table 4-2 lists identified hazard mitigation actions prioritized by each participating jurisdiction. The table indicates: status of each mitigation action, party responsible for implementing the mitigation action; potential funding Source; implementation status of listed mitigation actions, and a suggested timeframe for implementation. The HMP recognizes implementation of mitigation actions is dependent on the available resources of each participating jurisdiction. Table 4-2 begins on the following page. A key to hazards abbreviations used in Table 4-2 follows:

Table 4-2 Key: Hazards Addressed

All	All HMP hazards	F	Floods
T	Tornadoes	D	Drought
SS	Severe Storms	EH	Extreme Heat
SWS	Severe Winter Storms	E	Earthquakes

Table 4-2. Prioritized Mitigation Actions by Jurisdiction

Jurisdiction: **Champaign County**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Educate public and disseminate information regarding all hazards and preventative and preparedness safety procedures to population via community meetings, presentations to groups, displays, press, and media	ONGOING	Mitigation Action #1 and former Mitigation Action #5 were combined in the broader version now shown. CCEMA disseminates timely preventative measures and preparedness information on its official website; CUPHD sponsors the 'Champaign County Prepares' website. Responsible Parties: CCEMA and CUPHD Funding Source: federal, state, local or grant
All	1	2) Promote the use of an area-wide warning text message system such as Alert Sense®, the American Red Cross tornado warning application, or others.	ONGOING	Promoted by CCEMA on its official website and, as possible, at public venues. Responsible Party: CCEMA Funding Source: local
T, SS, SWS	1	3) Participate in the National Weather Service StormReady® program.	ONGOING	Champaign County is a StormReady® county. Responsible Party: CCEMA Funding Source: local
All	2	4) Encourage use of NOAA all-hazard radios in residences and businesses throughout unincorporated area.	ONGOING	CCEMA encourages use of all-hazard radios on its official website and, as possible, at public venues. Responsible Party: CCEMA Funding Source: local or grant
All	2	5) When appropriate as determined by CCEMA, provide information to local public radio and television stations regarding emergency warning and public service announcements.	ONGOING	CCEMA provides information, when deemed appropriate by the CCEMA coordinator. Responsible Party: CCEMA Funding Source: local
T, SS	2	6) Coordinate the countywide voluntary Storm Spotter program.	ONGOING	CCEMA coordinates the program. Responsible Party: CCEMA Funding Source: local
F	2	7) Participate in National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Champaign County participates, providing NFIP options to residents and businesses in unincorporated county areas. Responsible Party: CC ELUC, CCPZ Funding Source: local
T, SS, SWS, EH	2	8) Conduct a needs assessment regarding community shelter options for vulnerable populations in unincorporated county.	NEW	Responsible Party: CC ELUC, CCPZ Funding Source: local Suggested Timeframe: within one year of FEMA approval of HMP Update
All	2	9) Identify a strategy to transport vulnerable populations in unincorporated county.	NEW	Responsible Party: CC EMA, Human Services Transportation Plan Representative Funding Source: local or grant Suggested Timeframe: within 2 years of FEMA approval of HMP Update

Jurisdiction: **Champaign County** (continued)

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	3	10) Improve the countywide integrated information base for use in assessing risk from natural and selected technical hazard events.	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: CCGIS Consortium Funding Source: local
F	3	11) Review costs and benefits of County participation in FEMA Community Rating System voluntary incentive program.	NEW	Responsible Party: CC ELUC , CCPZ Funding Source: local Suggested Timeframe: within two years of FEMA approval of HMP Update
T, SS, SWS, E	3	12) Make a recommendation to the Champaign County Environment and Land Use Committee regarding County adoption of building regulations requiring wind-resistant and seismic resistance construction for new critical facilities.	NEW	Responsible Party: CC ELUC , CCPZ Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP Update
F	3	13) Identify and prioritize needed improvements to County maintained roads that flood in heavy rainstorms, blocking or impairing road use and through access by vehicular traffic.	PENDING	Responsible Party: CCHD Funding Source: local or grant Suggested Timeframe: within 2 to 5 years of FEMA approval of HMP update
F	3	14) Conduct a feasibility study regarding acquisition of acceptable elevation data to identify boundaries of the floodway and 100-year floodplain throughout unincorporated Champaign County.	NEW	Based on a previous similar Mitigation Action. Responsible Party: CC ELUC, CCPZ Funding Source: local Suggested Timeframe: within 2 to 5 years of FEMA approval of HMP update
All	3	15) Inventory mutual aid agreement terms for Plan Area communities and encourage participation of communities.	NEW	Responsible Party: CCEMA Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Removed or Replaced Mitigation Actions for Champaign County

		Mitigation Action	Status	Notes
E	3	~~5)~~ Distribute information regarding earthquake hazards and safety procedures to all Champaign County school districts on an annual basis.	REMOVED	CCEMA preference is to combine former Mitigation Action #5 to include it as part of Mitigation Action #1.
SS	3	~~9)~~ Establish means of activating an advance warning siren and provide advance warning sirens in outlying unincorporated communities that do not yet have one.	REPLACED	CCEMA preference is to replace former Mitigation Action #9 with expanded Mitigation Action #2.
SS, E	3	~~10)~~ Adopt building regulations that require wind-resistant and earthquake-resistant construction measures for critical facilities that house vulnerable populations or that house volatile liquids or hazardous wastes.	REPLACED	CCPZ preference is to replace former Mitigation Action #10 with new Mitigation Action #12.

Jurisdiction: **Village of Allerton**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Allerton residents and businesses to purchase and use a NOAA all-hazard radio.	ONGOING	Interest expressed regarding discount for buying radios in bulk, and in possible cost-share options between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local
F	2	2) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Board of Trustees Funding Source: local
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	PENDING	Interest expressed in brochures/mailings, and poster displayed at Allerton post office. Responsible Party: Village Board of Trustees Funding Source: local or grant Suggested Timeframe: within 1 year of FEMA approval of HMP update

Completed Mitigation Action for Village of Allerton

		Mitigation Action	Status	Notes
F	2	2) Adopt or amend Village of Allerton floodplain management regulations to comply with NFIP requirements.	COMPLETE	Complete as of October 2, 2013 Responsible Party: Village Board of Trustees

Jurisdiction: **Village of Bondville**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Bondville residents and businesses to purchase and use a NOAA all-hazard radio.	ONGOING	Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local
F	2	2) Review cost and benefits of Village of Bondville participation in National Flood Insurance Program.	PENDING	Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Responsible Party: Village Board of Trustees Funding Source: local or grant Suggested Timeframe: within 1 year of FEMA approval of HMP update

Jurisdiction: **Village of Broadlands**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Broadlands residents and businesses to purchase and use a NOAA all-hazard radio.	ONGOING	Share information regarding any bulk radio purchase discount. Explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local
F	2	2) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Board of Trustees Funding Source: local
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Responsible Party: Village Board of Trustees Funding Source: local or grant Suggested Timeframe: within 1 year of FEMA approval of HMP update
F	3	4) Review hazard mitigation options regarding repetitive flood loss property in Broadlands.	PENDING	Interest expressed in exploring FEMA/HMGP options. Responsible Party: Village Board of Trustees Funding Source: local or grant Suggested Timeframe: within 2 years of FEMA approval of HMP update

Completed Mitigation Action for Village of Broadlands

		Mitigation Action	Status	Notes
F	2	~~2)~~ Adopt or amend Village of Broadlands floodplain management regulations to comply with NFIP requirements.	COMPLETE	Complete as of October 2, 2013 Responsible Party: Village Board of Trustees

Jurisdiction: **City of Champaign**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
F	1	1) Continue improvements to remove structures within the Boneyard Creek floodway and mitigate flooding hazards with adequate stormwater detention facilities in the Boneyard Creek watershed.	ONGOING	Responsible Party: City Public Works Department Funding Source: local or grant
F	1	2) Continue to construct stormwater detention improvements within the Copper Slough Watershed (specific to the West Washington Street Watershed).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: City Public Works Department Funding Source: local or grant
F	2	3) Acquire properties located within the Boneyard Creek floodplain as funding allows and as the properties become available.	ONGOING	Responsible Party: City Public Works Department Funding Source: local or grant
F		4) Participate in National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: City Public Works Department Funding Source: local
F	2	5) Continue review of City floodplain development regulations for compliance with FEMA NFIP requirements.	ONGOING	Most recently updated as of October 2, 2013. Responsible Party: City Public Works Department Funding Source: local
F		6) Participate in the FEMA Community Rating System Program.	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: City Public Works Department Funding Source: local
T, SS, SWS		7) Participate in the National Weather Service StormReady® program.	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: City Public Works and Building Safety Departments Funding Source: local
F	2	8) Construct new buildings and new development in accordance with City floodplain development regulations.	ONGOING	Responsible Party: City Public Works Department Funding Source: local
F	2	9) Conduct volunteer clean-up of Boneyard Creek as part of the MS4 Stormwater Management Program biannual Community Cleanup Day event.	ONGOING	Responsible Party: City Public Works Department Funding Source: local

Jurisdiction: **City of Champaign** (continued)

Hazards Addressed	Priority	Mitigation Action	Status	Notes
F	2	10) Require construction of detention basins in accordance with City stormwater regulations.	ONGOING	Responsible Party: City Public Works Department Funding Source: local
F	2	11) Require erosion control plans in accordance with City stormwater regulations to mitigate stormwater pollution.	ONGOING	Responsible Party: City Public Works Department Funding Source: local
All	2	12) Adopt Comprehensive Land Use Plan that guides growth and development to suitable locations and includes goals, objectives and policies consistent with HMP goals and objectives.	ONGOING	Responsible Party: City Planning Department Funding Source: local
T, SS	2	13) Maintain City's system of advance warning sirens.	ONGOING	Responsible Party: City Public Works Department Funding Source: local
All	2	14) Require back-up generators for public assembly buildings and buildings that house dependent populations.	ONGOING	Responsible Party: City Building Safety Department Funding Source(s): local
T, SS, E, F, SWS	2	15) Require construction projects to conform to wind, snow load, and seismic provisions of the International Building and International Residential Codes.	ONGOING	Responsible Party: City Building Safety Department Funding Source(s): local
T, SS, SWS, EH	2	16) Conduct a needs assessment regarding community shelter options for vulnerable populations.	NEW	Responsible Party: City Building Safety Department Funding Source(s): local Suggested Timeframe: within 2 years of FEMA approval of HMP update
All	3	17) Disseminate public education information about preventative protective measures to take prior to occurrence of natural and technical hazards via internet, social media, print, and television.	ONGOING	Responsible Party: City Fire Department Funding source: local or grant
T, SS, SWS	3	18) Prune or remove trees as needed in public right-of-way areas.	ONGOING	Responsible Party: City Public Works Department Funding Source: local
T, SS	3	19) Review International Building Codes for adoption by the city as they are published every three years.	ONGOING	Responsible Party: City Building Safety Department Funding Source(s): local

Completed or Replaced Mitigation Actions for City of Champaign

		Mitigation Action	Status	Notes
F	1	~~1)~~ Continue to implement plans for the East University Avenue area that contain goals and strategies for removing structures within the Boneyard Creek floodway and mitigating flooding hazards with adequate stormwater detention facilities.	REPLACED	Adjusted based on input from City Engineer. The revised version is shown as ongoing Mitigation Action #1.

Completed or Replaced Mitigation Actions for City of Champaign (continued)

		Mitigation Action	Status	Notes
F	1	John Street Drainage Improvement Project installation of a 60-inch storm sewer between Prairie Street and State Street.	COMPLETE*	*Added as a mitigation action, completed in 2010. Responsible party: City Public Works Department Funding Source: local
F	2	~~8)~~ Complete Boneyard Creek Second Street Reach Project.	COMPLETE	Completed in 2012. Responsible Party: City Public Works Department Funding Source: local
F	2	~~5)~~ Require construction projects located within and adjacent to floodplains to be built in accordance with the provisions of the City floodplain regulations. ~~9)~~ Locate new buildings with regard to recognized floodplains.	REPLACED	Former Mitigation Actions #5 and #9 were combined to form ongoing Mitigation Action #8.
All	2	~~10)~~ Adopt Comprehensive Land Use Plan that guides growth and development to suitable locations and includes goals, objectives and policies related to hazard mitigation.	REPLACED	Former Mitigation Action #10 revised and now included as ongoing Mitigation Action #12.
All	2	~~14)~~ Install web-portal system that would allow City employees to work from home in the event of an emergency.	COMPLETE	Completed shortly after adoption of HMP in 2009. Responsible Party: City IT Department

Jurisdiction: **Village of Fisher**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Fisher residents and businesses to purchase and use a NOAA all-hazard radio.	ONGOING	Newspaper ad to date. Share information regarding any bulk radio purchase discount. Explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local
F	2	2) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Board of Trustees Funding Source: local
F	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update
F	3	4) Review hazard mitigation options regarding repetitive flood loss property in Fisher.	PENDING	Interest expressed in exploring FEMA/HMGP options. Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Completed Mitigation Action for Village of Fisher

		Mitigation Action	Status	Notes
F	2	~~2)~~ Adopt or amend Village of Fisher floodplain management regulations to comply with NFIP requirements	COMPLETE	Completed as of October 2, 2013. Responsible Party: Village Board of Trustees Funding Source: local

Jurisdiction: **Village of Foosland**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	2	1) Encourage Village of Foosland residents and businesses to purchase and use a NOAA all-hazard radio.	ONGOING	Implemented, many residents purchased radios. Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local
All	1	2) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Considering town meeting or local newspaper as means. Responsible Party: Village Board of Trustees Funding Source: local or grant Suggested Timeframe: within 1 year of FEMA approval of HMP update

Completed Mitigation Action for Village of Foosland:

		Mitigation Action	Status	Notes
F	2	~~2)~~ Adopt or amend Village of Foosland floodplain management regulations to comply with NFIP requirements.	COMPLETE	Completed as of October 2, 2013. Responsible Party: Village Board of Trustees Funding Source: local

Jurisdiction: **Village of Gifford**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	Encourage Village of Gifford residents and businesses to purchase and use a NOAA all-hazard radio.	ONGOING	Church handed out radios once. Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local or grant
T, SS	1	2) Arrange to designate a local facility as a storm shelter.	NEW	Many residents do not have basements. Responsible Party: Village Board of Trustees Funding Source: local or grant Suggested Timeframe: within 1 year of FEMA approval of HMP update.
F	2	3) Review cost and benefits of Village participation in National Flood Insurance Program.	PENDING	ESDA contact expressed interest in receiving information about NFIP participation. No localized areas of flooding. Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update
All	2	4) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Police chief suggested posting on website, and distribute brochures and display posters for residents with no internet access. Responsible Party: Village Board of Trustees Funding Source: local or grant Suggested Timeframe: within 2 years of FEMA approval of HMP update

Jurisdiction: **Village of Homer**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Homer residents and businesses to purchase and use a NOAA all-hazard radio.	ONGOING	Newsletter suggested as an effective means. Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local or grant
F	2	2) Review cost and benefits of Village participation in National Flood Insurance Program.	PENDING	Expressed interest in obtaining information about NFIP participation. Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Suggested RPC develop a brochure for Village to distribute. Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update

Jurisdiction: **Village of Ivesdale**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Ivesdale residents and businesses to purchase and use a NOAA all-hazard radio.	ONGOING	Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local or grant
F	2	2) Review cost and benefits of Village participation in National Flood Insurance Program.	PENDING	Village participation expired for unknown reason. Village is interested in re-instating NFIP participation. Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Jurisdiction: **Village of Longview**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Longview residents and businesses to purchase and use a NOAA all-hazard radio.	ONGOING	Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local or grant
F	2	2) Review cost and benefits of Village participation in National Flood Insurance Program.	PENDING	Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Jurisdiction: **Village of Ludlow**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Ludlow residents and businesses to purchase and use a NOAA all-hazard radio.	ONGOING	Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local or grant
F	2	2) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Board of Trustees Funding Source: local
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Completed Mitigation Action for Village of Ludlow:

		Mitigation Action	Status	Notes
F	2	~~2)~~ Review cost and benefits of Village participation in National Flood Insurance Program.	COMPLETE	Village joined as a participant of NFIP during 2013. Responsible Party: Village Board of Trustees Funding Source: local

Jurisdiction: **Village of Mahomet**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
F	1	1) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Planner Funding Source: local
F	1	2) Administer Floodplain Management Ordinance and Stormwater Management Ordinance.	ONGOING	Responsible Party: Village Planner Funding Source: local
T, SS, SWS, EH	1	3) Identify and designate shelters and cooling centers.	PENDING	Responsible Party: Village Planner Funding Source: local Suggested Timeframe: within1 year of FEMA approval of HMP update

Jurisdiction: **Village of Mahomet** (continued)

Hazards Addressed	Priority	Mitigation Action	Status	Notes
T, SS	1	4) Maintain advance warning sirens.	ONGOING	Responsible Party: Village Public Works Funding Source: local
All	1	5) Require back-up generators for public assembly buildings and buildings that house dependent populations.	ONGOING	Responsible Party: Village Planner Funding Source: local
F	2	6) Administer flood elevation standards within Subdivision Ordinance.	ONGOING	Responsible Party: Village Planner Funding Source: local
T, SS, SWS, E, F	2	7) Adopt International Building and International Residential Codes	PENDING	Responsible Party: Village Planner Funding Source: local Suggested Timeframe: within 2 to 3 years of FEMA approval of HMP update
D	2	8) Adopt a water use restriction ordinance	PENDING	Responsible Party: Village Planner Funding Source: local Suggested Timeframe: within 2 to 3 years of FEMA approval of HMP update
T, SS, SWS, E, F, EH	2	9) Adopt a minimum housing ordinance.	PENDING	Responsible Party: Village Planner Funding Source: local Suggested Timeframe: within 2 to 3 years of FEMA approval of HMP update
All	2	10) Identify a strategy to provide emergency patrol and rescue, including access to snowmobiles and 4x4 vehicles.	PENDING	Responsible Party: Village Police, local EMA representative Funding Source: local Suggested Timeframe: within 2 to 3 years of FEMA approval of HMP update
All	2	11) Disseminate public education information about preventative protective measures to take prior to occurrence of natural and technical hazards via internet, social media, print, and community cable television	ONGOING	Responsible Party: Village Police Funding Source: local and grant
All	3	12) Update Comprehensive Land Use Plan to include goals, objectives and policies consistent with HMP goals and objectives.	ONGOING	Responsible Party: Village Planner, Village Board of Trustees Funding Source: local
F	3	13) Acquire flood-prone properties along Sangamon River for perpetual open space.	PENDING	Responsible Party: Village Planner, Village Board of Trustees Funding Source: local or grant Suggested Timeframe: within 3 to 5 years of FEMA approval of HMP update

Jurisdiction: **Village of Mahomet** (continued)

Hazards Addressed	Priority	Mitigation Action	Status	Notes
SWS	3	14) Administer a snow emergency ordinance.	ONGOING	Responsible Party: Village Planner Funding Source: local
All	3	15) Educate public with regard to preventative protective measures to take prior to occurrence of natural and technical hazards via school presentations.	ONGOING	Responsible Party: Village Police Funding Source: local

Completed Mitigation Action for Village of Mahomet

		Mitigation Action	Status	Notes
F	1	~~1)~~ Adopt or amend Village of Mahomet floodplain management regulations to comply with NFIP requirements.	COMPLETE	Updated as of October 2, 2013. Responsible Party: Village Board of Trustees Funding Source: local

Jurisdiction: **Village of Ogden**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Ogden residents and businesses to purchase and use a NOAA all-hazard radio	ONGOING	Interest in placing message about NOAA radios on water bills to residents. Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees. Funding Source: local
F	2	2) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Board of Trustees Funding Source: local
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Completed Mitigation Action for Village of Ogden

		Mitigation Action	Status	Notes
F	1	~~1)~~ Adopt or amend Village of Ogden floodplain management regulations to comply with NFIP requirements.	COMPLETE	Updated as of October 2, 2013. Responsible Party: Village Board of Trustees. Funding Source: local

Jurisdiction: **Village of Pesotum**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage all Village of Pesotum residents and businesses to purchase and use a NOAA all-hazard radio	ONGOING	Included in Village newsletter. Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees. Funding Source: local
F	2	2) Review cost and benefits of Village participation in National Flood Insurance Program.	PENDING	Expressed interest in obtaining information about NFIP participation. Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	2	2) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Interest in considering distributing general brochure created by RPC. Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Jurisdiction: **Village of Philo**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage all Village of Pesotum residents and businesses to purchase and use a NOAA all-hazard radio	ONGOING	Will continue to include message in Village newsletter. Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees. Funding Source: local
F	2	2) Review cost and benefits of Village participation in National Flood Insurance Program.	PENDING	Village started process of looking into this. Interest expressed interest in considering NFIP participation. Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	2	2) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Interest in considering distributing general brochure created by RPC. Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Jurisdiction: **Village of Rantoul**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Maintain redundancy in power grid, capability of Village to generate its own power, and backup power generating capabilities for operation of the Village stormwater, waste water, and municipal buildings.	ONGOING	Responsible Party: Village Public Works Department Funding Source: local
EH, SWS	1	2) Identify cooling and warming shelters for vulnerable populations within the Village.	PENDING	Responsible Party: Village Inspection Department Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update
T, SS	1	3) Encourage the construction of storm shelters for existing manufactured home developments. Require the construction of storm shelters for new manufactured homes.	PENDING	Responsible Party: Village Inspection Department Funding Source: local or grant Suggested timeframe: within 2 to 3 years of FEMA approval of HMP update

Jurisdiction: **Village of Rantoul** (continued)

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	4) Administer a rental inspection program to inspect all rental properties for structural weaknesses, overcrowding, utilities, and roofing.	ONGOING	Entering 8th year of program implementation. Responsible Party: Village Inspection Department Funding Source: local
F	1	5) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Inspection Department Funding Source: local
T, SS, SWS, E, EH	1	6) Require construction projects to conform to surge protection, energy efficiency, wind, snow load, and seismic provisions of the International Building and International Residential Codes.	ONGOING	Responsible Party: Village Inspection Department Funding Source: local
T, SS	1	7) Maintain advance warning sirens.	ONGOING	Responsible Party: Village ESDA representative, Police Department, and Public Works Department Funding Source: local
All	1	8) Encourage Village of Rantoul residents and businesses to purchase and use a NOAA all-hazard radio.	NEW	Responsible Party: Village Inspection Department Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	2	9) Maintain fiber optic connections to Village wastewater, stormwater, electric and municipal facilities to allow their remote operation in the event they become inaccessible.	ONGOING	Responsible Party: Village Public Works Department Funding Source: local
T, SS, SWS	2	10) Conduct tree trimming and removal program in public right of way areas to prevent damage to overhead electric lines.	ONGOING	Responsible Party: Village Public Works Department Funding Source: local
T, SS, SWS	2	11) Require new developments to bury electrical utilities underground.	ONGOING	Responsible Party: Village Inspection Department Funding Source: local
T, SS, SWS	2	12 Ensure that anchoring requirements are in place for mobile homes.	ONGOING	Responsible Party: Village Inspection Department Funding Source: local
T, SS	2	13) Notify ESDA director, monitor Doppler radar, and send lookouts to monitor tornados when a Tornado Warning is issued.	ONGOING	Responsible Party: Village ESDA representative, Village Police Department Funding Source: local
All	2	14) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Responsible Party: Village Inspection Department Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update
E	2	15) Conduct rapid visual screening to identify structural and non-structural hazards.	ONGOING	Partially begun, with plans to fully implement as resources allow. Responsible Party: Village Inspection Department Funding Source: local

Jurisdiction: **Village of Rantoul** (continued)

All	2	17) Review International Building Codes for adoption by the Village as they are published every three years.	ONGOING	Responsible Party: Village Inspection Department Funding Source: local
All	2	18) Update Comprehensive Land Use Plan to include goals, objectives, and policies consistent with HMP goals and objectives.	ONGOING	Responsible Party: Village Inspection Department Funding Source: local
F	2	19) Require construction of detention basins pursuant to Village stormwater detention requirements.	ONGOING	Responsible Party: Village Inspection and Public Works Departments Funding Source: local
F	3	20) Review costs and benefits of Village of Rantoul participation in FEMA Community Rating System voluntary incentive program.	NEW	Responsible Party: Village Inspection Department Funding Source: local Suggested Timeframe: within 2 to 3 years of FEMA approval of HMP update
T, SS, SWS, F	3	21) Conduct quarterly meetings of storm drainage committee to identify, prioritize and oversee drainage improvements.	ONGOING	Responsible Party: Village Inspection Department Funding Source: local
T, SS	3	22) Use PA systems in police and fire vehicles to warn citizens in the event that the advance warning sirens fail.	ONGOING	Responsible Party: Village Police Department Funding Source: local

Completed or Replaced Mitigation Actions for Village of Rantoul

		Mitigation Action	Status	Notes
F	1	~~5)~~ Adopt or amend Village of Rantoul floodplain management regulations to comply with NFIP requirements.	COMPLETE	Responsible Party: Village Inspection Department Funding Source: local
SS	3	~~13)~~ Disseminate public education information through print, internet, and television, including community cable channel.	REPLACED	Broader Mitigation Action #14 instead replaces former Mitigation Action #13.
T, SS, SWS	2	15) Install surge protection in existing critical facilities.	COMPLETE	Responsible Party: Village Inspection and Public Works Departments Funding Source: local

Jurisdiction: **Village of Royal**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Royal residents and businesses to purchase and use a NOAA all-hazard radio	ONGOING	Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local
F	2	2) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Board of Trustees. Funding Source: local
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Interest in considering distributing general brochure created by RPC. Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Completed Mitigation Actions for Village of Royal

		Mitigation Action	Status	Notes
F	2	~~2)~~ Review cost and benefits of Village participation in National Flood Insurance Program.	COMPLETE	Responsible Party: Village Board of Trustees. Funding Source: local

Jurisdiction: **Village of Sadorus**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Sadorus residents and businesses to purchase and use a NOAA all-hazard radio	ONGOING	Considered distributing of a brochure as preferred means. Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees. Funding Source: local
All	2	2) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Interest in distributing a brochure created by RPC. Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Removed Mitigation Action for Village of Sadorus

		Mitigation Action	Status	Notes
F	2	~~2)~~ Review cost and benefits of Village participation in National Flood Insurance Program.	REMOVED	Village President suggested this Mitigation Action be removed.

Jurisdiction: **Village of Savoy**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Sadorus residents and businesses to purchase and use a NOAA all-hazard radio	ONGOING	Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees. Funding Source: local
F	2	2) Review cost and benefits of Village participation in National Flood Insurance program (NFIP).	PENDING	Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Jurisdiction: **Village of Savoy** (continued)

Hazards Addressed	Priority	Mitigation Action	Status	Notes
F	2	3) Review costs and benefits of Village of Savoy participation in FEMA Community Rating System voluntary incentive program.	NEW	Responsible Party: Village Planning and Economic Development Director Funding Source: local Suggested Timeframe: within 2 to 3 years of FEMA approval of HMP update
F	2	4) Require construction of detention basins pursuant to stormwater detention requirements in Village subdivision standards.	ONGOING	Responsible Party: Village Zoning Administrator Funding Source: local
All	2	5) Administer Building Code for new and replacement development construction.	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Zoning Administrator Funding Source: local
T, SS, SWS	2	6) Participate in the National Weather Service StormReady® program.	ONGOING*	*Added as an ongoing mitigation action. Savoy is a StormReady® community. Responsible Party: Village Board of Trustees Funding Source: local
T, SS, SWS, F, E	3	7) Provide emergency patrol and rescue, including access to rescue and 4x4 vehicles.	ONGOING	Responsible Party: Village Fire Department Funding Source: local
All	3	8) Update the Village of Savoy Comprehensive Land Use Plan to be consistent with HMP goals and objectives.	ONGOING	Responsible Party: Village Planning and Economic Development Director Funding Source: local

Completed Mitigation Actions for Village of Savoy

		Mitigation Action	Status	Notes
T, SS, SWS, EH	2	3) Identify and maintain storm shelters and cooling centers within the Village.	COMPLETE	Responsible Party: Village ESDA Representative, and Village Public Works Department Funding Source: local
F	2	5) improve storm sewer system to alleviate flooding due to heavy rainfall in old Village of Savoy area.	COMPLETE	Responsible Party: Village Public Works Department Funding Source: local
F, SS, SWS	2	6) Adopt a minimum Building Code ordinance.	COMPLETE	Responsible Party: Village Board of Trustees Funding Source: local

Jurisdiction: **Village of Sidney**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Sidney residents and businesses to purchase and use a NOAA all-hazard radio	ONGOING	Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local
F	2	2) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Board of Trustees. Funding Source: local
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Interest in considering distributing general brochure created by RPC. Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update
F	3	4) Identify a strategy to protect Review feasibility of protecting critical facility in Village from flood damage.	NEW	Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 to 3 years of FEMA approval of HMP update
F	3	5) Review costs and benefits of Village of Sidney participation in FEMA Community Rating System voluntary incentive program.	NEW	Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 to 3 years of FEMA approval of HMP update

Completed or Replaced Mitigation Actions for Village of Sidney

		Mitigation Action	Status	Notes
F	2	~~2)~~ Adopt of amend Village of Sidney floodplain management regulations to comply with NFIP requirements.	COMPLETE	Responsible Party: Village Board of Trustees. Funding Source: local
F	3	~~3)~~ Review feasibility of protecting critical facility in Village from flood damage.	REPLACED	This mitigation action was replaced with Mitigation Action #4. Responsible Party: Village Board of Trustees. Funding Source: local

Jurisdiction: **Village of St. Joseph**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of St. Joseph residents and businesses to purchase and use a NOAA all-hazard radio	ONGOING	Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees Funding Source: local
F	2	2) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Village Board of Trustees. Funding Source: local
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Interest in considering distributing general brochure created by RPC. Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update
F	3	4) Review costs and benefits of Village of St. Joseph participation in FEMA Community Rating System voluntary incentive program.	NEW	Responsible Party: Village Board of Trustees Funding Source: local Suggested Timeframe: within 2 to 3 years of FEMA approval of HMP update

Completed Mitigation Action for Village of St. Joseph

		Mitigation Action	Status	Notes
F	2	~~2)~~ Adopt of amend Village of St. Joseph floodplain management regulations to comply with NFIP requirements.	COMPLETE	Responsible Party: Village Board of Trustees. Funding Source: local

Jurisdiction: **Village of Thomasboro**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Thomasboro residents and businesses to purchase and use a NOAA all-hazard radio	ONGOING	Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees. Funding Source: local
F	2	2) Review cost and benefits of Village participation in National Flood Insurance Program.	PENDING	Interest expressed interest in considering NFIP participation. Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Plans to link EMA online resources to Village website. Interest in providing brochure and other physical resources available. Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update

Jurisdiction: **Village of Tolono**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Encourage Village of Thomasboro residents and businesses to purchase and use a NOAA all-hazard radio	ONGOING	Share information regarding any discount for buying radios in bulk and explore interest in cost-share option between Village and residents. Responsible Party: Village Board of Trustees. Funding Source: local
F	2	2) Review cost and benefits of Village participation in National Flood Insurance Program.	PENDING	Responsible Party: Village Board of Trustees. Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	2	3) Improve communication to population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	NEW	Responsible Party: Village Board of Trustees. Funding Source: local or grant Suggested Timeframe: within 1 year of FEMA approval of HMP update

Jurisdiction: **City of Urbana**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Complete installation of emergency back-up power systems for remaining essential City facilities such as Fire Stations 2 and 3 and the Civic Center.	PENDING	Recommended for inclusion in a future list of capital projects. Responsible Party: City Fire Department and Public Works Department Funding Source: local or grant Suggested Timeframe: within 1 year of FEMA approval of HMP update as resources allow
All	1	2) Contribute to countywide integrated information base for use in assessing risk from natural and selected technical hazard event	ONGOING	Responsible Party: City Community Development Services, Public Works, Fire Department Funding Source: local
All	1	3) Identify existing buildings as shelters	ONGOING	Responsible Party: City Fire Department Funding Source: local
All	1	4) Offer and promote the use of area-wide warning text message system (e.g., Alert Sense)	ONGOING	Responsible Party: City Fire Department Funding Source: local

Jurisdiction: **City of Urbana** (continued)

Hazards Addressed	Priority	Mitigation Action	Status	Notes
T, SS	1	5) Maintain an advance outdoor warning siren system	ONGOING	Outdoor siren warning system is tested the first Tuesday of each month Responsible Party: City Fire Department Funding Source: local
T, SS, SWS	1	6) Use Risk Watch program in schools.	ONGOING	Responsible Party: City Fire Department Funding Source: local
T, SS, SWS	1	7) Educate the public--especially seniors and the disabled--on methods to ensure critical documents can be easily retrieved in case of emergency.	ONGOING	Responsible Party: City Fire Department Funding Source: local
E	1	8) Periodically review and update International Building Code requirements concerning seismic resistance.	ONGOING	2009 International Building Code adopted. Responsible Party: City Building Safety Division Funding Source: local
T, SS, SWS	1	9) Periodically review and update International Building Code requirements concerning high wind resistance.	ONGOING	2009 International Building Code adopted. Video on City website promotes wind resistant construction techniques. Responsible Party: City Building Safety Division Funding Source: local
F	1	10) Require developers to pre-approve a tax benefit district to include properties served by a detention basin in the event that a property owner association fails to maintain it.	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: City Public Works Department Funding Source: local
F	1	11) Continue to require a minimum of one-foot freeboard above the 100-year floodplain for new construction.	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: City Community Development Services and Public Works Department Funding Source: local
All	2	12) Encourage distribution of NOAA all-hazard radios to special needs populations.	ONGOING	Responsible Party: City Fire Department Funding Sources: local
F	2	13) Participate in the National Flood Insurance Program (NFIP).	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: City Public Works Department Funding Source: local
T, SS, SWS	2	14) Participate in the National Weather Service StormReady® program.	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: City Public Works Department and Building Safety Division. Funding Source: local
F	2	15) Offer zoning transfer of development rights as a tool within the Boneyard Creek District.	ONGOING	Responsible Party: City Community Development Services Funding Sources: local

Jurisdiction: **City of Urbana** (continued)

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	2	16) Monitor and target financial assistance to improve safety of existing buildings in TIF districts	ONGOING	Responsible Party: City Community Development Services Funding Sources: local
T, SS	2	17) Educate local builders on wind resistant construction techniques.	ONGOING	Video available on City website. Responsible Party: City Community Development Services Funding Sources: local
T, SS, SWS	2	18) Trim and tree removal program to reduce limb and tree hazards.	ONGOING	Trees are rated based on risk using a scale of 1 to 10 with 10 being the highest risk. All level 10 risk trees have been removed. Anticipate completing removal of risk level 9 and 8 trees in 2015. Responsible Party: City Public Works Department Funding Sources: local
T, SS, SWS	2	19) Improve maintenance and proper species selection in urban forestry.	ONGOING	Reducing the number of maples in our inventory by attrition. Other than maples the urban forest has good diversity among tree species. Responsible Party: City Public Works Department Funding Sources: local
F	3	20) When appropriate, acquire flood-prone properties along the Boneyard Creek to expand greenways.	ONGOING	Acquired parts of 5 flood prone properties for Boneyard Creek Improvements Project. Applied for an IEMA grant to purchase an additional flood prone property along Boneyard Creek but did not receive grant. Responsible Party: City Public Works Department Funding Sources: local
T, SS, SWS, E	3	21) Develop a Facilities Plan to provide technical support and funding or subsidies to upgrade critical facilities.	PENDING	Responsible Party: City Community Development Services and Public Works Department Funding Sources: local Suggested Timeframe: within 3 to 5 years of FEMA approval of HMP update
T, SS, SWS, E	3	22) Provide technical support and funding or subsidies to upgrade unreinforced masonry buildings in downtown Urbana.	PENDING	Responsible Party: City Community Development Services Funding Sources: local Suggested Timeframe: within 3 to 5 years of FEMA approval of HMP update
T, SS	3	23) Educate residents of mobile home parks regarding the location of safe shelters and/or offer shelters within parks.	ONGOING	Responsible Party: City Community Development Services and Fire Department Funding Source: local or grant

Completed or Replaced Mitigation Actions for City of Urbana

		Mitigation Action	Status	Notes
F	1	~~5)~~ Provide back-up maintenance of storm water detention basins by amending Subdivision Ordinance to require developers to pre-approve a tax benefit district to include properties served by a detention basin in the event that a property owner association fails to maintain it.	COMPLETE	Added ongoing Mitigation Action #10 to indicate implementation of this completed mitigation action.
SS	3	~~11)~~ Amend the City of Urbana floodplain management regulations to require a minimum of one-foot freeboard above the 100-year floodplain for new construction.	COMPLETE	Added ongoing Mitigation Action #11 to indicate implementation of this completed mitigation action.
F	2	~~13)~~ Update FEMA Flood Insurance Rate Maps based on a study of the floodway and 100-year floodplain of the Boneyard Creek.	COMPLETE	New FEMA maps were adopted on October 2, 2013 for Champaign County including Urbana. The new FEMA map included the Boneyard Creek floodplain modeling and study completed by the USGS for the City of Urbana, City of Champaign, and University of Illinois. Responsible Party: City of Urbana Public Works Department Funding Source: local

Jurisdiction: **Parkland College**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Offer and promote the use of an area-wide warning text message system such as IRIS.	ONGOING	Responsible Party: Parkland College Public Safety Funding Source: local
All	1	2) Participate as a StormReady® campus.	ONGOING*	*Added as an ongoing mitigation action. Responsible Party: Parkland College Public Safety Funding Source: local
All	1	3) Continue to use Parkland College public safety website and social media to communicate to campus population regarding preventative protective measures to take prior to occurrence of natural and technical hazards.	ONGOING	Responsible Party: Parkland College Public Safety Funding Source: local
All	1	4) Review benefits of Parkland College participation in the 'Ready to Respond' Campus program.	NEW	Responsible Party: Parkland College Public Safety Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	1	5) Continue to conduct classroom outreach talks to students, staff, and faculty each semester and upon request to address preventive protective measures prior to occurrence of natural and technical hazards.	ONGOING	Responsible Party: Parkland College Public Safety Funding Source: local
All	1	6) Distribute 'Emergency Procedure Guide' throughout Parkland College campus.	NEW	Responsible Party: Parkland College Public Safety Funding Source: local Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	1	7) Conduct a needs assessment with regard to back-up generators to serve campus premises.	NEW	Responsible Party: Parkland College Public Safety Funding Source: local Suggested Timeframe: within 2 years of FEMA approval of HMP update

Completed, Removed, or Replaced Mitigation Actions for Parkland College

		Mitigation Action	Status	Notes
E	1	~~5)~~ Identify existing buildings as shelters.	COMPLETE	Action completed, as part of StormReady® program participation. See Mitigation Action #2.

Jurisdiction: **University of Illinois at Urbana-Champaign**

Hazards Addressed	Priority	Mitigation Action	Status	Notes
All	1	1) Update and expand the Office of Campus Emergency Planning Website.	ONGOING	Responsible Party: Office of Campus Emergency Planning Funding Source: state
All	1	2) Utilize nine emergency notification systems to alert the campus community.	ONGOING	Responsible Party: Office of Campus Emergency Planning Funding Source: state
All	1	3) Continue assignment of Building Emergency Coordinators to assist in creation and maintenance of Building Emergency Action Plans for natural, man-made, and technological disasters.	ONGOING	Responsible Party: Office of Campus Emergency Planning Funding Source: state
All	1	4) Continue to update and implement the Building Emergency Plan template to be used by campus buildings.	ONGOING	Responsible Party: Office of Campus Emergency Planning Funding Source: state
F	1	5) Continue to update and implement the UC-Berkeley Continuity of Operations Plan template	ONGOING	Responsible Party: Office of Campus Emergency Planning Funding Source: state
All	1	6) Establish a training and/or review program to ensure employees are trained on their respective Building Emergency Action Plan(s).	NEW	Responsible Party: Office of Campus Emergency Planning Funding Source: state Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	1	7) Create online emergency response training programs for the UIUC campus.	NEW	Responsible Party: Office of Campus Emergency Planning Funding Source: state Suggested Timeframe: within 1 year of FEMA approval of HMP update
All	1	8) Complete Department of Human Services survey of critical infrastructure.	NEW	Responsible Party: Office of Campus Emergency Planning Funding Source: state Suggested Timeframe: within 1 year of FEMA approval of HMP update

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Chapter 5 includes the following HMP components:

- Description of method and schedule for monitoring, evaluating, and updating the mitigation plan within a five-year cycle. *FEMA Requirement § 201.6(c)(4)(i)*
- Description of how the HMP will be incorporated into local planning mechanisms for each jurisdiction. *FEMA Requirement §201.6(c)(4)(ii)*
- Description of how public involvement will be continued in the HMP maintenance process. *FEMA Requirement § 201.6(c)(4)(i)*

Monitoring, Evaluating, and Updating the Plan

FEMA requires the HMP be reviewed and revised to reflect changes in development, progress in local mitigation efforts, and changes in its priorities, and resubmit it for approval within five years in order to continue to be eligible for mitigation project grant funding.

Because the HMP is a multi-jurisdictional effort, the Planning Team recommends it be reviewed on an annual basis. Annual reviews will facilitate improved tracking and record-keeping of progress toward implementation, and allow for an easier, more efficient five-year update. Additional Planning Team recommendations regarding how to monitor, evaluate and update the HMP within a five year cycle follow:

- The HMP Planning Team, structured as described in Chapter One, be retained as the ongoing organization to maintain the HMP, with Planning Team vacancies filled on an as-needed basis.

- Continue to use the 'combination' approach to represent all participating jurisdictions for the annual HMP review and the five-year update. The combination approach allows for direct representation of the seven largest populated jurisdictions and the two higher education institutions on the Planning Team, and for authorized representation of the 19 smaller municipalities on the Planning Team, with the CCRPC HMP Project Manager serving on the HMP Planning Team as authorized representative of the 19 smaller municipalities participating in HMP development and update.

- To facilitate the annual HMP review, use a survey format to canvass Planning Team members and key municipal representatives of participating jurisdictions regarding changing circumstances, and progress toward implementing mitigation actions for each participating jurisdiction. Feedback from representatives of each participating jurisdiction will be encouraged to report on any changing circumstances impacting the priority of selected mitigation actions for each jurisdiction, or make suggestions regarding potential mitigation actions.

- The CCRPC HMP Project Manager continue to coordinate the annual review of the HMP and the HMP update on a five-year cycle.

- The HMP Planning Team meet at least once a year to review the progress of participating jurisdictions toward implementing the HMP mitigation actions. The annual meeting will provide an opportunity for Planning Team members to brainstorm and discuss ways to improve the coordination of participating jurisdictions' efforts toward implementing HMP mitigation actions.

- The outcome of the HMP annual review be a brief report regarding: 1) significant changing circumstances within the HMP planning area related to natural hazard risk assessment; and 2) an update regarding efforts by jurisdictions toward implementing selected mitigation actions over the preceding year, and new mitigation action proposals.

- The five-year plan review and update cycle begins at the time of FEMA acceptance of the HMP update. So participating jurisdictions remain eligible for potential mitigation project grant funding opportunities, the schedule to complete the five-year update commence 18 months prior to the end of the five-year cycle.

Table 5-1. Standard Review Process for 5-Year Update

	Participating Jurisdiction	At beginning of 18-month HMP update	Once HMP update is approved by FEMA
1) 2)	Parkland College University of Illinois at Urbana-Champaign	These participating jurisdictions will be directly represented on the Planning Team.	If a college or university has fully participated in the development and review of the HMP in accordance with 44 CFR *§ 201.6*, it is not necessary for them to approve or adopt the plan as long as it is approved by IEMA.
3) 4) 5) 6) 7) 8) 9)	Champaign County City of Champaign City of Urbana Village of Rantoul Village of Mahomet Village of Savoy Village of St. Joseph	These participating jurisdictions will be directly represented on the Planning Team.	The County Board, City Council, or Village Board of each participating local government jurisdiction will be requested to review and adopt the HMP update. Planning Team members will bring the request to review and adopt the HMP update forward for consideration.
10) 11) 12) 13) 14) 15) 16) 17) 18) 19) 20) 21) 22) 23) 24) 25) 26) 27)	Village of Allerton Village of Bondville Village of Broadlands Village of Fisher Village of Foosland Village of Gifford Village of Homer Village of Ivesdale Village of Longview Village of Ludlow Village of Ogden Village of Pesotum Village of Philo Village of Royal Village of Sadorus Village of Sidney Village of Thomasboro Village of Tolono	These participating jurisdictions will be requested to re-affirm and authorize the CCRPC HMP Project Manager to represent the jurisdiction on the HMP Planning Team.	

Continued Public Involvement
Ongoing opportunities for citizen input will remain an essential component of the HMP maintenance process. Efforts to inform the public and to allow for their effective participation as the HMP is reviewed and updated are described as follows:

Interactive HMP Website.
The HMP website, http://champaigncountyhmp.info, established by CCRPC will be maintained, providing a means to both share information with the public about development of the Champaign County HMP and to allow public feedback regarding the HMP. The website will continue to include agendas and minutes of the annual Planning Team meeting, and meetings related to the five-year HMP update, and expanded to include documents and links to information regarding preventative protective measures to take prior to occurrence of natural and technical hazards and hazard mitigation planning.

Public Service Announcements and Press Releases
PSA's and press releases that include information about opportunities for public participation in the HMP review and five-year updates will be issued.

Public Meetings
Public meetings are a key forum for continued public input regarding the adopted HMP and continued discussion regarding possible implementation of hazard mitigation actions. Participating local government jurisdictions have either identified and prioritized a mitigation action to improve communications to their population regarding preventative protective measures to take prior to occurrence of natural and technical hazards or a mitigation action to provide key information, or links to key information, regarding hazard mitigation planning on their respective local government website.

During the HMP update process, review and adoption processes, communications regarding Planning Team review and progress regarding HMP update efforts are shared with local governing bodies regarding HMP Planning Team meetings throughout the update process, with questions from each governing body and public input at each Planning Team meeting or with HMP project staff encouraged.

Prior to the end of the five-year HMP update cycle, a public meeting to consider the update to the HMP and to adopt the HMP update will be held before the local governing body of each participating local government jurisdiction. As a matter of course, comments and questions from the public regarding the review and adoption of the HMP update will be accepted at each of these meetings.

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Preliminary Review Draft

APPENDICES

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Federal Disaster Declarations within Plan Area

The Plan Area has been included in eight Federal Emergency Disaster Declarations since 1967, the first year that there was a federal disaster declaration in Illinois under the Office of Emergency Preparedness, a predecessor of FEMA. The Federal Disaster Declarations, to date, are described below.

1968 Tornados, Severe Storms, and Floods *(Declaration #: FEMA 242-DR)*

The first recorded Federal Disaster Declaration that included Champaign County occurred on June 5, 1968. No further information is provided, probably due to the fact that this was one of the first federally documented declarations.

1974 Tornados *(Declaration #: FEMA 427-DR)*

This disaster was declared on April 11, 1974, and much like the previous declaration, there is no further information regarding this event.

1990 Ice Storm *(Declaration #: FEMA 860-DR)*

On February 14, 1990 Champaign County, along with nine other counties in Illinois, was hit by an ice storm. A total of 1.8 inches of rain fell over a 10- to 12-hour period, resulting in between 0.5 and 0.75 inches of ice accumulating on exposed surfaces. According to a report prepared by Richard J. Hauer, et al., more than 18,000 homes in Champaign-Urbana lost power, some for as long as eight days. Ice-laden tree branches that fell on power lines were the main causes of the power outages. The City of Urbana Hazard Mitigation Plan notes that over half of the trees in Champaign-Urbana were damaged in the storm. Falling tree branches were also responsible for causing damage to houses and automobiles. The City of Urbana incurred $768,000 in costs for emergency response and clean-up. The NOAA estimates that the storm caused in excess of $12 million in damages in Champaign County.

1994 Floods *(Declaration #: FEMA 1025-DR)*

In 1994, the large scale flooding that occurred in 16 Illinois counties, including Champaign County, led to the second recorded Federal Disaster Declaration for Champaign County. Heavy rains fell over a two-day period in April of that year and resulted in excess of $50 million in damages to homes, businesses, and property in the County.

1996 Tornados *(Declaration #: FEMA 1110-DR)*

In April of 1996, a series of tornados swept through Central Illinois, triggering a Federal Disaster Declaration that included Champaign County and four other counties. The tornados caused significant damage in the County, particularly in the Village of Savoy, City of Urbana and the Village of Ogden. The damage done in Savoy and Urbana was estimated at $9 million. The Village of Ogden sustained even heavier damage, with more than 200 homes receiving major damage, 80 homes completely destroyed and 13 people suffering minor injuries.*

* From the Village of Ogden website
at http://ww2010.atmos.uiuc.edu/(Gh)/arch/cases/960419/dmg/home.rxml

1999 Winter Snow Storm *(Declaration #: FEMA 3134-EM)*

A Snow Emergency Declaration was issued on January 8, 1999 for 34 counties in Central and Northern Illinois, including Champaign County. A National Weather Service report described the storm as follows:

> "A major winter storm paralyzed much of the region, during the first few days of 1999. Snow began falling across portions of Central Illinois before noon on New Year's Day, and continued at moderate to heavy rates for most of the following 24 hour period. Areas from Charleston southward also saw the snow mixed with rain or freezing rain at times. Once the snow ended, high winds developed, causing severe blowing and drifting snow, and dangerous wind chills. The heaviest snow band extended from near Quincy, to Virginia, then through the Peoria and Bloomington areas to Champaign, where 14 or more inches of snow were common. The weight of the heavy snow caused many roofs and porches to collapse, causing one death and one injury."

2002 Severe Storms, Tornados and Floods *(Declaration #: FEMA 1416-DR)*

This Federal Disaster Declaration resulted after a series of severe storms occurred between April 21-May 3, 2002, producing tornados and flooding that caused widespread damage to Champaign County and 67 other Central Illinois counties.

2013 Severe Storms, Straight-line Winds, and Tornados *(Declaration #: FEMA 4157-DR)*

The most recent Federal Disaster Declaration was the result of a tornado which developed from severe storms in November 2013. According to the National Weather Service, the rain-wrapped tornado was about 1/2 mile wide when it moved through the center of Gifford. Nearly 30 homes were destroyed, more than 40 suffered major damage, and around 125 had minor damage. Around 15 businesses sustained moderate to major damage and the roof of a school was peeled back. Hundreds of vehicles were damaged or destroyed. Six people were injured in Champaign County, with damage estimated around $60 million.

Thunderstorm Wind Events within Plan Area with Injuries or Property Damage Reported

Location or County[1]	Date	Recorded Windspeed (knots)[2]	Injuries	Property Damage ($)
CHAMPAIGN	6/29/1987	N/A	5	0
Sadorus	8/23/1996	N/A	0	5K
Mahomet	8/24/1997	N/A	0	700K
Philo	3/28/1998	N/A	0	90K
Homer	6/12/1998	N/A	1	0
Countywide	6/29/1998	72	2	500K
Champaign	7/23/2001	52	0	15K
Ludlow	7/13/2004	78	0	2.2M
Urbana	7/18/2007	55	0	2K
Champaign	10/18/2007	56	0	2K
Ogden	10/18/2007	50	0	31K
Countywide	5/11/2008	50	0	15K
Tolono	5/30/2008	61	0	40K
Philo	5/30/2008	61	0	15K
Unincorporated	6/15/2008	52	0	15K
Sidney	6/15/2008	52	0	15K
Fisher	7/21/2008	52	0	20K
Champaign	7/21/2008	52	0	15K
Champaign	7/21/2008	52	0	30K
Fisher	7/29/2008	52	0	15K
Allerton	7/29/2008	61	0	20K
Rantoul	12/27/2008	52	0	12K
Countywide	3/8/2009	52	0	25K
Philo	3/8/2009	52	0	20K
Savoy	3/8/2009	52	0	8K
Homer	5/13/2009	61	0	30K
Tolono	5/13/2009	52	0	50K
Sidney	6/18/2009	61	0	3K
Champaign	6/19/2009	52	0	100K

Location or County[1]	Date	Recorded Windspeed (knots)[2]	Injuries	Property Damage ($)
Champaign	6/19/2009	52	0	40K
Tolono	7/24/2009	52	0	3K
Bondville	8/4/2009	52	0	15K
Champaign	8/4/2009	52	0	15K
Savoy	8/4/2009	52	0	20K
Sidney	8/4/2009	61	0	35K
Urbana	8/16/2009	52	0	15K
Royal	5/26/2010	52	0	12K
Tolono	6/13/2010	52	0	1K
Ogden	6/13/2010	52	0	8K
Unincorporated	10/26/2010	52	0	12K
Champaign	10/26/2010	52	0	40K
Unincorporated	10/26/2010	52	0	4K
Countywide	4/3/2011	48	0	0.5K
Fisher	4/11/2011	52	0	1K
Unincorporated	4/19/2011	61	0	20K
Sadorus	5/25/2011	52	0	12K
Pesotum	5/25/2011	52	1	15K
Pesotum	5/25/2011	52	0	15K
Urbana	5/25/2011	52	0	90K
Urbana	5/25/2011	52	0	30K
Ogden	5/25/2011	52	0	30K
CHAMPAIGN	6/21/2011	52	0	15K
CHAMPAIGN	6/21/2011	52	0	50K
Unincorporated	8/13/2011	70	0	100K
Countywide	11/13/2011	48	0	15K
Mahomet	11/14/2011	61	0	27K
Countywide	2/29/2012	48	0	15K
Rantoul	5/6/2012	52	0	12K
Rantoul	6/16/2012	61	0	15K
Champaign	8/9/2012	61	0	60K

Location or County[1]	Date	Recorded Windspeed (knots)[2]	Injuries	Property Damage ($)
Unincorporated	8/9/2012	61	0	50K
Sidney	8/9/2012	61	0	20K
Sidney	8/9/2012	61	0	8K
Sidney	8/9/2012	61	0	15K
Broadlands	8/9/2012	61	0	350K
St. Joseph	8/16/2012	61	0	10K
Unincorporated	4/18/2013	61	0	60K
Champaign	5/30/2013	52	0	30K
Mahomet	6/24/2013	52	0	3K
Fisher	6/24/2013	52	0	6K
Urbana	6/24/2013	52	0	10K
Mahomet	6/25/2013	52	0	12K
Champaign	6/25/2013	52	0	2K
Mahomet	11/17/2013	71	0	7K
Mahomet	11/17/2013	61	0	60K
Mahomet	11/17/2013	61	0	50K
Pesotum	11/17/2013	61	0	75K
Savoy	5/21/2014	52	0	100K
Tolono	5/21/2014	52	0	30K
Mahomet	6/4/2014	52	0	1.5K
Champaign	6/4/2014	52	0	1K
Fisher	7/14/2014	52	0	1K
Champaign	7/14/2014	52	0	1.5K
Illini Arpt	7/14/2014	52	0	1.5K
Mahomet	7/26/2014	52	0	4K
Urbana	7/26/2014	52	0	22K
Urbana	7/26/2014	52	0	9K
Homer Arpt	7/26/2014	52	0	12K

Notes:

1. “CHAMPAIGN” in all capitals refers to an unspecified location within the Plan Area.
2. Conversion: 1 knot = 1.15 mph. ‘N/A’ means that recorded windspeed data is not available.

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Excerpt: Section 2.3 'Principal Flood Problems' from FEMA Flood Insurance Study Champaign County and Incorporated Areas'effective October 2, 2013

"Flooding has been exacerbated in Champaign County by frequent development along the county's remaining floodplains (Reference 27). Large scale flooding in 1994 led to a Federal Disaster Declaration for the county, with heavy rains falling over a two-day period in April of that year and resulting in excess of $50 million in damages to homes, businesses, and property. In 2002, another Federal Disaster Declaration for Champaign County resulted from severe storms that occurred between April 21-May 3, 2002, producing tornados and flooding that caused widespread damage in the county. Between 1993 and 2007, there were a total of 27 separate flood events occurring in ten different years in Champaign County. In the same time period, there were six different years in which there were more than one flood event in the county (Reference 24).

Copper Slough and Phinney Branch are two of the three main drainage systems within the City of Champaign along the Boneyard Creek. Of these three systems, Boneyard Creek has represented the main flood hazard. Problems associated with the creek date back to the initial development of the Champaign/Urbana area (Reference 28).

The Boneyard Creek basin is 100 percent urbanized and includes a large percentage of the University of Illinois campus as well as the downtown areas of Champaign and Urbana. Historically, flooding occurred on all reaches of the Boneyard Creek during major storm events. Upper Boneyard Creek has also experienced overbank flooding typically due to short, intense thunderstorms (Reference 28).

Copper Slough and Phinney Branch lie within the heavily developing southwestern portion of the City of Champaign, and flooding problems have increased with development along some reaches (Reference 25). The 2007 *Copper Slough Watershed Master Plan* reported that approximately two-thirds of the Copper Slough watershed were fully urbanized, and development has continued since that time. In addition, there are numerous industrial sites in the northern half of the watershed that have little to no stormwater detention, causing increased peak flows to Copper Slough (Reference 26).

The Village of St. Joseph is subject to flooding from the Salt Fork, with development pressure and encroachment into the Salt Fork floodplain adding to flooding concerns (Reference 29). Backwater from the Salt Fork causes flooding on both the Right Bank Tributary of Salt Fork and Left Branch of Right Bank Tributary of Salt Fork within the community of Sidney. Most of Sidney's flood hazard areas include residential structures and some downtown businesses, with flooding having occurred as often as three times per year (Reference 30).

The Salt Fork flood of record at the gage near St. Joseph (USGS 03336900) is reported for February 6, 2008, with a gage height of 19.06 feet and discharge of 5,600 cfs (Reference 32, 33). However, a gap in gage data exists between 1991 and 2004. During

this gap in reporting, FEMA communications dated April 25, 1994 and August 16, 2002 indicate that the Village of Sidney sustained flood damage at the time of both the 1994 and 2002 Federal Disaster Declarations.

Saline Branch Drainage Ditch flows through portions of Champaign County and the City of Urbana. The stream lies primarily outside of Urbana's developed city limits, running through a golf course, agricultural areas, and a few industrial areas. Flooding of the Saline Branch Drainage Ditch usually occurs during spring thaws, when runoff is accelerated by intense rainfalls (Reference 8, 34).

McCullough Creek, which flows through southern Urbana before joining the Embarras River, experiences overbank flooding typically due to short, intense thunderstorms (Reference 3).

Flooding from the Sangamon River has occurred within the Village of Mahomet, a community that has experienced above-average growth and development in recent years. Much of the development has taken place in the Sangamon River watershed, increasing the river's flow (Reference 6, 13). The Sangamon River flood of record occurred in 1994, with a gage height of 21.58 feet and discharge of 13,000 cfs (USGS 05570910). The second and third ranked floods were recorded in 2008 and 2005, with gage heights/discharges of 20.26 feet/9,030 cfs and 20.11 feet/9,850 cfs, respectively (Reference 32, 33).

Owl Creek forms the main floodplain area in the Village of Fisher, which flows through the middle of the community from west to east. The creek is completely lined with existing development (Reference 35). FEMA communication dated April 25, 1994 and IDNR communication dated May 14, 2002 indicate that Fisher sustained flood damage at the time of Federal Disaster Declarations in both 1994 and 2002."

Excerpt of References cited:

"3. FEMA, Federal Insurance Administration. *Flood Insurance Study: City of Urbana, Illinois, Champaign County*. Washington, D.C.: July 16, 1980.

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6. USDA, Soil Conservation Service. *Flood Hazard Reconnaissance Study: Village of Mahomet, Champaign County, Illinois.* In cooperation with State of Illinois, Department of Transportation, Division of Water Resources, April, 1981.

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8. FEMA. *Flood Insurance Rate Map: County of Champaign, Illinois, Unincorporated Areas.* Washington, D.C.: Rev. January 2, 2003.

⋮

13. FEMA. *Flood Insurance Study: Village of Mahomet, Illinois, Champaign County.* Washington, D.C.: Rev. January 2, 2003.

⋮

24. Champaign County Regional Planning Commission. *Champaign County Multi-Jurisdictional Natural Hazard Mitigation Plan.* August 1, 2009.

25. Clark Dietz, Inc. Phinney Branch Creek Master Plan. Prepared for the City of Champaign, January 1996.

26. Clark Dietz, Inc. Copper Slough Watershed Master Plan. Prepared for the City of Champaign, March 2007.

27. IDNR. Community Assistance Visit Narrative Report, Champaign County, Illinois. December 8, 1994.

28. Camp, Dresser and McKee. Boneyard Creek Improvement Plan Executive Summary. June 30, 1999.

29. IDNR. *Community Assistance Visit Narrative Report, St. Joseph, Illinois.* December 8, 1994.

30. USDA, Soil Conservation Service. *Flood Hazard Reconnaissance Study: Village of Sidney, Champaign County, Illinois.* In cooperation with State of Illinois, Department of Transportation, Division of Water Resources, September, 1981.

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32. NOAA, NWS. Advanced Hydrologic Prediction Service, River Observations. [Cited February 2012]. Available from: http://water.weather.gov/ahps2/index.php?wfo=lot.

33. USGS. Peak Streamflow for Illinois. [Cited February 2012]. Available from: http://nwis.waterdata.usgs.gov/il/nwis/peak.

34. IDNR. *Community Assistance Visit Narrative Report, Urbana, Illinois.* May 22, 1996.

35. IDNR. *Community Assistance Visit Narrative Report, Fisher, Illinois.* August 25, 2004.”

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Jurisdiction-Specific Vulnerability Assessments for Riverine Floods

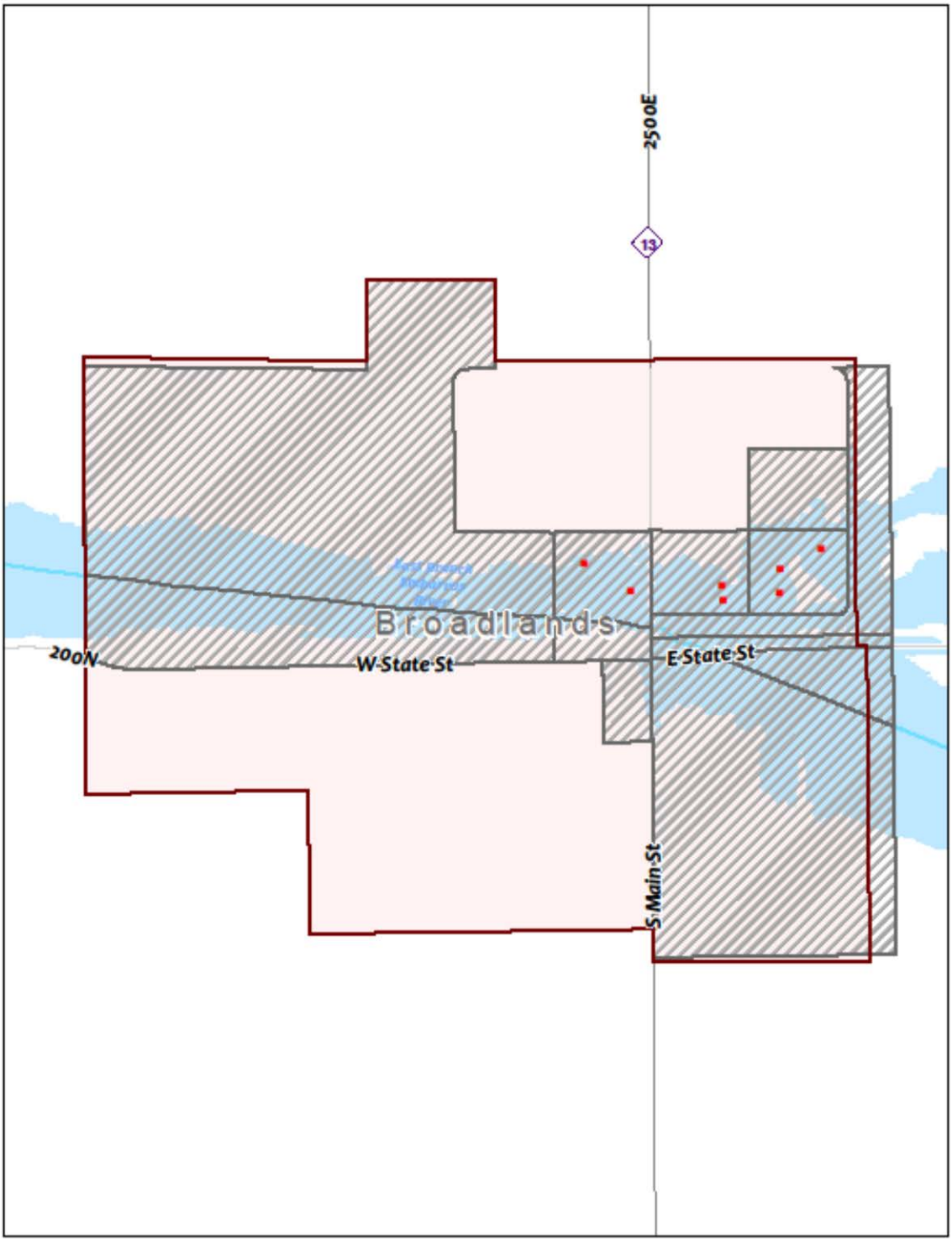
Flood hazards from a 1% flood event (commonly referred to as a '100-year flood event') do not threaten all of the jurisdictions in the Plan Area.

Appendix D provides the results of a risk assessment regarding riverine floods within the Plan Area, based on FEMA HAZUS-MH Version 2.2, Level 2 risk assessment model program, and using updated 2010 U.S. Census data and updated FEMA digital Flood Insurance Rate Maps (dFIRMs) effective October 2, 2013. The HAZUS model predicts that the following jurisdictions will sustain damage in such an event:

- Village of Broadlands
- City of Champaign
- Village of Fisher
- Village of Ivesdale
- Village of Mahomet
- Village of Sidney
- Village of St. Joseph
- City of Urbana
- Unincorporated Champaign County

For jurisdictions listed above, a map is shown to indicate jurisdictional boundaries, the 1% flood limits as indicated on FEMA dFIRMS, impacted buildings and critical facilities. The HAZUS model was used to analyze and calculate estimated damage to buildings and critical facilities within each Plan Area jurisdiction. A vulnerability assessment to riverine floods is provided for each jurisdiction estimated to sustain damage in the event of a riverine flood event.

Village of Broadlands – Riverine Floods Vulnerability Assessment



Broadlands
Boundary Definition

Municipal Boundary
Census Blocks In Flood Plain
100 Year Flood Plain
Non Intermittent Stream
Buildings Sustaining Damage

HMP
N
Date of Preparation:
March 2015

Village of Broadlands – Riverine Floods Vulnerability Assessment

The following table displays the number of buildings which HAZUS predicts will be damaged in a 1% flood event. These damaged buildings are grouped by occupancy type and by the percentage of damage to the structure.

Table C-1. Expected Broadlands Building Damage by General Occupancy Type

	Number Damaged by Percentage of Damage to Structure						
	1-10%	11-20%	21-30%	31-40%	41-50%	50%+	TOTAL
Agriculture	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0
Residential	1	1	5	0	0	0	7
TOTAL	1	1	5	0	0	0	7

Table C-2. Broadlands Building Related Economic Loss Estimates
(Thousands of Dollars)

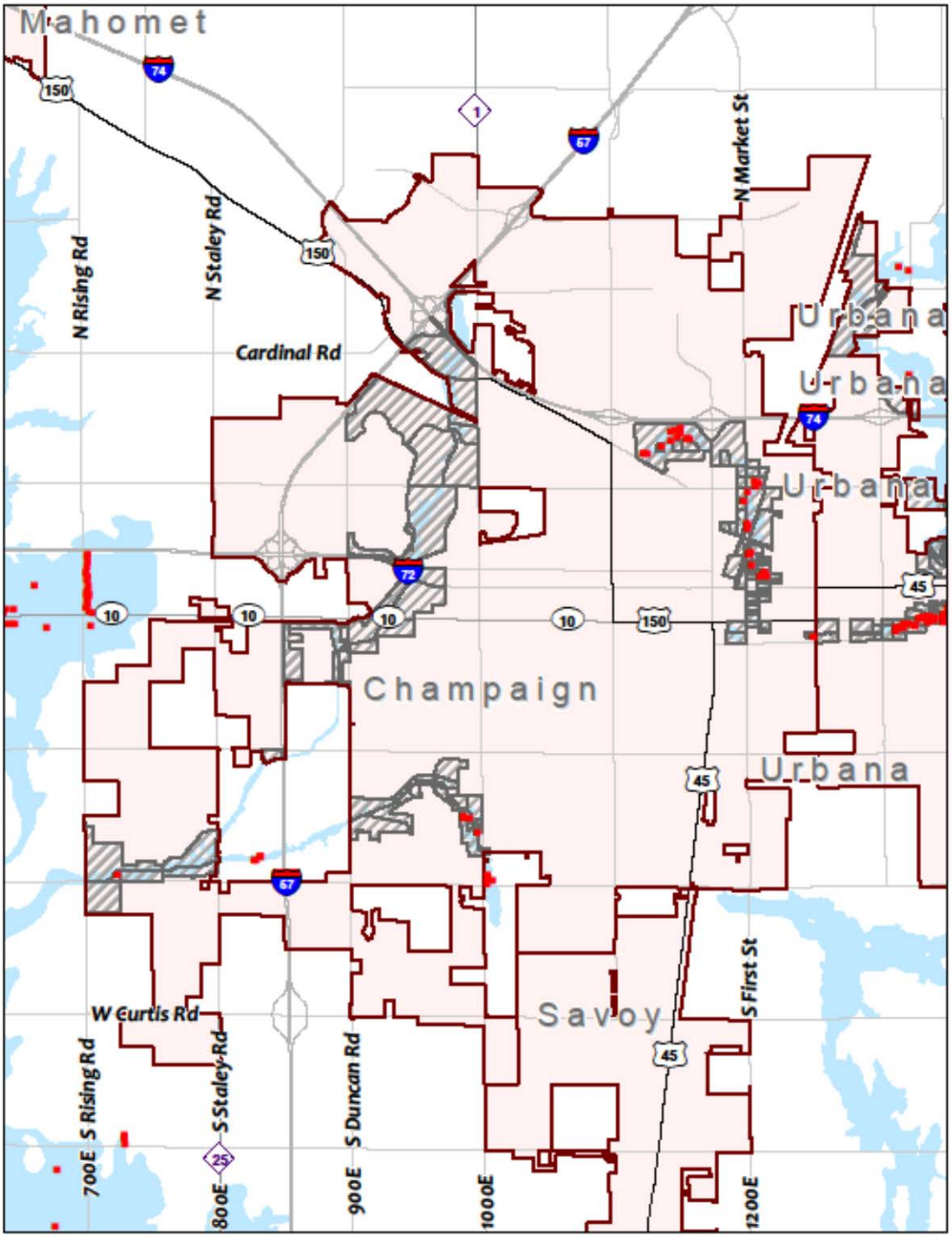
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	56.07	0	0	0	56.07
	Content	33.48	0	0	0	33.48
	Inventory	0	0	0	0	0
	Subtotal	89.55	0	0	0	89.55
Business Interruption						
	Income	0	0	0	0	0
	Relocation	0	0	0	0	0
	Rental Income	0	0	0	0	0
	Wage	0	0	0	0	0
	Subtotal	0	0	0	0	0
ALL	Total	89.55	0	0	0	89.55

Critical Facility Damage in Broadlands
The HAZUS model does not predict that any of the critical facilities in the Village of Broadlands will sustain damage.

Debris Generation in Broadlands
The model predicts that a total of 18 tons of debris will be generated as a result of the flood. Of this debris, 17 tons will be finishing materials, and one ton will be foundation materials. If the debris tonnage is converted into truckloads, it will require 1 truckload (@25 tons/ truck) to remove all of the debris.

Shelter Needs in Broadlands
HAZUS estimates that 26 people will be displaced as a result of flood damage. Also estimated is that, of this group, two people will seek temporary shelter in a public shelter.

City of Champaign - Riverine Floods Vulnerability Assessment



Champaign
Boundary Definition

Municipal Boundary
Census Blocks in Flood Plain
100 Year Flood Plain
Buildings Sustaining Damage

HMP

N

0 0.7 Miles

Date of Preparation: March 2015

City of Champaign - Riverine Floods Vulnerability Assessment

The following table displays the number of buildings within the City of Champaign which HAZUS predicts will be damaged in a 1% flood event. These damaged buildings are grouped by occupancy type and by the estimated percentage of damage to the structure.

Table C-3. Expected Champaign Building Damage by General Occupancy Type

	Number Damaged by Percentage of Damage to Structure						
	1-10%	11-20%	21-30%	31-40%	41-50%	50%+	TOTAL
Agriculture	0	0	0	0	0	0	0
Commercial	5	5	2	0	0	0	12
Education	0	0	0	0	0	0	0
Government	1	3	0	0	0	0	4
Industrial	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0
Residential	1	5	12	1	1	0	20
TOTAL	7	13	14	1	1	0	36

Table C-4. Champaign Building-Related Economic Loss Estimates
(Thousands of Dollars)

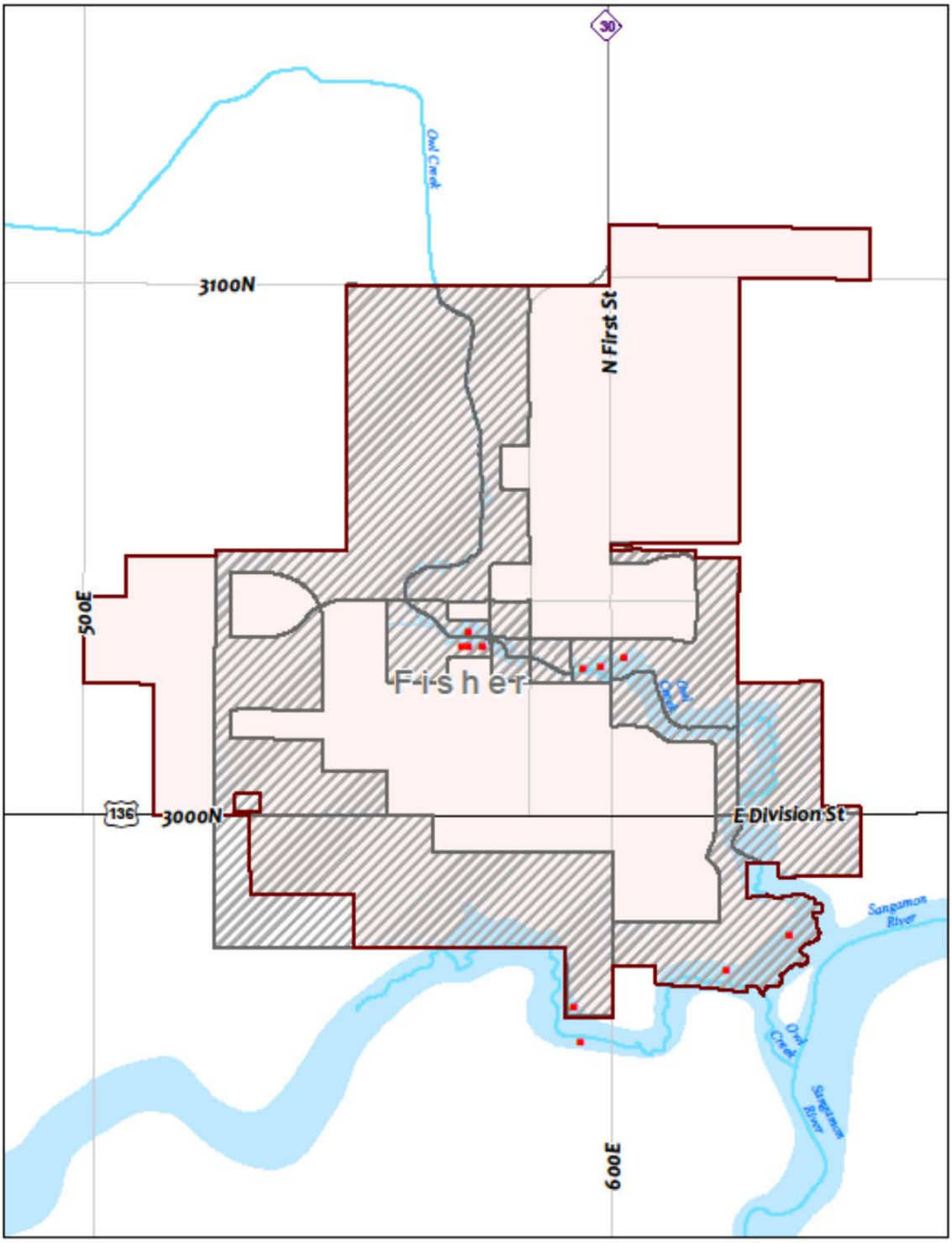
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	351.82	198.09	0	103.40	653.31
	Content	220.44	630.39	0	583.05	1433.88
	Inventory	0	737.14	0	0	737.14
	Subtotal	572.26	1,565.62	0	686.45	2,824.33
Business Interruption						
	Income	0	28.00	0	0	28.00
	Relocation	11.00	4.00	0	1.00	16.00
	Rental Income	3.00	2.00	0	0	5.00
	Wage	2.00	25.00	0	50.00	77.00
	Subtotal	16.00	59.00	0	51.00	126.00
ALL	Total	588.26	1,624.62	0	737.45	2,950.33

Critical Facility Damage in Champaign
The HAZUS model predicts that one critical facility in the City of Champaign will sustain damage. In the event of a 1% flood, Herff Jones Cap and Gown is estimated to sustain 12% building damage and 24% content damage.

Debris Generation in Champaign
The model predicts that a total of 727 tons of debris will be generated as a result of a 1% flood event. Of this debris, 564 tons will be finishing materials, 85 tons will be structural materials, and 78 tons will be foundation materials. If the debris tonnage is converted into truckloads, it will require 29 truckloads (@25 tons/ truck) to remove all of the debris.

Shelter Needs in Champaign
HAZUS estimates that 774 people will be displaced as a result of flood damage due to a 1% flood event. Also estimated is that, of this group, 512 people would seek temporary shelter in a public shelter.

Village of Fisher - Riverine Floods Vulnerability Assessment



Fisher
Boundary Definition

Municipal Boundary
Census Blocks in Flood Plain
100 Year Flood Plain
Non Intermittent Stream
Buildings Sustaining Damage

HMP
N
0 0.17 Miles
Date of Preparation: March 2015

Village of Fisher - Riverine Floods Vulnerability Assessment

The following table displays the number of buildings in the Village of Fisher which HAZUS predicts will be damaged in a 1% flood event. These damaged buildings are grouped by occupancy type and by the percentage of damage to the structure.

Table C-5. Expected Fisher Building Damage by General Occupancy Type

	Number Damaged by Percentage of Damage to Structure						
	1-10%	11-20%	21-30%	31-40%	41-50%	50%+	TOTAL
Agriculture	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0
Residential	0	2	7	0	1	0	10
TOTAL	0	2	7	0	1	0	10

Table C-6. Fisher Building-Related Economic Loss Estimates
(Thousands of Dollars)

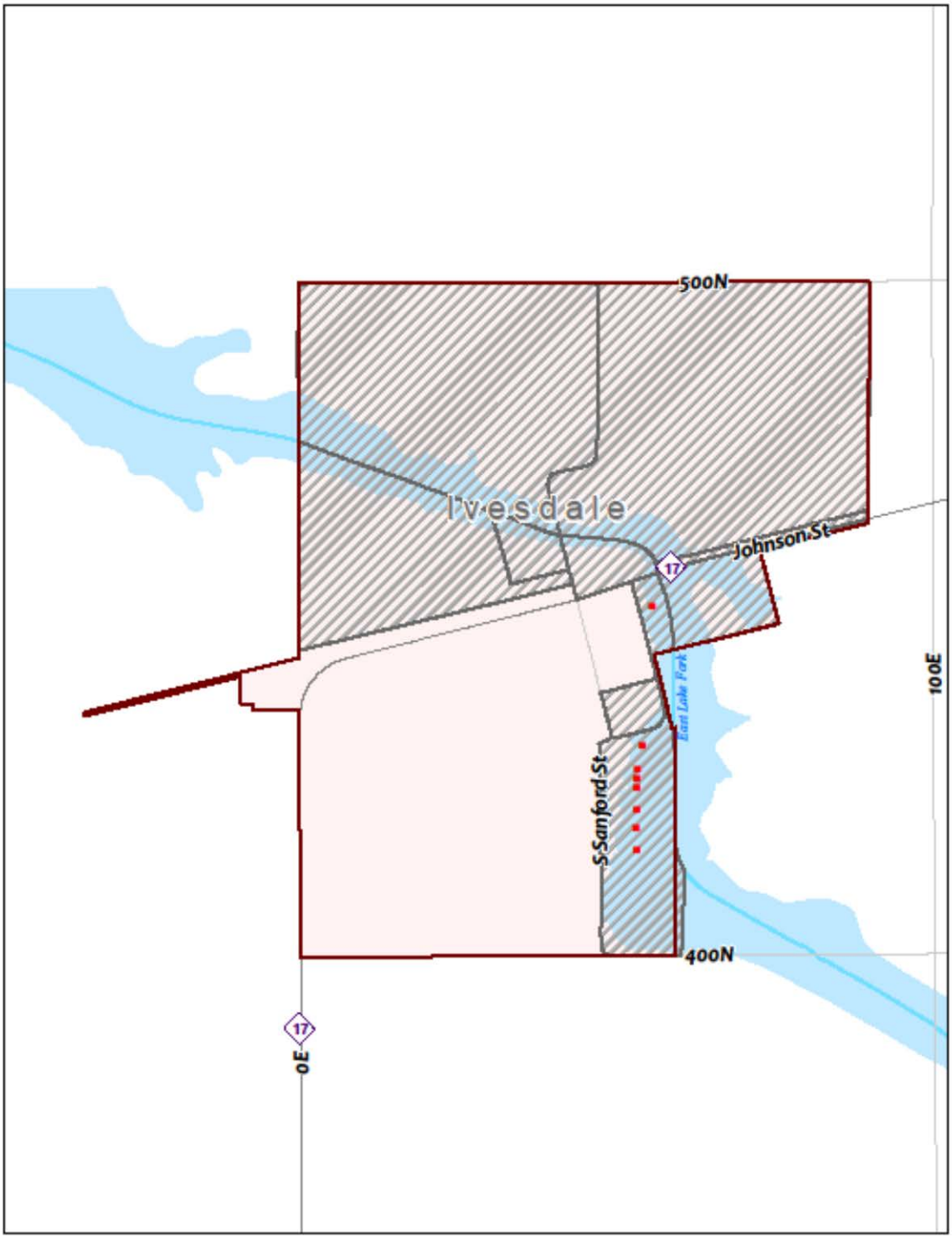
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	178.75	0	0	0	178.75
	Content	97.41	0	0	0	97.41
	Inventory	0	0	0	0	0
	Subtotal	276.16	0	0	0	276.16
Business Interruption						
	Income	0	0	0	0	0
	Relocation	1.00	0	0	0	1.00
	Rental Income	0	0	0	0	0
	Wage	0	0	0	0	0
	Subtotal	1.00	0	0	0	1.00
ALL	Total	277.16	0	0	0	277.16

Critical Facility Damage in Fisher
The HAZUS model predicts that one critical facility in the Village of Fisher will sustain damage. The Fisher sewage treatment plant is expected to sustain 27% damage amounting to $19,869 in total losses.

Debris Generation in Fisher
The model predicts that a total of 382 tons of debris will be generated as a result of the flood. Of this debris, 193 tons will be finishing materials, 107 tons will be structural materials, and 82 tons will be foundation materials. If the debris tonnage is converted into truckloads, it will require 15 truckloads (@25 tons/ truck) to remove all of the debris.

Shelter Needs in Fisher
HAZUS estimates that 95 people will be displaced as a result of flood damage. Also estimated is that, of this group, 52 people will seek temporary shelter in a public shelter.

Village of Ivesdale - Riverine Floods Vulnerability Assessment



Ivesdale
Boundary Definition

Municipal Boundary
Census Blocks in Flood Plain
100 Year Flood Plain
Non Intermittent Stream
Buildings Sustaining Damage

HMP
N
0 0.14 Miles
Date of Preparation: March 2015

Village of Ivesdale - Riverine Floods Vulnerability Assessment

The following table displays the number of buildings in the Village of Ivesdale which HAZUS predicts will be damaged in a 1% flood event. These damaged buildings are grouped by occupancy type and by the percentage of damage to the structure.

Table C-7. Expected Ivesdale Building Damage by General Occupancy Type

	Number Damaged by Percentage of Damage to Structure						
	1-10%	11-20%	21-30%	31-40%	41-50%	50%+	TOTAL
Agriculture	1	0	0	0	0	0	1
Commercial	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0
Residential	0	1	6	0	0	0	7
TOTAL	1	1	6	0	0	0	8

Table C-8. Ivesdale Building-Related Economic Loss Estimates
(Thousands of Dollars)

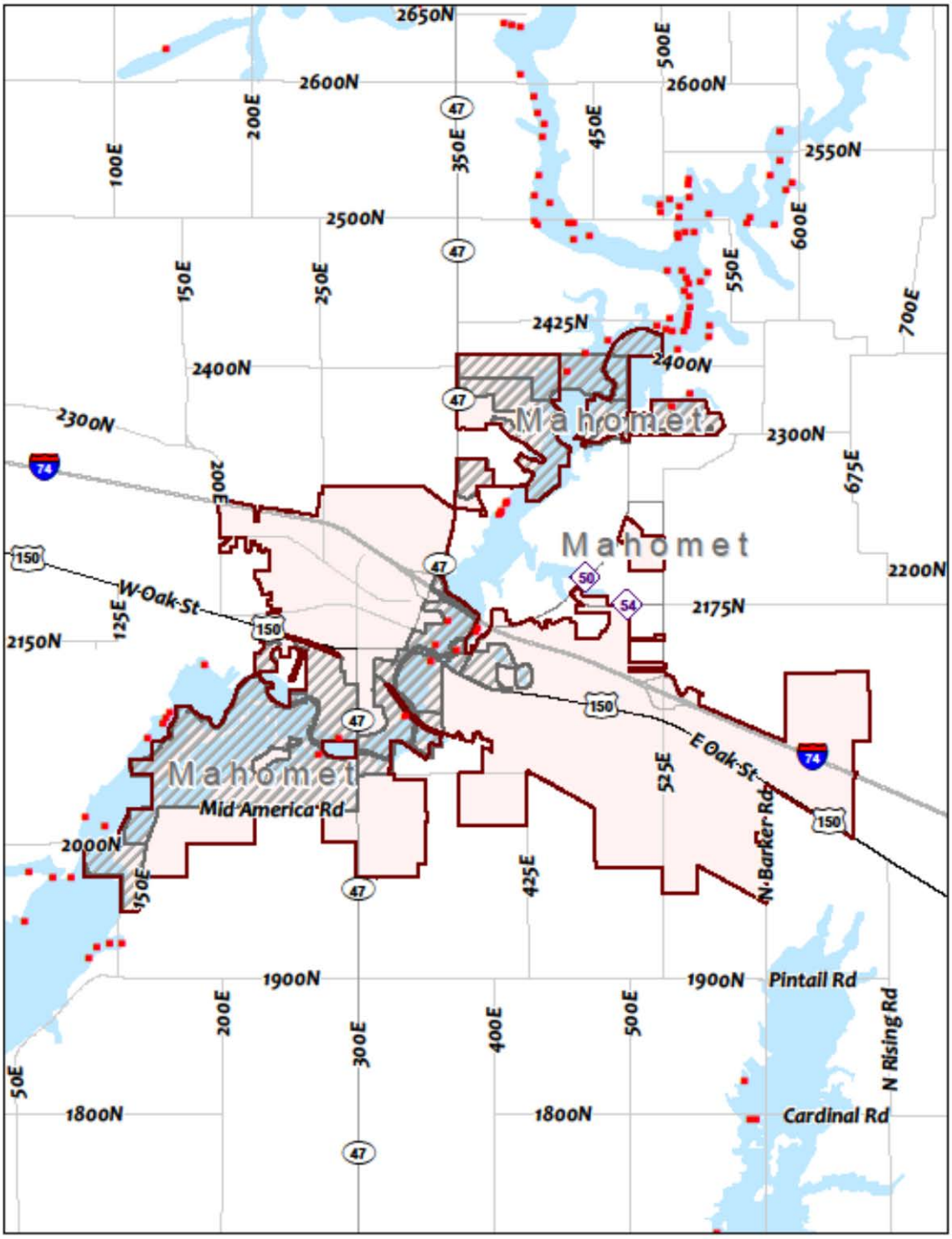
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	103.02	0	0	6.94	109.96
	Content	58.37	0	0	24.40	82.77
	Inventory	0	0	0	29.75	29.75
	Subtotal	161.39	0	0	61.09	222.48
Business Interruption						
	Income	0	0	0	0	0
	Relocation	0	0	0	0	0
	Rental Income	0	0	0	0	0
	Wage	0	0	0	0	0
	Subtotal	0	0	0	0	0
ALL	Total	161.39	0	0	61.09	222.48

Critical Facility Damage in Ivesdale
The HAZUS model does not predict that any of the critical facilities in the Village of Ivesdale will sustain damage.

Debris Generation in Ivesdale
The model predicts that a total of 24 tons of debris will be generated as a result of the flood. Of this debris, 19 tons will be finishing materials, two tons will be structural materials, and three tons will be foundation materials. If the debris tonnage is converted into truckloads, it will require one truckload (@25 tons/ truck) to remove all of the debris.

Shelter Needs in Ivesdale
HAZUS estimates that 18 people will be displaced as a result of flood damage. Also estimated is that, of this group, four people will seek temporary shelter in a public shelter.

Village of Mahomet – Riverine Floods Vulnerability Assessment



Mahomet
Boundary Definition

Municipal Boundary
Census Blocks in Flood Plain
100 Year Flood Plain
Buildings Sustaining Damage

HMP
N
0 0.7 Miles
Date of Preparation: March 2015

Village of Mahomet – Riverine Floods Vulnerability Assessment

The following table displays the number of buildings in the Village of Mahomet which HAZUS predicts will be damaged in a 1% flood event. These damaged buildings are grouped by occupancy type and by the percentage of damage to the structure.

Table C-9. Expected Mahomet Building Damage by General Occupancy Type

	Number Damaged by Percentage of Damage to Structure						
	1-10%	11-20%	21-30%	31-40%	41-50%	50%+	TOTAL
Agriculture	0	0	0	0	0	0	0
Commercial	0	0	0	1	0	0	1
Education	0	0	0	0	0	0	0
Government	0	0	0	0	0	1	1
Industrial	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0
Residential	0	0	3	2	0	1	6
TOTAL	0	0	3	3	0	2	8

Table C-10. Mahomet Building-Related Economic Loss Estimates
(Thousands of Dollars)

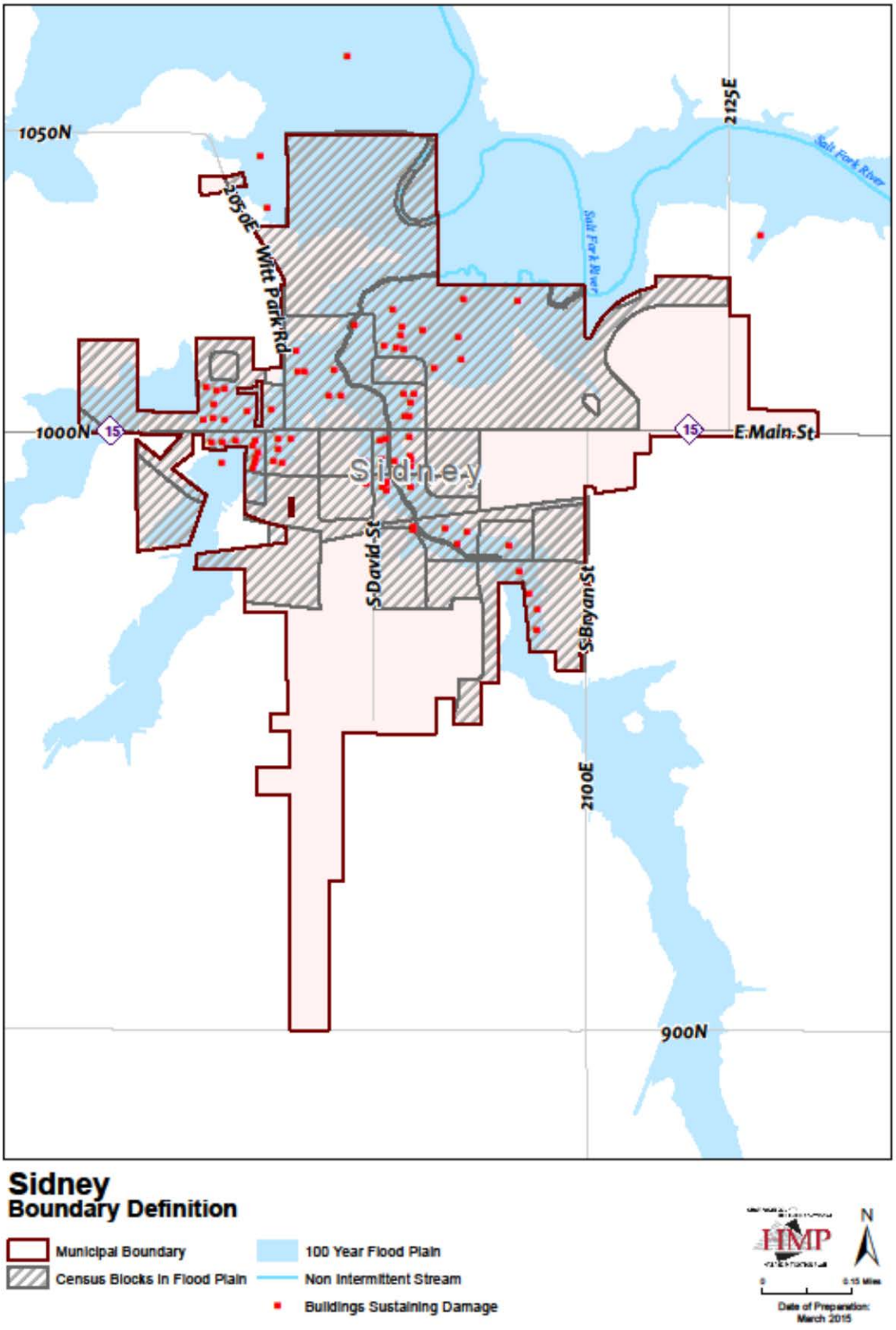
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	103.02	33.82	0	4.12	140.96
	Content	58.37	86.73	0	24.69	169.79
	Inventory	0	92.64	0	0	92.64
	Subtotal	161.39	213.19	0	28.81	403.39
Business Interruption						
	Income	0	1.00	0	0	1.00
	Relocation	11.00	0	0	0	11.00
	Rental Income	1.00	0	0	0	1.00
	Wage	0	4.00	0	0	4.00
	Subtotal	12.00	5.00	0	0	17.00
ALL	Total	173.39	218.19	0	28.81	420.39

Critical Facility Damage in Mahomet
The HAZUS model predicts that one critical facility in the Village of Mahomet will sustain damage. The Sangamon Valley sewage treatment plant will sustain 30% building damage and, resulting in about $22,178 in total losses.

Debris Generation in Mahomet
The model predicts that a total of 1,782 tons of debris will be generated as a result of the flood. Of this debris, 583 tons will be finishing materials, 691 tons will be structural materials, and 508 tons will be foundation materials. If the debris tonnage is converted into truckloads, it will require 71 truckloads (@25 tons/ truck) to remove all of the debris.

Shelter Needs in Mahomet
HAZUS estimates that 500 people will be displaced as a result of flood damage. Also estimated is that, of this group, 417 people will seek temporary shelter in a public shelter.

Village of Sidney – Riverine Floods Vulnerability Assessment



Village of Sidney – Riverine Floods Vulnerability Assessment

The following table displays the number of buildings which HAZUS predicts will be damaged in a 1% flood event. These damaged buildings are grouped by occupancy type and by the percentage of damage to the structure.

Table C-11. Expected Sidney Building Damage by General Occupancy Type

	Number Damaged by Percentage of Damage to Structure						
	1-10%	11-20%	21-30%	31-40%	41-50%	50%+	TOTAL
Agriculture	0	0	0	0	0	0	0
Commercial	0	6	3	0	0	0	9
Education	0	0	0	0	0	0	0
Government	0	2	0	0	0	0	2
Industrial	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0
Residential	4	5	34	8	10	0	61
TOTAL	4	13	37	8	10	0	72

Table C-12. Sidney Building-Related Economic Loss Estimates
(Thousands of Dollars)

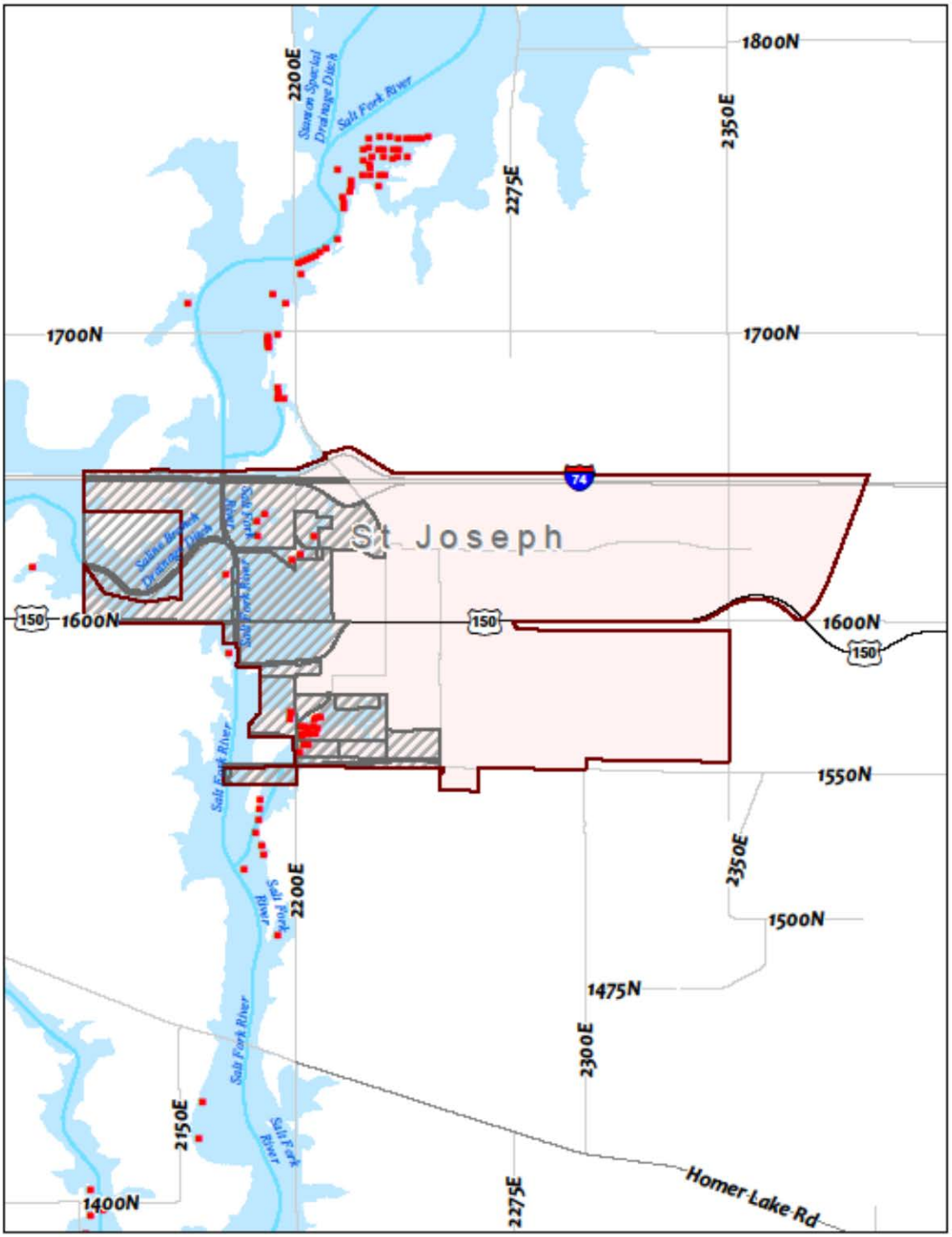
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	1,383.81	60.35	0	57.86	1,502.02
	Content	859.75	214.20	0	383.11	1,457.06
	Inventory	0	240.41	0	0	240.41
	Subtotal	2,243.56	514.96	0	440.97	3,199.49
Business Interruption						
	Income	0	0	0	0	0
	Relocation	5.00	0	0	0	5.00
	Rental Income	0	1.00	0	0	1.00
	Wage	0	3.00	0	14.00	17.00
	Subtotal	5.00	4.00	0	14.00	23.00
ALL	Total	2,248.56	518.96	0	454.97	3,222.49

Critical Facility Damage in Sidney
The HAZUS model predicts that one critical facility in the Village of Sidney will sustain damage. The Sidney ESDA building is estimated to sustain $1.6 million in damages to the building, content, and inventory. The facility will be inoperable and could take up to 630 days to repair.

Debris Generation in Sidney
The model predicts that a total of 829 tons of debris will be generated as a result of the flood. Of this debris, 444 tons will be finishing materials, 232 tons will be structural materials, and 153 tons will be foundation materials. If the debris tonnage is converted into truckloads, it will require 33 truckloads (@25 tons/ truck) to remove all of the debris.

Shelter Needs in Sidney
HAZUS estimates that 258 people will be displaced as a result of flood damage. Also estimated is that, of this group, 149 people will seek temporary shelter in a public shelter.

Village of St. Joseph – Riverine Floods Vulnerability Assessment



St Joseph
Boundary Definition

Municipal Boundary
Census Blocks in Flood Plain
100 Year Flood Plain
Non Intermittent Stream
Buildings Sustaining Damage

HMP
N
0 0.3 Miles
Date of Preparation: March 2015

Village of St. Joseph – Riverine Floods Vulnerability Assessment

The following table displays the number of buildings in the Village of St. Joseph which HAZUS predicts will be damaged in a 1% flood event. These damaged buildings are grouped by occupancy type and by the percentage of damage to the structure.

Table C-13. Expected St. Joseph Building Damage by General Occupancy Type

	Number Damaged by Percentage of Damage to Structure						
	1-10%	11-20%	21-30%	31-40%	41-50%	50%+	TOTAL
Agriculture	0	0	0	0	0	0	0
Commercial	0	0	0	0	0	0	0
Education	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0
Residential	0	4	19	3	0	0	26
TOTAL	0	4	19	3	0	0	26

Table C-14. St. Joseph Building-Related Economic Loss Estimates
(Thousands of Dollars)

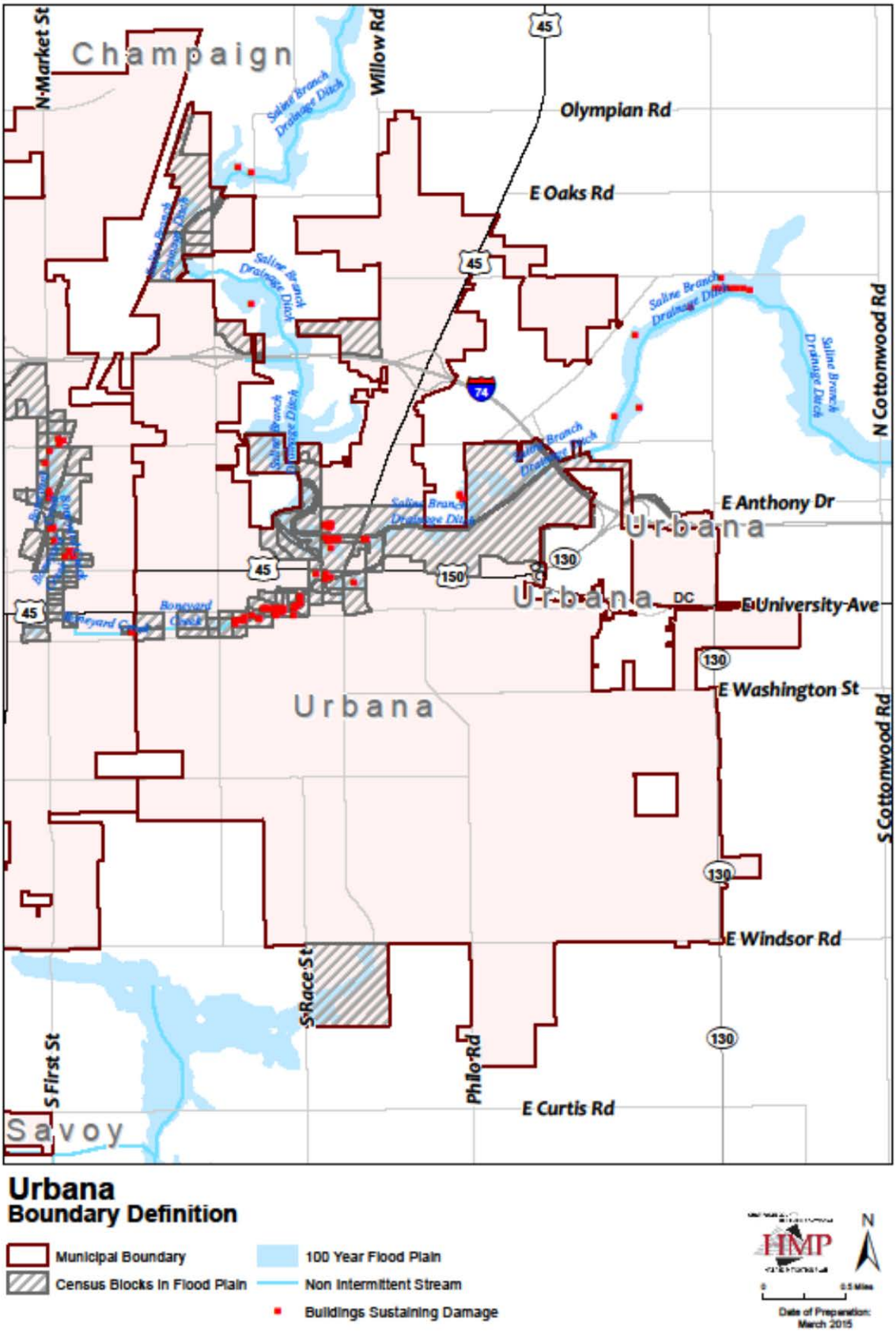
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	774.37	0	0	0	774.37
	Content	488.43	0	0	0	488.43
	Inventory	0	0	0	0	0
	Subtotal	1,262.80	0	0	0	1,262.80
Business Interruption						
	Income	0	0	0	0	0
	Relocation	2.00	0	0	0	2.00
	Rental Income	0	0	0	0	0
	Wage	0	0	0	0	0
	Subtotal	2.00	0	0	0	2.00
ALL	Total	1,264.80	0	0	0	1,264.80

Critical Facility Damage in St. Joseph
The HAZUS model does not predict that any of the critical facilities in the Village of St. Joseph will sustain damage.

Debris Generation in St. Joseph
The model predicts that a total of 437 tons of debris will be generated as a result of the flood. Of this debris, 284 tons will be finishing materials, 93 tons will be structural materials, and 60 tons will be foundation materials. If the debris tonnage is converted into truckloads, it will require 17 truckloads (@25 tons/ truck) to remove all of the debris.

Shelter Needs in St. Joseph
HAZUS estimates that 193 people will be displaced as a result of flood damage. Also estimated is that, of this group, 130 people will seek temporary shelter in a public shelter.

City of Urbana – Riverine Floods Vulnerability Assessment



City of Urbana – Riverine Floods Vulnerability Assessment

The following table displays the number of buildings within the City of Urbana which HAZUS predicts will be damaged in a 1% flood event. These damaged buildings are grouped by occupancy type and by the percentage of damage to the structure.

Table C-15. Expected Urbana Building Damage by General Occupancy Type

	Number Damaged by Percentage of Damage to Structure						
	1-10%	11-20%	21-30%	31-40%	41-50%	50%+	TOTAL
Agriculture	0	0	0	0	0	0	0
Commercial	1	4	4	0	0	0	9
Education	0	0	0	0	0	0	0
Government	0	0	0	0	0	0	0
Industrial	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0
Residential	1	13	29	1	11	0	55
TOTAL	2	17	33	1	11	0	64

Table C-16. Urbana Building-Related Economic Loss Estimates
(Thousands of Dollars)

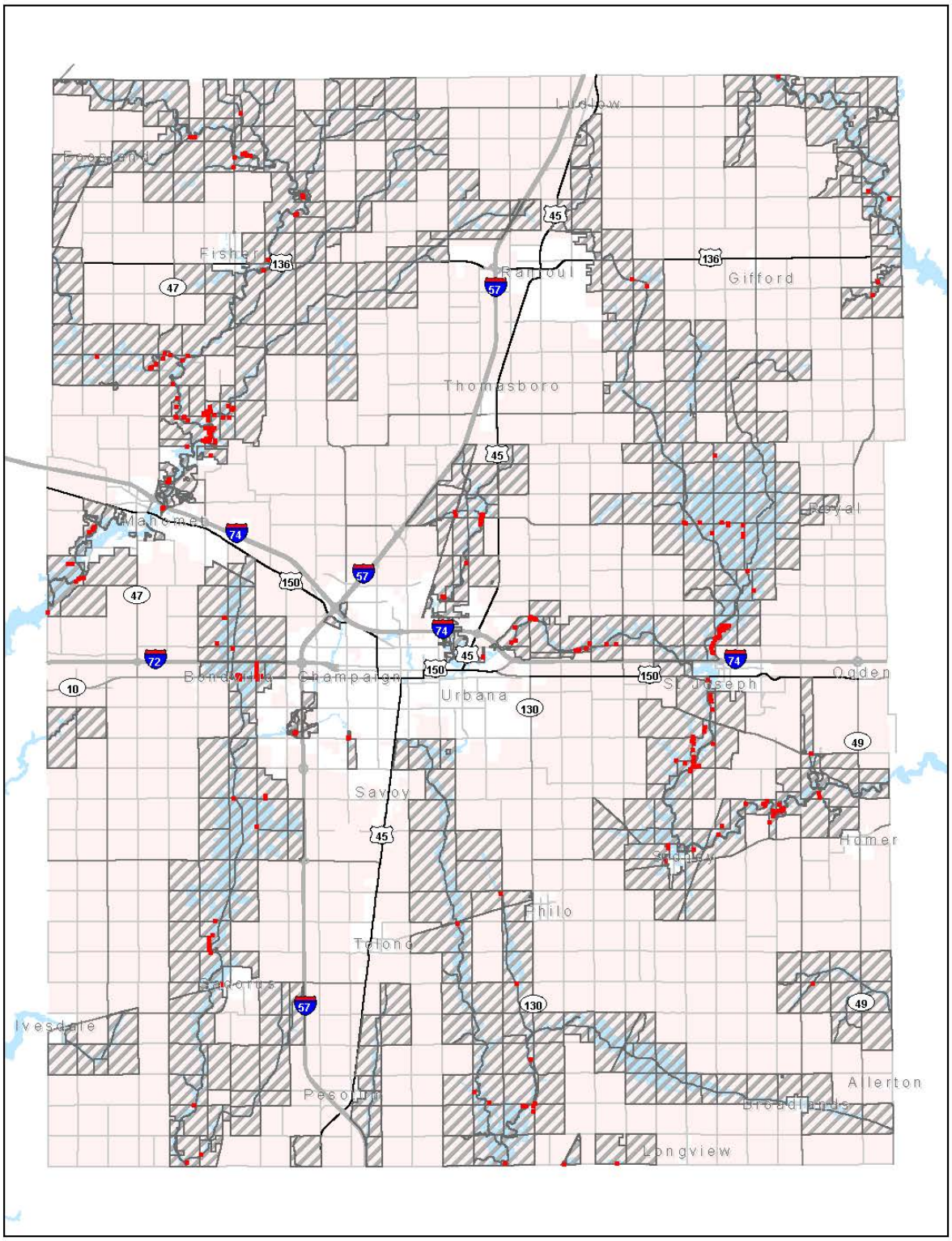
Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	1,110.38	427.93	0	0	1,538.31
	Content	722.63	1,361.91	0	0	2,084.54
	Inventory	0	1,499.64	0	0	1,499.64
	Subtotal	1,833.01	3,289.48	0	0	5,122.49
Business Interruption						
	Income	0	42.00	0	0	42.00
	Relocation	0	8.00	0	0	8.00
	Rental Income	0	6.00	0	0	6.00
	Wage	1.00	23.00	0	0	24.00
	Subtotal	1.00	79.00	0	0	80.00
ALL	Total	1,834.01	3,368.48	0	0	5,202.49

Critical Facility Damage in Urbana
The HAZUS model predicts that one critical facility designated as 'Champaign Service Area' in the City of Urbana will sustain damage. The single critical facility is likely a public utility structure, possibly an electric sub-station.

Debris Generation in Urbana
The model predicts that a total of 605 tons of debris will be generated as a result of the flood. Of this debris, 445 tons will be finishing materials, 96 tons will be structural materials, and 65 tons will be foundation materials. If the debris tonnage is converted into truckloads, it will require 24 truckloads (@25 tons/ truck) to remove all of the debris.

Shelter Needs in Urbana
HAZUS estimates that 440 people will be displaced as a result of flood damage. Also estimated is that, of this group, 343 people will seek temporary shelter in a public shelter.

Unincorporated Champaign County – Riverine Floods Vulnerability Assessment



Champaign County
Boundary Definition

Census Blocks in Flood Plain
100 Year Flood Plain
Buildings Sustaining Damage

CHAMPAIGN COUNTY MULTI-JURISDICTIONAL HMP HAZARD MITIGATION PLAN

N

0 3 Miles

Date of Preparation: March 2015

Unincorporated Champaign County – Riverine Floods Vulnerability Assessment

The following table displays the number of buildings located in unincorporated Champaign County which HAZUS predicts will be damaged in a 1% flood event. These damaged buildings are grouped by occupancy type and by the percentage of damage to the structure.

Table C-17. Expected Unincorporated Building Damage by General Occupancy Type

	Number Damaged by Percentage of Damage to Structure						
	1-10%	11-20%	21-30%	31-40%	41-50%	50%+	TOTAL
Agriculture	53	52	12	6	8	12	143
Commercial	3	1	0	0	0	0	4
Education	0	0	0	0	0	0	0
Government	1	0	0	0	0	0	1
Industrial	0	0	0	0	0	0	0
Religion	0	0	0	0	0	0	0
Residential	24	59	124	49	63	7	326
TOTAL	81	112	136	55	71	19	474

Table C-18. Unincorporated Building-Related Economic Loss Estimates
(Thousands of Dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	13,213.40	828.60	0	4,769.36	18,811.36
	Content	7,904.55	2,103.93	0	11,232.54	21,241.02
	Inventory	0	3,076.94	0	14,439.39	17,516.33
	Subtotal	21,117.95	6,009.47	0	30,441.29	57,568.71
Business Interruption						
	Income	0	20.00	0	0	20.00
	Relocation	17.00	1.00	0	0	18.00
	Rental Income	1.00	0	0	0	1.00
	Wage	0	21.00	0	3.00	24.00
	Subtotal	18.00	42.00	0	3.00	63.00
ALL	Total	21,135.95	6,051.47	0	30,444.29	57,631.71

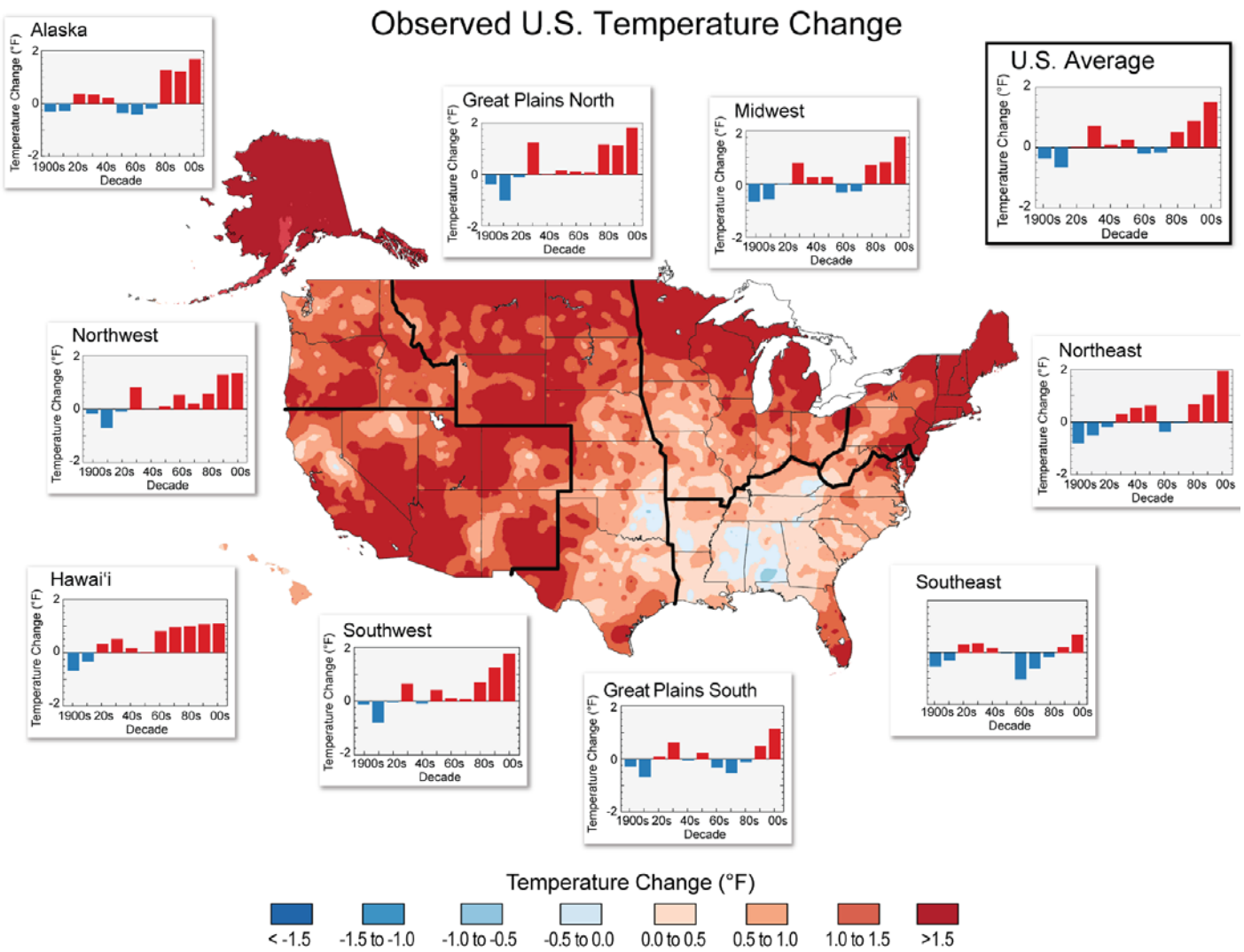
Critical Facility Damage in Unincorporated Champaign County
The HAZUS model predicts that three critical facilities in unincorporated Champaign County will sustain damage. Greenwood Lake Dam, Spring Lake Dam, and Homer Lake Dam are all expected to sustain damage.

Debris Generation in Urbana
The model predicts that a total of 6,483 tons of debris will be generated as a result of a 1% flood. Of this debris, 2,520 tons will be finishing materials, 2,221 tons will be structural materials, and 1,742 tons will be foundation materials. If the debris tonnage is converted into truckloads, it will require 259 truckloads (@25 tons/ truck) to remove all of the debris.

Shelter Needs in Urbana
HAZUS estimates that 1,998 people will be displaced as a result of 1% flood damage. Also estimated is that, of this group, 877 people will seek temporary shelter in a public shelter.

Excerpt: 'Climate Change Impacts in the United States: The Third National Climate Assessment'

Additional detail regarding the USGCRP observation that average temperature for the Plan Area increased by 1 to 1.5 degrees over the 22-year period 1991 – 2012 is provided in the Assessment excerpt below:



"The colors on the map show temperature changes over the past 22 years (1991-2012) compared to the 1901-1960 average, and compared to the 1951-1980 average for Alaska and Hawai'i. The bars on the graphs show the average temperature changes by decade for 1901-2012 (relative to the 1901-1960 average) for each region. The far right bar in each graph (2000s decade) includes 2011 and 2012. The period from 2001 to 2012 was warmer than any previous decade in every region. (Figure source: NOAA NCDC / CICS-NC)."

Source:
Melillo, Jerry M., Terese (T.C.) Richmond, and Gary W. Yohe, Eds., 2014: *Climate Change Impacts in the United States: The Third National Climate Assessment*. U.S. Global Change Research Program, 841 pp. doi:10.7930/J0Z31WJ2. Chapter 2, p. 29.

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Earthquake Events within 100 Miles of Plan Area

Date	Latitude	Longitude	Magnitude	Moment Magnitude	Depth km	Distance km	Distance miles
5/27/1881	41.30	-89.10	4.6	4.44		154	96
2/4/1883	40.50	-89.00		4.52		83	52
12/27/1885	40.40	-89.00	2.9			78	48
3/17/1903	39.10	-89.50	3.0	2.32		159	99
10/21/1903	38.70	-88.10		2.65		155	96
12/11/1903	39.10	-88.50	2.5			114	71
12/31/1903	40.00	-87.90				25	16
5/21/1906	38.70	-88.40	3.4	2.31		156	97
8/13/1906	39.70	-86.80		2.65		125	78
1/29/1907	39.50	-86.60	3.4	3.31		149	93
7/19/1909	40.20	-90.00	4.5	4.35		156	97
9/27/1909	39.50	-87.40	5.4	4.73		89	55
10/23/1909	39.00	-87.80	4.2	3.87		128	80
1/2/1912	41.50	-88.50	4.7	4.38		157	98
4/15/1915	38.70	-88.10	3.8	3.17		155	96
1/7/1916	39.10	-87.00	3.8	3.31		149	93
3/14/1921	39.50	-87.50	4.5	4.11		87	54
11/10/1923	40.00	-89.90	3.3	3.21		147	91
1/6/1931	39.00	-87.00	3.5	3.17		158	98
6/29/1937	40.70	-89.60	2.5			138	86
1/7/1952	40.20	-88.50	2.9			30	19
11/25/1974	40.30	-87.40	2.4		5	69	43
4/8/1976	39.35	-86.68	3.0	2.94	20	152	94
2/16/1978	39.80	-88.23	2.7	2.38	5	33	21
3/27/1982	38.74	-88.69	2.7	2.93	15	157	98
7/1/1982	39.34	-89.67	2.6	2.85	5	153	95
5/16/1983	38.75	-87.96	2.6	2.28	20	150	93
6/12/1984	38.92	-87.46	3.4		3	144	89
7/28/1984	39.22	-87.07	4.0	3.72	10	135	84
8/29/1984	39.37	-87.22	3.2		10	114	71
8/29/1984	39.11	-87.45	3.1	3.00	10	126	78
6/10/1987	38.71	-87.95	5.1	4.95	9	155	96
1/5/1988	38.74	-87.96	3.3	3.16	5	151	94
10/5/1988	38.69	-87.93	3.6	3.33	5	157	98
4/24/1990	39.56	-88.23	3.0	2.89	10	60	37
12/17/1990	40.07	-87.04	3.2	3.31	10	96	60
12/20/1990	39.57	-86.67	3.6	3.58	10	141	88
11/11/1991	38.71	-87.89	3.8	3.52	10	155	96
1/29/1993	39.04	-89.04	3.2	3.09	5	139	86
12/16/1996	39.50	-87.40	3.1	2.99	5	93	58
4/14/2000	39.76	-86.75	3.6	3.28	5	127	79

Source: ISGS

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