MILLS COUNTYWIDE
MULTI-JURISDICTIONAL
PRE-DISASTER MITIGATION PLAN

Prepared by:

Mills County Pre-Disaster Mitigation Planning Committee
Incorporated Municipalities of Mills County
Mills County Emergency Management Agency
&
Omaha-Council Bluffs Metropolitan Area Planning Agency
January 30, 2013

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COUNTY BOARD RESOLUTION

RESOLUTION NO. 12-12

THE COUNTY BOARD OF MILLS COUNTY ADOPTING A MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN FOR MILLS COUNTY

WHEREAS, the Board of Supervisors of Mills County, Iowa, pursuant to Iowa Code, is vested with the authority of administrating the affairs of Mills County, and,

WHEREAS, the Board of Supervisors of Mills County, Iowa has committed to the development of a Multi-Jurisdictional Hazard Mitigation Plan for the County of Mills; and,

WHEREAS, the Mills County Multi-Jurisdictional Hazard Mitigation Planning Committee has participated in the formulation of the plan, and recommends that Mills County adopt said Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, a Public Hearing was held at the Mills County Courthouse for the purpose of obtaining citizen input on the Multi-Jurisdictional Hazard Mitigation Plan; and,

WHEREAS, the Board of Supervisors of Mills County deems it advisable and in the best interests of Mills County to approve said plan; and,

NOW, THEREFORE, BE IT RESOLVED, by the Board of Supervisors of Mills County, Iowa, that the Mills County Multi-Jurisdictional Hazard Mitigation Plan be approved and adopted this day.

PASSED AND ADOPTED on this 8th day of May, 2012.

Chairperson

Attest: County Auditor

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EMERGENCY MANAGEMENT COMMISSION APPROVAL

MILLS COUNTY EMERGENCY MANAGEMENT COMMISSION

MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN

May 2012

Richard Crouch

Richard Crouch
Chairman, Emergency Management Commission

5/8/2012
Date

Larry Hurst
County Emergency Management Coordinator

05/08/2012
Date

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MILLS COUNTYWIDE
MULTI-JURISDICTIONAL
PRE-DISASTER MITIGATION PLAN

Mills County, Iowa

January, 2013

Prepared by:

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Incorporated Municipalities of Mills County
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&
Omaha-Council Bluffs Metropolitan Area Planning Agency

The Omaha-Council Bluffs Metropolitan Area Planning Agency, in coordination with the Mills County Emergency Management Agency, prepared the Countywide Multi-Jurisdictional Pre-Disaster Mitigation Plan for Mills County, Iowa, with direction and assistance from the Mills County Pre-Disaster Mitigation Planning Committee. The Plan was developed with assistance from the following individuals representing the county, incorporated cities and special purpose districts.

Mills County

Sheri Bowen, Mills County Public Health
Richard Crouch, Mills County Supervisor
Jerad Getter, Mills County Conservation
Eugene Goos, Mills County Sheriff
Jim Goos, Mills County Veteran Affairs
Christina Goving, Mills County Assessor
Eric Hansen, Mills County Attorney
Ron Kohn, Mills County Supervisor
Tom Ling, Mills County 911
Kevin Mayberry, Mills County Engineer
Marci McClellan, Mills County Attorney
Richard Parks, Mills County Engineer
Carol Robertson, Mills County Auditor
Mike Sukup, Mills County Public Health

City of Emerson

Don Lee, City Council
Charles Moyers, City Council/Mayor Protem
Jackie Porter, City Clerk
Ron Williams, Fire Department

City of Glenwood

Perry Cook, Public Works
Robert Fidler, Fire Department
Matt Gray, Fire Department
Eric Johansen, Police Department
Lucas Lechtenberg, Fire Department
Mary Smith, City Clerk

City of Hastings

Ryan Campbell, City Council
Eva Hall, City Council
Troy Hatcher, Mayor
Mike Moraine, City Council
Lana Moyers, City Clerk
Doug Volz, Fire Department

City of Henderson

Mike Baumfalk, City Council
Terry Byers, City Council
Bonnie Frink, City Clerk
Garret Holgdal, City Council
Claudia Hoover, Mayor
Herb Hoover, City Council
Mark Knop, Fire Department
Wanda Williams, City Council

City of Malvern
Susan Dunmire, City Council
Toni Michel, Mayor
Shari Mueller, City Clerk
Lantz Powles, City Council
Shane Sayers, City Council
Doug Shere, City Council

City of Pacific Junction
Rodney Bents, City Council
Pat Hatcher, City Council
Richard Kerres, City Council
James Lovely, Mayor
Earl Smith, City Council
Kari Williams, City Clerk/Treasurer
Andy Young, City Council

City of Silver City
Deb Belt, City Council
Jeff Carper, Fire Department
Jo Carper, City Clerk
Rose Schoening, Mayor

Other Contributors
David Carter, Department of Agriculture, Malvern Office
Devin Embray, Superintendent, Glenwood Community School District
John Poore, Chairperson, M&P Missouri River Levee District
Mark Schoening, Oak Township

Mills County Emergency Management Agency
Larry Hurst, Mills County Emergency Manager
Adam Wainwright, GIS Coordinator

Omaha-Council Bluffs Metropolitan Area Planning Agency
Grant Anderson, Community and Economic Development Planner
John Bair, Graphics Specialist
Jake Hansen, Community and Economic Development Manager
Paul Hunt, Transportation Planner
Clint Sloss, Community and Economic Development Planner

Mills County's Multi-Jurisdictional Pre-Disaster Mitigation Plan was funded in part through a grant provided by Iowa Homeland Security and Emergency Management and the Federal Emergency Management Agency. The Mills County Emergency Management Agency also provided funding for the development of this plan.

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LIST OF ACRONYMS/ABBREVIATIONS

CPRI – Calculated Priority Risk Index

DI – Damage Indicators

DOD – Degrees of Damage

EMA – Emergency Management Agency

EHS – Extremely Hazardous Substances

FEMA – Federal Emergency Management Agency

FIRM – Flood Insurance Rate Map

Hazmat – Hazardous Materials

HMGP – Hazard Mitigation Grant Program

HSEMD – Homeland Security and Emergency Management Division

IDLH – Immediately Dangerous to Life and Health

NFIP – National Flood Insurance Program

NIMS – National Incident Management System

NOAA – National Oceanic and Atmospheric Administration

OMMRS – Omaha Metropolitan Medical Response System

PDI – Palmer Drought Index

PDM – Pre-Disaster Mitigation

VZR – Vulnerability Zone Radius

WMD – Weapons of Mass Destruction

WNV – West Nile Virus

I. EXECUTIVE SUMMARY

The Mills Countywide Pre-Disaster Mitigation Plan was developed for and applicable to one county government, seven incorporated municipal governments, and two special purpose districts. These government/special purpose entities include Mills County; the Cities of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, and Silver City; the Glenwood Community School District; and the M&P Missouri River Levee District. All previously adopted single-jurisdiction hazard mitigation plans were utilized and migrated into this plan at the greatest extent possible. Individual jurisdictional data was updated to reflect the most current information available and any content deemed irrelevant or outdated was excluded from this plan. Otherwise, all applicable content was transferred to the multi-jurisdictional document.

The Mills County Multi-Jurisdictional Pre-Disaster Mitigation Planning Committee met six times to discuss potential hazards to the county and all seven incorporated jurisdictions. Forty natural and manmade hazards were determined to possibly or likely occur in the county and are cited in Section IV of this plan. The Planning Committee's prioritization of hazards is located in Page 64.

After studying potential hazards, the Planning Committee identified current mitigation activities and assessed gaps in the mitigation/preparedness of hazards to the county and all municipalities. Further in the process, the Planning Committee set goals, objectives and actions that cover all identified hazards and are covered in Section VI.

Finally, the Planning Committee developed a strategy for completing specific pre-disaster mitigation goals listed in Section VII. Hazard mitigation can occur through the accomplishments of objectives that, when achieved, will reduce the impact of hazards on citizens and businesses countywide. Many of the objectives are inexpensive and simple while others are more costly and sophisticated in scope. However, all objectives are within the realm of possibility and can be carried out to fruition.

Finally, adoption by all governing bodies within the jurisdictional boundaries of Mills County demonstrates commitment on a countywide basis to fulfill the mitigation goals and objectives outlined in the plan. Adoption legitimizes the plan and authorizes responsible entities to execute their responsibilities.

II. PURPOSE AND PROCESS OF THE COUNTY PRE-DISASTER MITIGATION PLAN

Purpose

There are three primary purposes for the development of the Mills Countywide Multi-Jurisdictional Pre-Disaster Mitigation (PDM) Plan:

First, the plan has been developed to protect the health, safety and economic interests of residents and businesses by reducing the impacts of natural and manmade disaster events through planning, awareness and implementation. Pre-disaster mitigation is any action taken to permanently eliminate or reduce the long-term risk to human life and property from natural and manmade hazards.

The second purpose of the plan is to comply with the requirements of Iowa Administrative Code 605-7.2(4)(d)(1)(2)-29C.9 and the Disaster Mitigation Act of 2000 as established by the Federal Emergency Management Agency (FEMA).

The third purpose of the plan is to identify short and long-term strategies to eliminate hazards or reduce the impact of hazards that cannot be eliminated.

Process

In 2010, the Mills County Board of Supervisors received funding to complete a Multi-Jurisdictional Hazard Mitigation Plan for all legal jurisdictions within Mills County, including unincorporated areas. Work on the plan began with assembling background information, using the State of Iowa Hazard Mitigation Plan and the previously approved single-jurisdiction PDM plans of the Cities of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, Silver City, and unincorporated Mills County. Sources of information provided in this plan include: U.S. Census Bureau (including the American Community Survey), Agriculture Census, Glenwood Area Chamber of Commerce, High Plains Regional Data Center, National Climatic Data Center, Mills County Assessors' Office, Iowa Department of Management, Iowa Department of Revenue, and staff of Mills County and incorporated cities. Information from these plans and sources was used in the development of this current plan to identify background information, vulnerabilities, critical facilities, historic weather/hazard events, property values, and other pertinent details. The planning process was discussed at the Mills County Board of Supervisors and at the council meetings of each legal jurisdiction.

The planning process began in the winter of 2010 by engaging public officials, administrators, business owners, citizens, school district administrators, and other local stakeholders to comprise the Mills County Multi-Jurisdictional PDM Planning Committee. The Committee first convened in April 2010 and met formally an additional five times through October 2011 to identify and prioritize hazards, review past and present mitigation activities, and formulate additional mitigation goals and strategies. Committee members also participated in the planning process by completing assigned tasks and information gathering between meetings. Meetings were located at the Mills County Engineer's Office in Glenwood and at the government/community buildings of the incorporated cities represented in this plan. All meetings were open to the public and held in accordance with Iowa's Open Meetings laws, found in Chapter 21 of the Code of Iowa.

The following is an outline of the planning process by meeting:

Meeting 1: Orientation of planning process and desired outcomes
Meeting 2: Discuss and identify natural and manmade disasters; Begin Hazard Analysis/Risk Assessment
Meeting 3: Complete Hazard Analysis/Risk Assessment; Prioritize hazards
Meeting 4: Identify critical facilities; Discuss goals and objectives
Meeting 5: Discuss goals and objectives; Discuss mitigation activities and projects
Meeting 6: Final discussion of goals and objectives and mitigation projects; Discuss plan implementation and evaluation

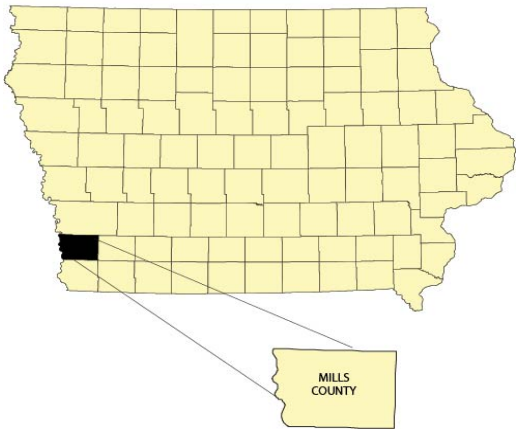
Upon completion of a clean draft, the PDM plan was forwarded to the Mills County Board of Supervisors and chief elected officials of each municipality in the county for additional review. Prior to adoption by the Board of Supervisors, a Notice of Public Hearing (see Appendix N) was published in the Glenwood Opinion-Tribune and Malvern Leader. The notice was posted at the Mills County Courthouse, allowing interested parties from the area adequate time to review the plan and provide comments. A copy of the plan and hearing notice was emailed to neighboring jurisdictions (Freemont County, Montgomery County and Pottawattamie County).

Political Body Approval: Mills County Board of Supervisors

Approval Date: May 8, 2012

III. COUNTY PROFILE INFORMATION

Mills County Locator Map



Section III of the plan describes and examines a variety of characteristics of the Mills County area. This section explains the county's history and includes demographic, climate, geographic, and other relevant information.

History

Mills County was established in 1851, named for Frederick Mills, a Yale University graduate and lawyer who was also a military officer during the Mexican-American War from 1846 to his death in 1847. The first settlement was named Rushville by the Mormons who arrived in 1846. Coonsville, named after Dr. Liberius Coons, was eventually changed to present day Glenwood in 1853.

The first courthouse was a 12' x 20' frame structure later replaced in 1857 by a two-story Georgian Colonial style building. The original courthouse served as home to the first newspaper in Mills County as well as a temporary barracks for Civil War soldiers in 1861. The courthouse served the area for over 100 years until it was replaced in 1959 with the current building in Glenwood.

Mills County is home to a variety of historical sites. The City of Tabor, which lies partly in Mills County, is the location of a once important station on the Underground Railroad as well as the home of Rev. John Todd who harbored the abolitionist John Brown. The Todd house is preserved and now serves as a museum. Pacific Junction in western Mills County is the junction for Burlington Railroad lines from Denver to Chicago and Kansas City to Council Bluffs.

Government

Mills County's main unit of government, the Board of Supervisors, is comprised of three elected officials, including an administrative staff that serves 20 offices/departments. The term of office for Board members is four years with elections staggered so that no more than two officials are elected during a cycle. The Board meets each Tuesday at 8:15 a.m. (excluding holidays) with additional meetings called by the Chairperson when necessary. Each city in Mills County elects a mayor and five council members to two to four year terms. Each city employs a city clerk and only Glenwood maintains a city administrator position.

Location

Mills County is located in the southwest corner of Iowa. It is bordered by Pottawattamie County to the north, Montgomery County to the east, Fremont County to the south, and the Missouri River to the west. Mills County is a largely rural area with an agriculture based economy, though the Omaha-Council Bluffs job market provides employment opportunities to the county's workforce. Glenwood, Mills County's largest city and county seat, is in the western half of the county near the junction of Interstate 29 and U.S. Highway 34. U.S. Highways 275 and 59 also run through Mills County.

Climate

Mills County, like Iowa and much of the Midwest, has a humid continental climate with extremes of both heat and cold. Approximately 73 percent of the precipitation the region receives annually comes during the months of April through September. Much of the precipitation in that period comes in the form of showers and thunderstorms, usually during the late afternoon and evening hours. The region averages approximately 27 inches of annual snowfall, which can begin as early as October and end as late as April. Table 1 on Page 5 documents climatic statistics of the area.

Table 1: Climatic Statistics, 6/1/1948 – 12/31/2011

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average High Temperature (F)	31.4	37.2	48.9	63.3	74.0	83.5	87.7	85.5	77.2	65.7	49.3	36.0
Average Low Temperature (F)	12.0	17.5	27.6	40.1	51.4	61.4	66.6	64.2	54.0	42.1	29.0	17.3
Average Participation (in.)	0.79	0.91	1.9	2.91	4.55	4.1	3.77	3.91	3.05	2.13	1.49	0.9
Average Total Snowfall (in.)	6.9	6.1	5.4	0.9	0.0	0.0	0.0	0.0	0.0	0.3	2.4	5.7

Source: High Plains Regional Data Center (Eppley Airfield weather station)

Communities and Rural Population Concentrations

The following are the 2010 census population counts of each legal jurisdiction in Mills County:

Mills County – 15,059; Unincorporated – 7,073

- Glenwood – 5,269
- Malvern – 1,142
- Pacific Junction – 471
- Emerson – 438
- Silver City – 245
- Henderson – 185
- Hastings – 152
- Tabor – 84*

*Note: The City of Tabor is in both Mills and Fremont Counties; the population figure above reflects only the residents of Tabor who reside within Mills County.

Much of the population growth in Mills County has taken place within the unincorporated areas in the northwest quarter of the county. Although there are no incorporated communities within Oak Township, which includes the unincorporated community of Mineola, its population of 2,027 persons in 2000 was second only to Glenwood Township in the entire county. There are 13 townships in Mills County. A township boundary map is located in Appendix B.

Population

Mills County's total population is ranked seventh out of eight counties in the Omaha, NE-Council Bluffs, IA Metropolitan Statistical Area, and 53rd out of 99 counties in the State of Iowa according to the 2010 census. Population data for Mills County and its municipalities is provided in Table 2 starting with the 1910 census. The county and city populations have generally been on a gradual decline since the early 1900s. However, significant residential growth has occurred since the 1970s, owing to increases during the 1980 and 2000 censuses. Mills County's estimated population as of 2009 is as high as it has been since the 1940 census. Glenwood has continued steady growth since the 1990 census.

Table 2: Population Trends, 1910-2010

Year	Mills County	Emerson	Glenwood	Hastings	Henderson	Malvern	Pacific Junction	Silver City
1910	15,811	478	4,052	393	240*	1,154	732*	416
1920	15,422	475	3,862	424*	232	1,195	501	430*
1930	15,866*	512	4,269	389	237	1,320	666	355
1940	15,064	498	4,501	403	217	1,325*	594	346
1950	14,064	556*	4,664	308	208	1,263	558	311
1960	13,050	521	4,783	260	191	1,193	550	281
1970	11,832	484	4,421	229	211	1,158	560	272
1980	13,406	502	5,280	215	236	1,244	505	291
1990	13,202	476	4,960	187	206	1,210	511	252
2000	14,547	480	5,358*	214	171	1,256	548	259
2010	15,059	438	5,269	152	185	1,142	471	245

Source: U.S. Census
*Census count high

As shown in Table 3, the unincorporated population of the county fell from 1950 to 1970, though it has increased gradually since the 1980s. It is no coincidence that as the non-farm population sees gains of 20 percent and 30 percent, the farming population is likewise diminished. Cities in Mills County have not grown commensurate with the rural population increase. Between 1990 and 2000, the entire population of Mills County increased by 1,345. Rural population increases accounted for nearly 97 percent of that growth (1,298 persons). With respect to pre-disaster mitigation, this trend will necessitate planning for evacuation of or providing assistance to a large decentralized population.

Table 3: Population Trends – Unincorporated Mills County, 1950-2010

Year	Population Count	% Chance
1950	6,103	N/A
1960	5,173	-15.2%
1970	4,443	-14.1%
1980	5,006	12.7%
1990	5,270	5.3%
2000	6,242	18.4%
2010	7,095	13.7%

Source: U.S. Census

Like most other areas in Iowa, the overall average age in Mills County has increased over the past decade. Out-migration of young people and relatively fewer births are contributing factors to this phenomenon. The apparent drop in population for persons ages 15 to 24, and to some extent the 25 to 34 age grouping, can be explained by lack of opportunities for housing, jobs and education for young people in Mills County. The high numbers for both children 14 and under and adults between the ages of 35 and 44 indicate a high percentage of families within Mills County.

In 2000 the two largest age groups were 35 to 44 and 45 to 54, representing 16.7 and 15.8 percent of the population, respectively. By 2009 the largest age groups remained the same, at 14.8 and 16.9 percent. These demographic groups will continue to dominate the population of Mills County. Within the next 20 to 30 years, it is likely that 30 percent of the population will be of retirement age possibly placing significant burdens on the county. With respect to disaster mitigation, this trend will necessitate planning for evacuation of and providing assistance to large populations of elderly residents.

Table 4: Percent of Population by Age

Age Bracket	1990	2000	2009
Under 5 years	6.3%	6.3%	6.2%
5-14	16.2%	15.5%	14.2%
15-24	12.3%	11.9%	11.7%
25-34	15.1%	11.5%	10.4%
35-44	16.8%	16.7%	14.8%
45-54	10.7%	15.8%	16.9%
55-64	8.9%	9.7%	13.2%
65-74	7.3%	6.5%	6.5%
75-84	4.8%	4.4%	4.2%
Over 85	1.6%	1.7%	1.9%

Source: U.S. Census; American Community Survey

Housing

Table 5 shows when homes were built in Mills County and its municipalities. The percentages are taken from American Community Survey five year estimates, which are not as accurate as decennial census counts. However, the samples provide a generally reliable indication of owner occupied residential construction since 2000. The majority of housing stock throughout the county was built prior to 1940. Only Glenwood and Pacific Junction did not have at least half of their owner occupied units built prior to 1940. The 1970s brought a significant amount of housing construction to Mills County and all seven cities, but many of the smaller municipalities have not seen any major or steady growth since. Typically, a newer housing stock can be considered less vulnerable to disaster, as modern building standards require designing for extreme weather events.

Table 5: Year Owner Occupied Home Built

Year Built	Mills County	Emerson	Glenwood	Hastings	Henderson	Malvern	Pacific Junction	Silver City
1939 or prior	32.1%*	53.8%*	22.7%	59.0%*	72.5%*	60.4%*	28.2%*	73.0%*
1940-1949	3.2%	3.3%	1.9%	0.0%	15.9%	3.6%	10.6%	1.7%
1950-1959	3.9%	7.6%	7.1%	0.0%	2.9%	4.4%	1.1%	6.10%
1960-1969	9.1%	7.1%	12.1%	2.4%	0.0%	8.2%	11.2%	1.7%
1970-1979	20.2%	17.9%	31.7%*	30.1%	5.8%	8.9%	11.7%	12.2%
1980-1989	8.7%	4.9%	12.1%	0.0%	0.0%	1.6%	17%	1.7%
1990-1999	13.6%	4.3%	9.2%	2.4%	2.9%	7.6%	16.5%	2.6%
2000-2004	7.6%	1.1%	1.9%	6.0%	0.0%	3.2%	3.7%	0.9%
2005 or later	1.5%	0.0%	1.3%	0.0%	0.0%	2.0%	0.0%	0.0%

Source: U.S. Census; American Community Survey
*Census rate high

According to five year estimates from the American Community Survey provided in Table 6, Mills County experienced steady growth in median housing value from the 2000 census, approximately seven percent higher than the state's growth rate. Each incorporated city in the county saw median value growth, with the exception Henderson due to considerably old housing stock and a lack of significant housing construction in recent decades. The rising price of real estate in Mills County correlates to higher replacement costs in the event of a disaster.

Table 6: Median Value of Owner Occupied Units

Jurisdiction	2000 Median Value	2006-2010 Median Value	% Change
Mills County	$95,200	$144,200	51.5%
State of Iowa	$82,500	$119,200	44.5%
Emerson	$49,200	$69,000	40.2%
Glenwood	$91,900	$131,100	42.7%
Hastings	$35,600	$39,200	10.1%
Henderson	$43,600	$40,900	-6.2%
Malvern	$71,800	$111,000	54.6%
Pacific Junction	$61,000	$77,700	27.4%
Silver City	$67,100	$85,400	27.3%

Source: U.S. Census; American Community Survey

Financial Analysis

Mills County assesses a tax levy per $1,000 valuation on regular and rural property. In the 2010/2011 fiscal year Mills County had $5.8 million in taxes levied on property. The county had $15.4 million in total revenues and $16.3 million in total expenditures. The county currently has no outstanding general obligation dept. Table 7 provides financial analysis figures for the county and incorporated cities.

Table 7: Community Financial Analysis

Jurisdiction	Source of Tax Revenue	Assessed Valuation
Mills County (Unincorporated)	$6.26229 tax levy per $1,000 valuation on regular property $2.76368 tax levy on agricultural land	$856,926,337
Emerson	$13.49343 tax levy per $1,000 valuation on regular property $3.00375 tax levy on agricultural land	$15,364,380
Glenwood	$14.48186 tax levy per $1,000 valuation on regular property $3.00375 tax levy on agricultural land	$251,928,019
Hastings	$17.21384 tax levy per $1,000 valuation on regular property $3.00375 tax levy on agricultural land	$4,653,778
Henderson	$11.14815 tax levy per $1,000 valuation on regular property $3.00375 tax levy on agricultural land	$4,616,680
Malvern	$15.85348 tax levy per $1,000 valuation on regular property $3.00375 tax levy on agricultural land	$45,172,827
Pacific Junction	$13.09987 tax levy per $1,000 valuation on regular property $2.42627 tax levy on agricultural land	$15,730,126
Silver City	$10.89291 tax levy per $1,000 valuation on regular property $3.00375 tax levy on agricultural land	$10,246,245

Source: Iowa Department of Management, FY 2010/2011

Table 8 below shows the total assessed value of taxable parcels in Mills County separated by agricultural, commercial, industrial, and residential uses. Assessed values by incorporated city are located in Appendix I.

Table 8: Number and Assessed Value of Parcels

Property Classification	Number	%	Total Value	%
Agricultural	9,850	56.8	$389,384,739	32.2
Commercial	1,105	6.4	$82,193,326	6.8
Industrial	34	0.2	$39,488,221	3.3
Residential	6,363	36.7	$696,737,930	57.7
TOTAL	17,352		$1,207,804,216	

Source: Mills County Assessor

Public Works

Roads

The road system in Mills County consists of over 756 miles of total rural roads. Of that total nearly 79 miles are state highways and Interstate 29, while nearly 677 miles are county roads. The county has approximately 20 miles of interstate highway, but the county is not responsible for maintenance. Nearly 65 percent of the roads in the county have a gravel surface. The county also has over 80 miles of paved roads, nearly 80 miles of seal coat surface and 150 bridges over 20 feet in length.

The county secondary roads department employs over 30 persons. The department has facilities at three locations throughout the county including Emerson, Malvern and the primary location in Glenwood. The roads department is a large part of the overall county budget. The department owns millions of dollars of equipment ranging from hand shovels to scrapers and includes 8 road graders and 12 dump trucks.

The department is responsible for all construction, maintenance, repair, widening, resurfacing, and reconstruction of pavements, bridges and culverts on the county highway system. It also includes traffic control, safety, mowing, snow removal and issuing permits for driveways and overweight/over-dimensional vehicles. Additionally, the department carries out floodplain management and subdivision review duties for the county and completes other tasks as assigned.

Water Supply and Distribution

Presently, the county does not provide residents with water service. Water is provided by private wells, rural water organizations or connection to an adjacent community. However, as areas in the northwest portion of the county are becoming increasingly populated, the need for community water systems in the area is growing. It should be noted that some unincorporated portions of the county near Glenwood are connected to municipal water provided through Glenwood Municipal Utilities. Table 9 provides water supply and distribution details for each incorporated city in Mills County.

Table 9: Municipal Water

Jurisdiction	Storage Capacity	Average Flow (gal per day)	Peak Flow (gal per day)
Emerson	40,000 gallon tower; 5,000 gal standpipe	Data not available	Data not available
Glenwood	4 storage reservoirs (2.15M total gallons)	800,000	2,000,000
Hastings	60,000 gallon standpipe	15,000	105,000
Henderson	33,000 gallon tower	12,000	18,000
Malvern	250,000 gallon tower	87,000	250,000
Pacific Junction	Provided by Glenwood Municipal Utilities	N/A	N/A
Silver City	91,000 gallon standpipe	18,000	172,800

Source: PeopleService, Inc.; Incorporated Cities

Wastewater Treatment

The county does not provide residents with wastewater treatment service. This service is provided by private septic systems, onsite lagoon systems or connection to a city treatment system. Population increases and growing development trends in the northwest portion of the county, coupled with more stringent regulations from Iowa Department of Natural Resources on community wastewater collection, have necessitated the study and possible construction of community wastewater collection systems for new rural subdivisions and for the Mills County area. Table 10 provides wastewater treatment details for each incorporated city in Mills County.

Table 10: Municipal Wastewater

Jurisdiction	Treatment System	Average Capacity (gal per day)	Peak Capacity (gal per day)
Emerson	3 cell lagoons	Data not available	Data not available
Glenwood	Lift station and treatment plant	900,000	7,200,000
Hastings	Private septic systems	N/A	N/A
Henderson	3 cell lagoons	Data not available.	Data not available.
Malvern	3 cell lagoons	180,000	900,000
Pacific Junction	Provided by Glenwood Municipal Utilities	N/A	N/A
Silver City	2 cell lagoons	12,000	213,120

Source: PeopleService, Inc.; Incorporated Cities

Storm Water Drainage

Water drainage from storms is usually handled through roadside ditches and curb collection. Storm water collection systems are in place in Glenwood and Malvern. Developed areas of Glenwood rely on pipes to collect surface drainage from streets and convey it to cross-city lines which outlet into Keg Creek or one of its tributaries.

Solid Waste

Solid waste is collected and delivered to the Loess Hills Landfill located south of Highway 34 and two miles west of Malvern. This facility is privately owned and operated by Iowa Waste System, Inc. The landfill serves all of Mills County and accepts waste from Pottawattamie County and communities in Missouri and Nebraska.

Public Buildings and Facilities

The county is responsible for the following public buildings:

- County Courthouse – 418 Sharp Street, Glenwood
- Public Health Department – 101 Central Street, Glenwood
- Law Enforcement Center – 3 North Vine Street, Glenwood
- Engineer's Office – 403 Railroad Avenue, Glenwood
- Secondary Roads Facility – 401 Railroad Avenue, Glenwood
- General Relief/Veteran's Affairs Office – 106 Central Street, Glenwood
- Conservation Office – 56235 Deacon Road, Pacific Junction
- Fairgrounds buildings in Malvern
- Secondary Roads Department in Emerson

Below are public buildings by incorporated city and the unincorporated village of Mineola:

Emerson

City Hall – 410 Manchester Street
Community Building – 711 Morton Avenue
Fire Station – 305 Howland Street
Maintenance Garage
Public Library – 701 Morton Avenue

Malvern

City Hall – East 4th Street
Community Building – 501 Main Street
Fire Station – 309 Main Street
Post Office – 202 West 4th Street
Public Library – 502 Main Street

Glenwood
City Hall – 107 South Locust Street
Fire Station – 120 South Walnut Street
Maintenance Garage
Parks Storage
Police Department – 209 Sharp Street
Public Library – 109 North Vine Street
Post Office – 101 South Vine Street
YMCA – 110 Sivers Road

Henderson
City Hall/Community Bldg. – 310 Maple Street
Fire Station – 206 Maple Street

Hastings
City Hall/Community Bldg. – 401 Indian Avenue
Fire Station
Post Office – 427 Indian Avenue
Rescue Station – 110 West Fifth Street
Senior Center – 207 East 4th Street
Water & Sewer Department – 307 West 8th Street

Mineola
Fire Station – 410 Main Street
Post Office – 107 North 4th Street

Pacific Junction
City Hall – 407 Lincoln Avenue
Community Building
Fire Station – 203 3rd Street
Post Office – 405 Lincoln Avenue
Public Works Garage

Silver City
City Hall – Main Street (east side)
Fire Station – 414 Main Street
Post Office – 413 Main Street

Emergency Services

Fire and Rescue

Fire protection service is provided by a combination of township and community based volunteer fire departments. There are 9 departments and 10 rescue units operating within the county staffing an estimated 160 volunteer emergency responders. Below are the emergency response capabilities of each jurisdiction by number of personnel and equipment available.

Emerson – 18 personnel
1 Tanker truck
2 Pumper trucks
1 Brush truck
1 Ambulance
1 5,000 watt portable generator

Glenwood – 30 personnel
1972 300 gallon 6x6 trailer
1989 Ford F350 pickup
1990 Ford 1000 GPM pumper
1997 Ford 750 GPM pumper
1994 Medtec ambulance
1995 Medtec ambulance
2003 Medtec ambulance
1996 Pierce 65' fire truck

Hastings – 20 personnel
2 Engines
1 Brush truck
1 6,000 gallon tanker
1 2,000 gallon tanker

Henderson – 15 personnel
4 Pumper/tanker trucks

Malvern – 29 personnel
1 5,000 gallon tanker
1 2,000 gallon tanker
1 1,251 gallon/minute pumper
1 750 gallon/minute pumper
1 Heavy rescue vehicle
1 Mini pumper

Pacific Junction – 16 personnel
2 Tanker trucks
2 Pumper trucks
2 Ambulances

Silver City – 11 personnel
1986 Chevrolet quad cab
1976 GMC 4x4 pickup
1979 GMC tanker
1985 GMC Type K pumper
1990 Ford ambulance

Tabor – 23 personnel
2 Ambulances
2 Tanker trucks
2 Utility pickups
1 Pumper truck

For emergency assistance citizens should dial 911. To contact the Mills County Emergency Management Agency call Larry Hurst, County Emergency Management Coordinator, at (712) 527-3643. The office is located in the basement of the Mills County Courthouse at 418 Sharp Street in Glenwood.

Law Enforcement

The Mills County Sheriff's Office consists of approximately 20 employees including 11 law enforcement officers and 6 correctional officers/staff. The office is responsible for law enforcement duties in an effort to protect life and property by enforcing local, state and federal laws. The department patrols approximately 436 square miles, about 654 miles of secondary county roads, and over 100 miles of state and interstate highway. The sheriff's office also contracts with each city in the county with the exception of Glenwood to provide law enforcement services. The Glenwood Police Department has a full time staff of nine law enforcement personnel and six vehicles.

Warning Systems

The National Oceanic and Atmospheric Administration (NOAA) Weather Radio Warning System serves the county. Coverage throughout Mills County is generally adequate due the presence of a NOAA transmitter near Oakland in neighboring Pottawattamie County. Mills County Emergency Management Agency controls outdoor warning sirens throughout the county and in all incorporated communities. Each city has at least one warning siren that provides citywide coverage. The county also participates in the CodeRed Emergency Alert System. Residents in the county may register to receive emergency notifications via telephone messages. Mills County residents can receive weather notifications via television and AM/FM radio outlets. A listing of major media providers in the area is located in Appendix M.

Medical Services and Facilities

Methodist Physicians Clinic, Alegent Health Clinic, and Fryzek Family Practice are located in Glenwood. Also, Methodist Physicians Clinic in Malvern is open two days a week. There are at least 59 other medical facilities available in the Omaha-Council Bluffs area that provide cancer treatment, mental health services, rehabilitation services, and a variety of other specialties. The closest hospitals depending on location in Mills County are the Jennie Edmondson and Alegent Health Mercy Hospitals, both in Council Bluffs, and Montgomery County Memorial Hospital in Red Oak, IA.

Utilities

Table 11 lists utility providers for incorporated cities in Mills County.

Table 11: Area Utility Providers

Jurisdiction	Electric	Gas	Telephone	Cable	Water	Solid Waste
Emerson	MidAmerican Energy	MidAmerican Energy	CenturyLink	Interstate Communications	City of Emerson	Individual contracts
Glenwood	MidAmerican Energy	Aquila	CenturyLink	Mediacom	Glenwood Municipal Utilities Board	Individual contracts
Hastings	MidAmerican Energy	MidAmerican Energy	CenturyLink	Available through satellite	City of Hastings	Individual contracts
Henderson	MidAmerican Energy	MidAmerican Energy	CenturyLink	Available through satellite	City of Henderson	Konfrst Waste Disposal
Malvern	MidAmerican Energy	MidAmerican Energy	CenturyLink	Western Iowa Networks	City of Malvern	Individual contracts
Pacific Junction	MidAmerican Energy	MidAmerican Energy	Western Iowa Networks	Available through satellite	Glenwood Municipal Utilities Board	Individual contracts
Silver City	MidAmerican Energy	MidAmerican Energy	CenturyLink	Interstate Communications	City of Silver City	Individual contracts

Source: Incorporated Cities

Watersheds, Major Rivers and Streams

There are three EPA designated watersheds in Mills County. These watersheds are:

- West Nishnabotna (10240002) – The total watershed area is 725.7 square miles. The primary river within the watershed is the West Nishnabotna River, which flows west of Hastings and Henderson and east of Malvern on its route through the county from north to

south. The watershed includes: 64 lakes, 16 rivers and streams, 2,223.6 total river miles, and 819.5 perennial river miles. This watershed covers over half of the county's land area.

- Keg-Weeping Water (10240001) – This watershed is 1,565.4 acres. The primary waterways within the Mills County portion of the watershed are Keg Creek, Pony Creek, and Silver Creek. The watershed also includes: 67 lakes and 7 rivers and streams. Nearly half of the county is located within this watershed.
- Big Papillion-Mosquito (10230006) – This Watershed is 5,412.2 acres. The watershed also includes: 112 lakes and 14 rivers and streams. Only a small area northwest of Glenwood is located within this watershed.

Floodplain and Flood Control Information

The following are incorporated cities participating in the National Flood Insurance Program (NFIP):

	Community Identification	Year Joined NFIP	Current Effective Floodplain Map
Mills County	190891	10/14/1982	08/03/1989
Emerson	190202#	04/03/1984	12/01/1987
Glenwood	190203#	05/17/1982	11/17/1982
Hastings	190204#	10/14/1982	19/16/1982
Malvern	190205#	09/16/1982	09/16/1982
Pacific Junction	190206#	04/04/1983	03/16/1989
Silver City	190207	09/04/1985	09/04/1985

Presently there are no participating jurisdictions within Mills County in FEMA's Community Rating System.

The primary flood control structure in the county is the Missouri River levee system. This vital structure protects much of western Mills County from Missouri River flooding for over 20 miles. Below is a description of various past and current property protection projects within Mills County:

- **Acquisition projects** – Nottleman Island and St. Mary's along the Missouri River.
- **Elevation projects** – Dollar General, Mills County YMCA, former Hardee's restaurant, and several other commercial and residential projects throughout the county.
- **Structural relocation projects** – One in Emerson.
- **Floodproofing projects** – None.
- **Other property protection projects** – None.

Relevant Community Plans, Ordinances and Studies

Mills County completed a comprehensive land use plan, which is the primary long range planning document for the county, as well as a zoning ordinance and subdivision regulations to provide for managed, orderly growth and development within the county. The zoning ordinance classifies land within one of the following land use districts: Agricultural and Conservation, Residential, Commercial, and Industrial. The subdivision ordinance outlines the processes and procedures necessary for the proper division and development of land under county jurisdiction.

The Cities of Emerson, Glenwood, Malvern, Pacific Junction, and Silver City have developed and currently maintain floodplain ordinances. In addition, Emerson, Glenwood, Hastings, and Malvern have adopted and enforce zoning ordinances. Mills County, including all legally incorporated jurisdictions, will regularly maintain the Multi-Jurisdictional PDM Plan once it has been formally approved by Iowa Homeland Security and Emergency Management Division (Iowa HSEMD) and FEMA.

Recreation
The Mills County Conservation Board is responsible for the care and maintenance of 10 county parks and other similar facilities. The conservation staff consists of three full time and three part time employees. The sites are described as:

- **Fisher Wildlife Area**, east of Malvern – 20 acre wildlife habitat on the west side of the West Nishnabotna River.
- **Glenwood Archeological Preserve**, southeast of Glenwood – 906 acre preserve that contains 107 recorded archeological sites.
- **Indian Creek Greenbelt Area**, south of Emerson – 12 acre greenbelt along Indian Creek featuring fishing access.
- **Lake George**, west of Emerson – 9 acre park with a 2 acre lake and picnic area.
- **Mile Hill Lake**, west of Glenwood – 29 acre park featuring a 10 acre lake, gravel boat ramp, fishing dock, walking trails, and a handicap accessible scenic overlook.
- **Pony Creek Park**, west of Glenwood – 53 acre park with access to an 82 acre lake. Park features include a campground, picnic areas, playgrounds, hiking trails, and a small scenic overlook. The Conservation Board offices and various buildings are also located at Pony Creek Park. The site is listed on the National Register of Historic Places.
- **Ray Thomas Wildlife Preserve**, north of Hastings – 90 acre wildlife preserve featuring a 19 acre restored prairie. There are no facilities or trails.
- **Wabash Trace Nature Trail**, crosses southeast through the county with access points in Silver City and Malvern – 25 mile multipurpose trail with 300 acres of adjacent park space.
- **West Oak Forest**, north of Pacific Junction – 308 acre preserve featuring a variety of habitats indicative of the Loess Hills. The site is listed on the National Register of Historic Places.

Each incorporated city in Mills County maintains at least one public park or recreational facility with local funds and staff. The following is a list of compiled public recreational spaces per incorporated city:

Emerson
Bass Park – Highway 59
Evan's Park – Morton Avenue & King Street

Glenwood
Glenwood Golf Course – 57073 240th Street
Glenwood Lake Park – 107 Sharp Street

Hastings
One acre public park

Henderson
Public Park – West & Maple Streets

Malvern
Boehner Park
Fairview Golf Course – 61453 315th Street
Mills County Fairgrounds
Wabash Trace Nature Trail Access

Pacific Junction
PJ Memorial Park – 900 block of Lincoln Ave
Whistlestop Park – 500 block of Lincoln Ave

Silver City
Centennial Park – Main Street
Silver City Community Park

Employment
Table 12 includes the Mills County area's top employers by number of employees and Table 13 shows select employment figures obtained from the American Community Survey.

Table 12: Area Top Employers

Employer	Location	Industry	Employees
Glenwood Resource Center	Glenwood	Human Services	940
Glenwood Community School District	Glenwood	Education	385
Five Star Quality Care Inc.	Glenwood	Human Services	250
Bunge Corporation	Mills County	Ag Processing	160

Mills County	Glenwood	Government	125
East Mills Community School District	Hastings/Malvern	Education	110
Glen Haven Nursing Home	Glenwood	Human Services	90
A&M Green Power	Pacific Junction	Ag Equipment	57
No Frills Supermarket	Glenwood	Grocery	48
Glenwood State Bank	Glenwood	Banking/Finance	43
Vander Haag's	Mills County	Trucking Sales	25

Source: Glenwood Area Chamber of Commerce

In Mills County, the total number of businesses located in the designated special flood hazard area is unknown. The county also has a sizable amount of land designated as the 500-year floodplain. It is unknown how many at risk businesses have flood insurance.

Table 13: Employment and Occupation Counts

Employment	
In Labor Force	7,902
Civilian	7,807
Employed	7,480
Unemployed	327
Armed Forces	95
Occupation	
Civilian employed population 16 years or older	7,480
Management, business, science, and arts occupations	2,243
Service occupations	1,553
Sales and office occupations	1,731
Natural resources, construction, and maintenance occupations	944
Production, transportation, and material moving occupations	1,009

Source: U.S. Census; American Community Survey, 2006-2010

Economic Conditions

Mills County is one of the smallest and rural counties in the Omaha-Council Bluffs Metropolitan Area. According to the 2007 USDA Census of Agriculture, there are 511 farms in Mills County with an average size of 385 acres. The average net cash income per farm operation is $82,030. Mills County has an extremely limited tax generating retail base. Because of its proximity to the Omaha area, most Mills County citizens do much of their spending closer to Omaha/Council Bluffs. The Summary of Economic Trends, published annually by Iowa State University, indicates that retail trade is Mills County's slowest growing industry (Table 14 shows retail sales tax for each incorporated city). Although poverty and unemployment rates are low, Mills County usually ranks at or near the bottom of the State of Iowa in per capita retail sales. Mills County also has virtually no manufacturing industry.

Table 14: Retail Sales Tax by Jurisdiction

Jurisdiction	Taxable Sales	Computed Tax
Emerson	$8,451,083	$507,065
Glenwood	$35,586,534	$2,135,192
Hastings	$429,259	$25,756
Malvern	$4,305,650	$258,339
Pacific Junction	$2,442,570	$146,260
Silver City	$588,480	$35,309
Other	$2,687,185	$159,725
TOTAL	$54,481,761	$3,267,645

Source: Iowa Department of Revenue, FY 2010

Development Patterns

A countywide land use can map can be found in Appendix H. Land is classified by agriculture/open land, commercial, industrial, and residential use. Much of the unincorporated county is agriculture or forest/grass land. There are concentrations of industrial and commercial land uses adjacent to Interstate 29.

Agriculture and Open Land

Agriculture is the dominant land use in Mills County. Most land is cultivated for corn and soybeans but some areas are used for pasture. The areas comprising of the Loess Hills are largely undeveloped due to steep bluffs, slopes and upland ridges. Wetlands and forested areas are located along rivers and streams. Scenic views and unique geological characteristics can provide increased opportunities for tourism potential.

Commercial

Commercial use comprises a small portion of Mills County land. Most commercial development is concentrated along Interstate 29 and Highway 34, near the Cities of Glenwood, Malvern and Pacific Junction. Commercial uses consist of implement dealers, auto service, retail, and restaurant/entertainment. Construction is currently underway on a bridge over the Missouri River that will be routed to Highway 34. This bridge will provide for increased commercial development opportunities.

Industrial

Most industrial uses in Mills County are located along the north side of Highway 370 and east of Interstate 29, including a Bunge biofuel facility which is the largest industrial site in Mills County and one of the largest in the Omaha-Council Bluffs area. Other industrial uses are concentrated near Pacific Junction. There are various farming facilities and grain storage operations located throughout the county.

Residential

Residential development is the second most prevalent land use in Mills County. Demand for increased residential development is manifesting in areas northwest of Glenwood and north to the county line. Such development to date has been generally decentralized. While new housing development increases the county's tax base, it also places additional demands on utilities, infrastructure, and essential services. Given the fact that many county and city emergency responders are volunteers and funding for their equipment and training can be limited, an important consideration as development continues to increase will be the ability to adequately staff and maintain emergency response units countywide. Additionally, increased development could impact availability of water resources and preservation of lands intended to protect currently developed areas. Continued vigilance by all county officials and local leaders will be critical in order to maintain the long-term viability and appeal of Mills County as a whole.

Development Changes

Development in Mills County over the last five years has been generally slow. Slow development trends can be mainly attributed to the economic downturn, particularly in the housing market, that began in the United States in 2007/2008. The subdivision Hickory Ridge near Glenwood has been the primary source of residential development in Mills County in recent years. A&M Green Power, an agricultural machinery supplier, opened in Glenwood in 2010 and supplements operations at the company's Malvern location. No development has occurred or is planned to occur in any known hazard areas.

IV. HAZARD ANALYSIS AND RISK ASSESSMENT

Overview

This section reviews a variety of potential hazards specifically impacting the Mills County area, including descriptions of past events for each particular hazard. Hazardous events have been a common occurrence throughout Mills County, affecting most of the unincorporated area as well as the majority of the county's incorporated cities. In fact, Mills County has been included in 15 recorded Presidential Disaster Declarations. Thirteen of the disaster declarations have resulted from thunderstorms and/or flooding. Flooding, by natural or manmade means, continues to remain a high priority hazard throughout Mills County. Flooding hazards were vigorously analyzed in the development of this plan in response to the 2011 Missouri River flood and it is expected flooding will continue to be thoroughly discussed in the hazard analysis and risk assessment section of future plan.

Disaster declarations are listed below:

- Flood, May 25, 2011 — Presidential Declaration FEMA DR-1998-IA
- Severe Storms, June 1-August 31, 2010 — Presidential Declaration FEMA DR-1930-IA
- Severe Storms, May 25-August 3, 2008 — Presidential Declaration FEMA DR-1763-IA
- Severe Storms, May 5-7, 2007 — Presidential Declaration FEMA DR-1705-IA
- Severe Storms, May 19-June 24, 2004 — Presidential Declaration FEMA DR-1518-IA
- Summer Storm, May 13, 2001 — Presidential Declaration FEMA DR-1367-IA
- Flash Flood, August 6-7, 1999 — Presidential Declaration FEMA DR-1282-IA
- Flood, June 14-23, 1998 — Presidential Declaration FEMA DR-1230-IA
- Winter Storm, October 25-26, 1997 — Presidential Declaration FEMA DR-1191-IA
- Flood, June 15-July 23, 1996 — Presidential Declaration FEMA DR-1133-IA
- Flood, July 8-9, 1993 — Presidential Declaration FEMA DR-0996-IA
- Ice Storm, December 26, 1991 — Presidential Declaration FEMA DR-928-IA
- Storms/Flash Flood, July 17, 1987 — Presidential Declaration FEMA DR-795-IA
- Severe Storms/Flood, September 26, 1972 — Presidential Declaration FEMA DR-354-IA
- Flood, April 22, 1965 — Presidential Declaration FEMA DR-193-IA

Flood Hazard Areas and Repetitive Loss Properties

Presently, the number of structures in rural Mills County located in the 100-year floodplain is unknown. The number of these structures that are protected by flood insurance is not known. The following provides estimates of structures located in flood hazard areas per incorporated city:

Emerson: Indian Creek on the south end of Emerson can cause river/stream flooding. There are five residences located within the 100-year floodplain and it is unknown how many are protected by flood insurance. The fire station and a business that maintains some hazardous materials are also located in the floodplain. There would be minimal damage in the event of a river or stream flood, though transportation could be disrupted as water would likely cover much of South Avenue and some of U.S. Highway 59. Emerson's current effective flood map date provided by FEMA is December 17, 1987.

Glenwood: Keg Creek flows northeast to southwest through Glenwood, thereby placing a significant portion of the city adjacent to the creek in the flood hazard area. It is currently estimated that there are 140 structures in Glenwood located in the 100-year floodplain, including 50 single-family residences, three multi-family apartment complexes, and various commercial properties. The number of structures protected by flood insurance is unknown. Glenwood's current effective flood map date provided by FEMA is May 17, 1982.

Hastings: The Nishnabotna River is located west of Hastings and only a small portion of the city is in a flood hazard area. Hastings has developed away from the flood hazard area and the risk of flooding from the Nishnabotna River is minimal. There are currently no structures or critical facilities in Hastings located in the 100-year floodplain. Hastings's current effective flood map date provided by FEMA is September 16, 1982.

Henderson: There are no special flood hazard areas in Henderson identified by FEMA.

Malvern: Silver Creek flows north to south on the west end of Malvern. A significant portion of west and southwest Malvern is located in the 100-year floodplain. It is unknown how many structures are in the floodplain or how many residences are protected by flood insurance. Malvern's current effective flood map date provided by FEMA is September 16, 1982.

Pacific Junction: Pacific Junction is approximately two miles east of the Missouri River. Pony Creek runs through the west portion of Pacific Junction along 195th Street and Keg Creek flows about a half mile southeast of the city. The 100-year floodplain is limited to the area immediately surrounding Pony Creek, very little of which is problematic to city residents. Pacific Junction's current effective flood map date provided by FEMA is March 16, 1989.

Silver City: Although Silver Creek flows close to the eastern boundary of Silver City, only a small portion of undeveloped land is in the 500-year floodplain. Silver City's current effective flood map date provided by FEMA is September 4, 1985.

Floodplain maps for the county and incorporated cities are provided in Appendix F.

Within Mills County there are five properties included on the Repetitive Loss List maintained by FEMA. Three properties are located in the unincorporated portion of the county, and two single REP properties in Emerson and Glenwood. Strategies to address those properties are included in this plan.

Critical Facilities

Critical facilities are structures and infrastructure that a jurisdiction places a priority on protecting. Damage to these facilities can endanger life, put vulnerable populations at risk, and impact the delivery of vital services. Both the Mills County PDM Planning Committee and local planning groups identified countywide and community specific critical facilities. Many critical facilities, typically transportation routes, hospitals/clinics, hazardous materials ("hazmat") sites, etc, have overlapping importance for a county and municipality. These are listed under "Countywide" critical facilities. Community specific critical facilities are listed under each incorporated city. Critical facilities maps can be found in Appendix D of this plan.

Countywide

Facilities essential to the welfare of the entire population, especially following a hazard event:

- Mills County Courthouse/Emergency Mgmt. (also houses EOC and Comm. Center)
- Mills County Communications Tower
- Mills County Engineer's Office/Fueling Station
- Mills County Sheriff's Office/Jail
- Glenwood Police Station (Alternate EOC)*
- Oak Township Fire Station

Transportation Systems:

- BNSF/Missouri River Bridge
- US Highway 34

BNSF Railroad Line
Interstate 29
Interstate 29 Bridges/Overpasses (3)
Missouri River/Highway 370 Bridge
Missouri River/US Highway 34 Bridge
US Highway 59
US Highway 275/221st Street
US 34/BNSF Bridge (2)
US 34/West Nishnabotna Bridge

Utility Systems/Hazmat Sites:

Agriland (Malvern)
Bunge Corporation
CenturyLink Communications (Glenwood)
CenturyLink Communications (Malvern)
Farm Service Co. (Malvern)
Farm Service Co. (Silver City)
Feed Energy (Pacific Junction)
Glenwood Wastewater Treatment Plant*
Glenwood Water Treatment Plant**
Henderson Farm Service
Loess Hills Landfill
Natural Gas Pipeline of America
Pacific Junction Farm Service
United Suppliers (Pacific Junction)
Vinton Fertilizer (Pacific Junction)

Other Vulnerable Population Centers:

East Mills Community Schools (4 schools)^
Faith Ridge Life Center
Glen Haven Nursing Home
Glenwood Community Schools (4 schools)^^
Glenwood Lake Park & Campground*
Glenwood Resource Center
Hospice with Heart
Loess Hills Estates
Linnwood Estates Assisted Living Facility
Mid-America Motorplex
Mills County Fairgrounds
Mills County YMCA
On With Life (Rehabilitation center)
Park Place Nursing Home
Vinton Campground

*Located in 100-year Floodplain
**Located in 500-year Floodplain
^East Mills Community School District has a total enrollment of approximately 550 students
^^Glenwood Community School District has a total enrollment of approximately 2,000 students

Emerson

Facilities essential to the welfare of the entire population, especially following a hazard event:

City Hall/Library
Community Building
Fire Station*
Rescue Station

Transportation Systems:

County Highway 34
King Street

Utility Systems/Hazmat Sites:

Viner's Inc.*
Warning Siren
Water Tower
Water Treatment Facility
Water Wells

Other Vulnerable Population Centers:

Bass Park
Business District
Churches (3)

Glenwood

Facilities essential to the welfare of the entire population, especially following a hazard event:

- City Hall
- Fire Station
- Police Station*
- Post Office

Transportation Systems:

- County Highway 385
- Locust Street

Utility Systems/Hazmat Sites:

- CenturyLink (phone switching terminal)
- GRC 10,000 Gallon Propane Tank
- Mid-American Power Grid (1 mile NE of town)
- Pump Station
- Sulfuric Acid Facility
- Trajet (storage tanks)
- Water Towers (5)
- Wastewater Treatment Facility
- Water Treatment Facility

Other Vulnerable Population Centers:

- Churches (9)
- Five Star Quality Care
- G.C.S.D. High School
- G.C.S.D. Middle School
- Glenwood Heights Apartments
- Glen Haven Home
- Kid's Place (day care part of G.C.S.D.)
- Linnwood Estates Assisted Living
- Loess Hills Apartments
- North Glen Apartments
- Northeast Elementary School
- West Elementary School
- Wood Glen Apartments

Hastings

Facilities essential to the welfare of the entire population, especially following a hazard event:

- City Hall
- Fire Department

Transportation Systems:

- County Highway M16

Utility Systems/Hazmat Sites:

- Scoular Elevator
- Water Tower
- Water Treatment Facility
- Water Wells

Other Vulnerable Population Centers:

- East Mills Middle School
- Nishna Valley Elementary School

Henderson

Facilities essential to the welfare of the entire population, especially following a hazard event:

- City Hall/Community Center/Library
- Fire Department

Transportation Systems:

- County Road H12
- County Road M21

Utility Systems/Hazmat Sites:

- Farm Service Company
- Telephone Building
- Water Tower
- Water Wells

Wastewater Lagoon

Other Vulnerable Population Centers:

- Business District
- City Park

Malvern

Facilities essential to the welfare of the entire population, especially following a hazard event:

- City Hall
- Community Center
- Fire Station
- Library (National Historic Registry)
- Medical Clinic
- Rescue Unit Building

Transportation Systems:

- County Road L66 (Main Street)

Utility Systems/Hazmat Sites:

- Agriland
- Casey's General Store (gas station)
- CenturyLink (phone switching terminal)
- Farm Service
- Maintenance Building
- Power Grid
- Swimming Pool
- Wastewater Treatment Plant*
- Water Tower
- Water Treatment Plant

Other Vulnerable Population Centers:

- Business District (Main Street)
- Chantry Elementary School
- East Mills High School
- Faith Ridge Life Center

Pacific Junction

Facilities essential to the welfare of the entire population, especially following a hazard event:

- Ambulance Building
- City Hall
- Community Hall
- Fire Station
- Post Office

Transportation Systems:

- County Highway L31

Utility Systems/Hazmat Sites:

- Lift Station/Pump Station
- Farm Service
- Maintenance Building
- Phone Service Building
- Wastewater Treatment Plant
- Water Treatment Plant

Other Vulnerable Population Centers:

- Churches (2)
- P.J. Memorial Park
- Whistlestop Park

Silver City

Facilities essential to the welfare of the entire population, especially following a hazard event:

- City Hall
- Fire and Rescue Station
- Library
- Post Office

Transportation Systems:
County Road L55

Utility Systems/Hazmat Sites:

CenturyLink (phone switching terminal)	Lift Station/Lagoons
Farm Service	Water Treatment Plant

Other Vulnerable Population Centers:

American Legion Hall	Church (1)
Centennial Park	Wabash Trace Nature Trail

Hazard Profiles

In addition to the disaster events listed on previous pages, the Mills County PDM Planning Committee reviewed a list of 40 potential hazards (as listed in the State of Iowa Plan). For each of these hazards (listed in Table 15), the Committee discussed previous occurrences in the countywide area. They then reviewed factors present that could result in future occurrences. The Committee identified 40 of the 40 hazards as "Has Occurred" or "May Occur". Hazard identification for each incorporated city is in Appendix J.

Hazard profiles were conducted on a planning area wide basis rather than analyzing each hazard for each individual jurisdiction. Unique conditions within the participating jurisdictions are noted in each hazard profile. For example, flooding will impact jurisdictions with Special Flood Hazard Areas more than those without such areas. Unless otherwise stated in the risk analysis, the school districts will have the same risk analysis as that of the underlying jurisdiction in which the school district assets are located. School district assets which are uniquely impacted by a given hazard will be identified in the hazard profiles. The following criteria were used to score the Hazard Profile Worksheets:

Historical Occurrence

How many times has this hazard occurred in the past? Each hazard may or may not have a comprehensive documented historical record. Because each hazard has a different period for which historical occurrences have been collected, each hazard was prorated to a 25 year period. Local, state, and federal government agencies have increasingly improved record-keeping with respect to incidents, accidents, and disasters which affect people and property.

Historical Occurrence: The number of times that a hazard has occurred in the past 25 years.

Score	Description
1	Less than 4 occurrences in the past 25 years
2	4-7 occurrences in the past 25 years
3	8-12 occurrences in the past 25 years
4	More than 12 occurrences in the past 25 years

Probability

The probability score reflects the estimated frequency of the hazard occurrence in the future. Many times the historical occurrence can be extrapolated into the future, but sometimes this is not accurate. If a hazard or its impacts have been mitigated, the future occurrence will most likely be less than the historical occurrence. The opposite can also be true. There may be new hazards that present themselves to the county. For example, a new industry that produces a hazardous material may have moved into the county where before, the hazard was not there.

Probability: Reflects the likelihood of the hazards occurring again in the future, sometimes without regard to the hazard's historical occurrence.

Score		Description
1	Unlikely	Less than 1% probability in the next 100 years
2	Possible	Between 1% and 10% probability in the next year, or at least one chance in the next 100 years
3	Likely	Between 10% and 100% probability in the next year, or at least one chance in the next 10 years
4	Highly Likely	Nearly 100% chance in the next year

Vulnerability

The vulnerability score represents adverse impacts to citizens, visitors, and emergency responders. Many hazards occur which do not significantly impact people.

Vulnerability: Measure of the percentage of people that will be adversely affected by the occurrence of the hazard.

Score		Description
1	Negligible	➢ Less than 10% of the total population of the jurisdiction ➢ No risk to response personnel, or no response needed
2	Limited	➢ 10% to 25% of the total population of the jurisdiction ➢ Minimal risk to response personnel
3	Critical	➢ 25% to 50% of the total population of the jurisdiction ➢ Moderate risk to response personnel
4	Catastrophic	➢ More than 50% of the total population of the jurisdiction ➢ High risk to response personnel

Maximum Geographic Extent

The maximum geographic extent is the percentage of a jurisdiction impacted by a hazard. As an example, a snowstorm will likely impact the entire county, whereas a small hazardous materials incident may cover only a few city blocks.

Maximum Geographic Extent: The potential spatial extent of the impacted area.		
Score		**Description**
1	Negligible	Less than 10% of the jurisdiction
2	Limited	10% to 25% of the jurisdiction
3	Critical	25% to 50% of the jurisdiction
4	Catastrophic	More than 50% of the jurisdiction

Severity of Impact

The severity of impacts is the most complex of the scoring guides. Many considerations must be accounted for including, at a minimum, the following:

A. Health and safety of persons in the affected area at the time of the incident (injury and death);
B. Health and safety of personnel responding to the incident;
C. Continuity of operations;
D. Property, facilities, and infrastructure;
E. Delivery of services;
F. The environment;
G. Economic and financial condition;
H. Regulatory and contractual obligations; and
I. Reputation of the entity.

This scoring guide was provided to help the PDM Planning Committee provide an appropriate score for this complex section. It was found that impacts to certain areas call for a score in one category while impacts to another area call for a different score. Providing an appropriate score for that hazard characteristic in the overall scale of one (1) through (4) was the overriding factor. The scoring guides were provided as guides only, and served to provide a uniform frame of reference for all users of the assessment tool.

Severity of Impact: Assessment of severity in terms of injuries and fatalities, personal property, and infrastructure.		
Score		**Description**
1	Negligible	➢ Few if any injuries ➢ Minor quality of life lost with little or no property damage ➢ Brief interruption of essential facilities and services for less than 4 hours ➢ No environmental impact ➢ No impact to reputation of the jurisdiction
2	Limited	➢ Minor injuries and illness ➢ Minor or short-term property damage which does not threaten structural stability ➢ Shutdown of essential facilities and services for 4-24 hours ➢ Minor short-term environmental impact ➢ Very limited impact to reputation of the jurisdiction
3	Critical	➢ Serious injury and illness ➢ Major or long-term property damage which threatens structural stability ➢ Shutdown of essential facilities and services for 24-72 hours ➢ Minor long-term environmental impact ➢ Moderate impact to reputation of the jurisdiction
4	Catastrophic	➢ Multiple deaths ➢ Property destroyed or damaged beyond repair ➢ Complete shutdown of essential facilities and services for 3 days or more ➢ Major long-term environmental impact ➢ Severe impacts to the reputation of the jurisdiction

Speed of Onset

The speed of onset is the amount of warning time available before the hazard occurs. This should be taken as an average warning time. For many of the atmospheric natural hazards there is a considerable amount of warning time as opposed to the human caused accidental hazards that occur instantaneously or without any significant warning time.

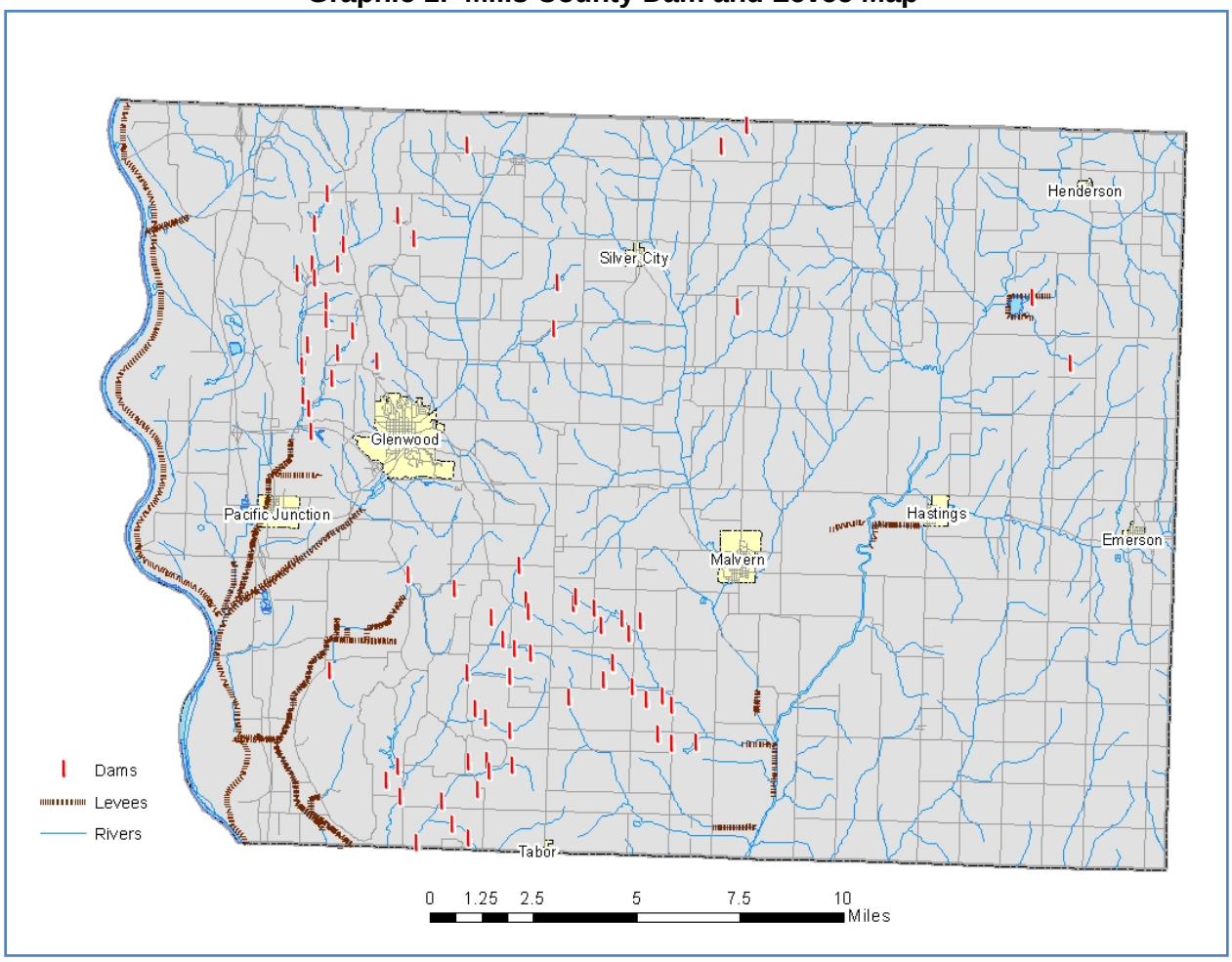
Speed of Onset: Rating of the potential amount of warning time that is available before the hazard occurs.	
Score	**Description**
1	More than 24 hours warning time
2	12-24 hours warning time
3	6-12 hours warning time
4	Minimal or no warning

Table 15: Hazard Identification

Natural Hazards			
Has Occurred	**May Occur**	**Absolutely Will Not Occur**	**Hazard**
	X		Dam Failure
X			Drought
	X		Earthquake
	X		Expansive Soils
X			Extreme Heat
X			Flash Flood
X			Grass or Wild Land Fire
X			Hailstorm
X			Landslide/Erosion/Slope Failure
X			Levee Failure
X			River/Stream Flood
X			Severe Winter Storm
	X		Sink Holes
X			Thunderstorm and Lightning
X			Tornado
X			Windstorm
Human-Caused Accidental Hazards			
	X		Air Transportation Incident
X			Communications Failure
X			Energy Disruption
X			Fixed Hazardous Materials Incident
	X		Fixed Radiological Incident
X			Highway Transportation Incident
X			Pipeline Incident
X			Rail Transportation Incident
X			Transportation Hazardous Materials Incident
	X		Transportation Radiological Incident
X			Waterway/Water Body Incident
Human-Caused Purposeful Hazards			
	X		Enemy Attack
	X		Public Disorder
	X		Terrorism – Biological (Includes Agricultural Terrorism)
	X		Terrorism – Chemical
	X		Terrorism – Conventional
	X		Terrorism – Cyber
	X		Terrorism – Radiological
Other/Combination Hazards			
	X		Animal Disease Epidemic
	X		Human Disease Epidemic
	X		Plant/Crop Disease Epidemic
X			Structural Failure
X			Structural Fire

Dam Failure		
Definition	A break in, or imposed threat from, any water retention fixture which may endanger population downstream of the containment area.	
Description	Dams are constructed for a variety of uses, including flood control, erosion control, water supply impoundment, hydroelectric power generation, and recreation. Flooding, operating error, poor construction, lack of maintenance, damage due to burrowing animals, vandalism, terrorism, and earthquakes can cause dam failure. Dams are classified into three categories based on the potential risk to people and property should a failure occur: High Hazard - If a dam was to fail, lives would be lost and extensive property damage could result; Moderate Hazard - Failure could result in loss of life and significant property damage; and Low Hazard - Failure results in minimal property damage only. The classification may change over time because of development downstream from the dam since its construction. Older dams may not have been built to the standards of its new classification. Dam hazard potential classifications have nothing to do with the material condition of a dam, only the potential for death or destruction due to the size of the dam, the size of the impoundment, and the characteristics of the area downstream of the dam. The Iowa Department of Natural Resources tracks all dams in the State of Iowa with a height of at least 25 feet or a total storage of at least 50 acre feet of water. The inventory excludes all dams less than 6 feet high regardless of storage capacity and dams less than 18 acre feet of storage regardless of height.	
Historical Occurrence	There have been no occurrences of dam failure in Mills County in the last 25 years.	1
Probability	In the event of failure of one of the six U.S. Army Corps of Engineer regulated dams on the Missouri River in South Dakota, all 500-year floodplains and adjoining low laying areas near the river could be flooded within 24 hours. There are several watersheds in the county with significant impoundments, though there are few population centers downstream. The Pony Creek watershed features several dams, including 20 acre Mile Hill Lake and 84 acre Pony Creek Lake, known by county officials as Pony Creek Dam Sites #21 and #30. The dams are beginning to show signs of age and wear, increasing the risk of failing with time. The present probability of these dams failing in the foreseeable future is low. Overall, there are 75 total dams of varying size in Mills County. Graphic 1 on the proceeding page shows dams (and levees) in the county.	2
Vulnerability	Pacific Junction is most at risk from an upstream earthen dam failure. Pacific Junction is protected from Pony Creek by a levee, however, dam failure could cause the creek to overwhelm the levee causing significant damage to the city and surrounding farmland. Farmland in extreme southern Mills County may be vulnerable to dam failure in the Waubonsie Creek watershed, though there is very little population in that area. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	Flooding as a result of dam failure would affect areas in and around Pacific Junction. Areas in the extreme southern portion of Mills County could be affected by a dam failure on the Waubonsie Creek watershed, though few residences or businesses would be in danger. See floodplain maps in Appendix F. Also see Graphic 1 on the proceeding page for a visual reference of dams in Mills County.	2
Severity of Impact	A. Citizens most at risk from dam failure are those downstream of dam sites and those in the 100 or 500-year floodplains. Motorists are also at risk when driving on roads near creeks and streams. B. Rescuers are at some risk when attempting to work in rising and swiftly moving currents associated with dam failure. C. None directly, but operations could be affected by communication loss, critical facility damage/destruction, etc. D. Depends upon the downstream property, facilities, and infrastructure. Worst case scenario could involve whole subdivisions being swept away by the fast flowing water. E. If the water being held by the dam was used for source water, a secondary source of water may be needed until the water level could be restored. F. Much scouring would take place and erosion would be extensive. G. Most impacts are indirect due to disruption of business and damage to infrastructure on which industry and services rely on. H. No direct impact to contractual obligations. I. Victims sometime will blame development or monitoring practices. Inspection records must be kept up to date to demonstrate that proper maintenance was being done.	2
Speed of Onset	Given the distance of the dams affecting the county to vulnerable areas, most businesses and residents would have less than an hour of lead time to prepare and/or evacuate. However, while the actual failure would be sudden, county officials are generally aware of areas experiencing heightened risk days in advance.	3

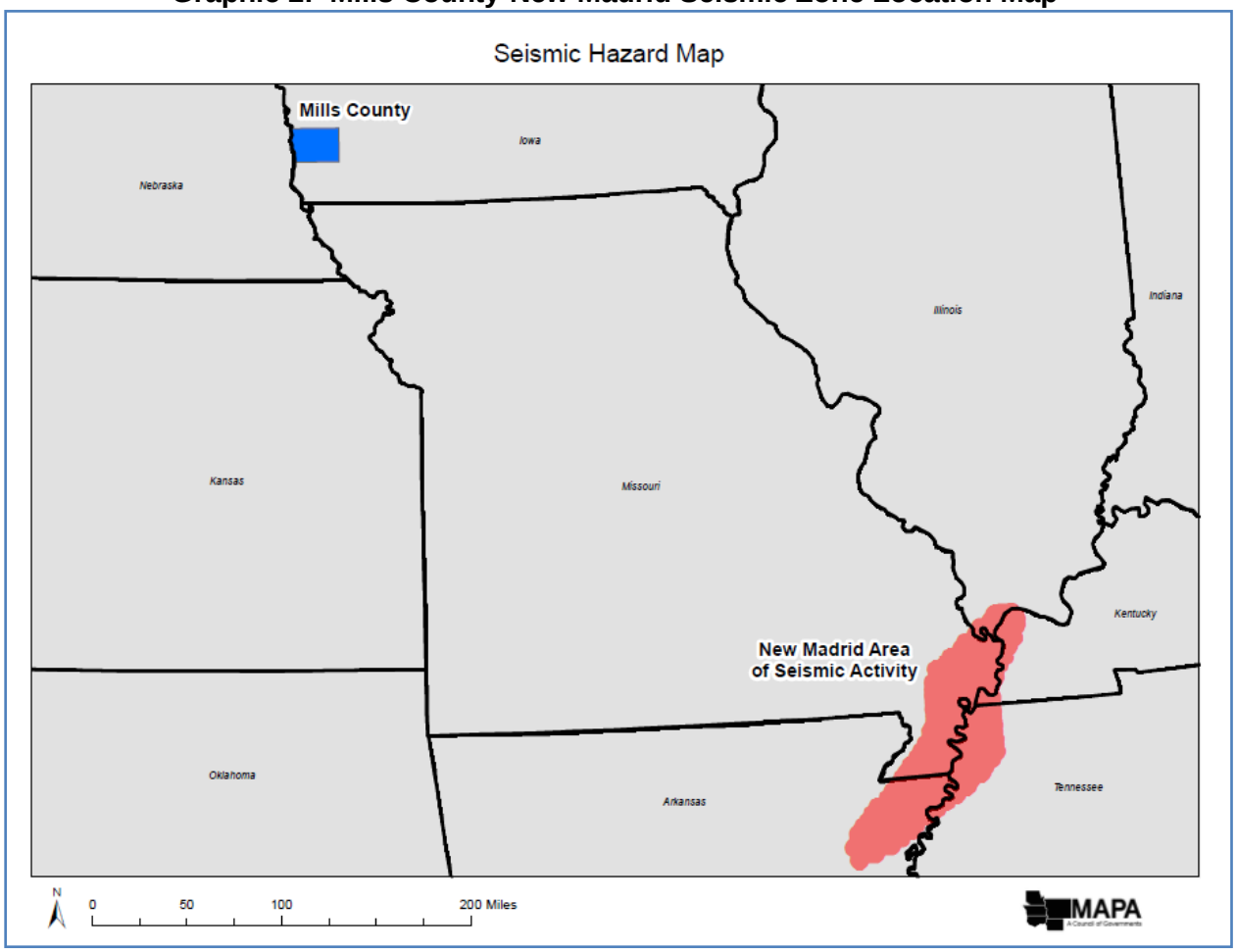
Graphic 1: Mills County Dam and Levee Map



Drought		
Definition	A period of prolonged lack of precipitation for weeks at a time producing severe dry conditions.	
Description	There are three types of drought conditions that are relevant to Iowa: Meteorlogic drought, which refers to precipitation deficiency; hydrological drought, which refers to declining surface water and groundwater supplies; and agricultural drought, which refers to soil moisture deficiencies. Droughts can be spotty or widespread and last from weeks to a period of years. A prolonged drought can have serious economic impact on a community. Increased demand for water and electricity may result in shortages of resources. Moreover, food shortages may occur if agricultural production is damaged or destroyed by a loss of crops or livestock. While droughts are generally associated with extreme heat, droughts can and do occur during cooler months.	
Historical Occurrence	Over the past 25 years, drought or near drought conditions affected the Mills County area during five periods including 1983, 1984, 1989, 2000-2003, and 2005-2006.	2
Probability	Managed flooding of the Missouri River by the U.S. Army Corps of Engineers from May through October, 2011 has inundated the area with record levels of water. It is likely a drought will occur again at some point, though the likelihood in the immediate future is low.	3
Vulnerability	Drought events have not produced long-term adverse effects in Mills County during the last 25 years. The municipal water systems in the county utilize groundwater and are somewhat protected from surface water fluctuations associated with drought. However, many of the county's residents are served by private water wells, which are relatively shallow and could run dry in the event of a severely prolonged drought. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	Drought conditions are generally uniform on a region-wide scale. There would be little variance in the scale of drought throughout the Mills County area. Droughts are monitored and classified by the **Palmer Drought Index** (PDI). The PDI is a measurement of dryness based on recent precipitation and temperature. Droughts are classified by the following conditions: Extreme Drought (-4.00 and below); Severe Drought (-3.99 to -3.00); Moderate Drought (-2.99 to -2.00); Mid-Range (-1.99 to 1.99); Moderately Moist (2.00 to 2.99); Very Moist (3.00 to 3.99); and Extremely Moist (4.00 and above). One of these conditions will affect 100% of Mills County at a given time.	4
Severity of Impact	A. There would be few if any health impacts to people in the affected area because of secondary sources of water. Health impacts would be more significant on livestock without auxiliary water supplies. B. Response personnel are at minimal risk. C. Continuity of operations would not be affected. D. Property losses would be limited to livestock and crops to the agricultural community. Facilities would not be impacted. Infrastructure could be affected in areas of expansive soils due to drying soils, lower water levels around dams, etc. E. Delivery of services would be limited to source water delivery and those services that consume large amounts of water. F. Drought is a naturally occurring hazard. The environmental impacts are usually short-term and the natural environment is used to drought cycles. Drought more directly affects agricultural crops, livestock, natural vegetation, wildlife, and stream flows (fish and aquatic vegetation). G. Drought can lead to significant impacts to the agricultural economy. Because of Mills County's reliance on the agricultural economy, the economic and financial impacts would certainly ripple out into other sectors. Rural areas can be especially affected by long-term drought. If restrictions are put on manufacturers that use large amounts of water, such as Bunge Corporation, the local economy can be impacted that way as well. H. Regulations in the agricultural sector can be and are often adjusted to provide some lenience for adverse conditions for livestock and crop loss. I. Drought is a naturally occurring hazard and is "out of the hands" of local and state officials. Local jurisdictions can have their reputation damaged if they do not provide source water to residents or respond in a satisfactory manner to provide an alternative supply.	2
Speed of Onset	Drought events occur slowly, over a period of weeks and months. Of all the hazards profiled in this plan, a drought is probably the slowest and most predictable hazard that could affect Mills County.	1

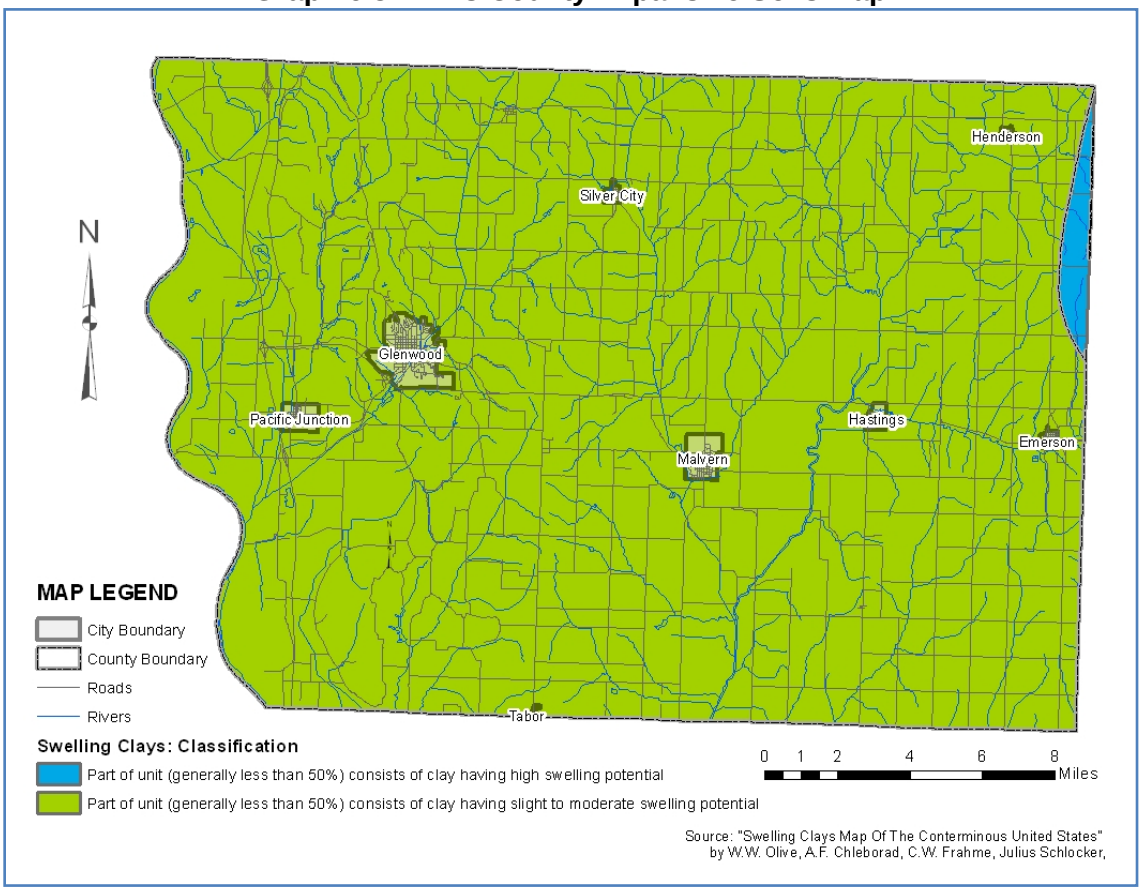
Earthquake		
Definition	Any shaking or vibration of the earth caused by the sudden release of energy that may impose a direct threat on life and property.	
Description	An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. This shaking can cause buildings and bridges to collapse; disrupt gas, electric, and phone service; and sometimes trigger landslides, flash floods, and fires. The three general classes of earthquakes now recognized are: tectonic, volcanic, and artificially produced.	
Historical Occurrence	There have been no reported earthquake events in Mills County in the past 25 years. However, the most recent earthquake in Iowa occurred near Shenandoah, IA on July 16, 2004. This event classified as III on the I through XII Mercalli Intensity Scale (see maximum geographic extent).	1
Probability	The nearest threat of an earthquake in Mills County is the New Madrid Seismic Zone. Earthquakes that occur in the New Madrid Seismic Zone can potentially threaten parts of Arkansas, Illinois, Indiana, Kentucky, Mississippi, Missouri, and Tennessee. Graphic 2 on the proceeding page shows the proximity of Mills County to the New Madrid Zone.	1
Vulnerability	It is likely there would be little to no loss of life in the event of an earthquake in a seismic zone. The nearest zone, New Madrid, is 500 plus miles from Mills County. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	1
Maximum Geographic Extent	Maximum geographic extent for an earthquake can be estimated by reviewing magnitude and scale of previous events in areas of similar geography and population density. The **Richter Magnitude Scale** is used to classify earthquake magnitude as follows: Micro (less than 2.0); Minor (2.0-3.9); Light (4.0-4.9); Moderate (5.0-5.9); Strong (6.0-6.9); Major (7.0-7.9); Great (8.0-9.9); and Massive/Epic (10.0 to more). The **Mercalli Intensity Scale** quantifies the effect of an earthquake on the Earth's surface, humans, objects of nature, and manmade structures on a scale of I (not felt) to XII (total destruction). The last earthquake to occur near Mills County in recent time was classified as III-"slight," which is described by the U.S. Geological Survey as "Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated." An earthquake may likely be felt across all of Mills County, though many may not recognize it as an earthquake. Geographic extent will depend on the magnitude and intensity of the event.	4
Severity of Impact	A. Ground shaking should be very minor and minimally threaten public health and safety. B. First responders should take extra precautions if aftershocks are reported, but there should not be a significant threat to the health and safety of rescuers. C. Continuity of operations would be affected only indirectly if communications were to be disabled. D. There is the possibility of noticeable shaking or structural shifting of poorly constructed buildings. No significant property damage is expected to occur from an earthquake in Mills County. E. Delivery of services such as water, gas, electricity, etc. may suffer minor, short-term delays. F. There could be potential for some localized underground pipe leaks or ruptures if tremors were strong enough. G. No known impact to the Mills County economy. H. Impacts would be limited to debris removal if any were produced. I. No known impact to jurisdictional reputation.	1
Speed of Onset	Generally, tremors associated with an earthquake will occur with virtually no warning.	4

Graphic 2: Mills County-New Madrid Seismic Zone Location Map



Expansive Soils		
Definition	Soils and soft rock that tend to shrink or swell excessively due to changes in moisture content.	
Description	The effects of expansive soils are most prevalent in regions of moderate to high precipitation, where prolonged periods of drought are followed by long periods of rainfall. However, because the hazard develops gradually and seldom presents a threat to life, expansive soils have received limited attention, despite their costly effects.	
Historical Occurrence	There have been no occurrences of expansive soils in Mills County in the last 25 years.	1
Probability	The probability of expansive soils is expected to be limited.	1
Vulnerability	The vulnerability to Mills County residents is likely negligible. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	1
Maximum Geographic Extent	The maximum extent of expansive soils to Mills County is likely negligible. According to "Swelling Clay Maps of the Conterminous United States," much of the soil in Mills County consists of clay having "slight to moderate swelling potential" (see Graphic 3). There are no incorporated or unincorporated jurisdictions containing soil that consists of clay having "high swelling potential."	1
Severity of Impact	A. No known impact to public health and safety. B. No known impact to first responder health and safety. C. No known impact to continuity of operations. D. The most extensive damage from expansive soils occurs to highways and streets. Houses and one-story commercial buildings are more apt to be damaged by the expansion of swelling than are multi-story buildings, which usually are heavy enough to counter swelling pressures. The most obvious manifestations of damage to buildings are sticking doors, uneven floors, and cracked foundations, floors, walls, ceilings, and windows. E. Utilities could be affected because of constant pushing and pulling resulting in cracks, breaks, and severing of underground infrastructure. F. Environmental impacts would be limited to spills and leaks of containment facilities. G. Economic and financial impacts would be felt by individual owners of buildings and facilities. These would occur over time and would not be a onetime impact. H. Building code requirements may impose due burden on construction to ensure proper performance of buildings and utilities in areas with expansive soils. I. No known impact to jurisdictional reputation.	1
Speed of Onset	This is a generally slow occurring hazard.	1

Graphic 3: Mills County Expansive Soils Map



Extreme Heat		
Definition	Temperatures (including heat index) in excess of 100 degrees Fahrenheit or 3 successive days of 90+ degrees Fahrenheit. A heat advisory is issued when temperatures reach 105 degrees and a warning is issued at 115 degrees.	
Description	A prolonged period of excessive heat and humidity. The heat index is a number in degrees Fahrenheit that tells how hot it really feels when relative humidity is added to the actual air temperature. Exposure to full sunshine can increase the heat index by at least 15 degrees. Extreme heat can impose stress on humans and animals. Heatstroke, sunstroke, cramps, exhaustion, and fatigue are possible with prolonged exposure or physical activity due to the body's inability to dissipate the heat. Urban areas are particularly at risk because of air stagnation and large quantities of heat absorbing materials such as streets and buildings. Extreme heat can also result in distortion and failure of structures and surfaces such as roadways and railroad tracks.	
Historical Occurrence	Mills County probably experiences at least one extreme heat event each summer. The duration and severity of that event varies from year to year, but the county generally experiences extreme heat on an annual basis.	4
Probability	During July 1995, the county suffered through its longest string of 100 degree days since July 1983. During this period area farmers and volunteer fire departments hauled extra water to cool livestock and prevent heat induced shock and death. Based on historical information, the county will almost certainly continue to experience an extreme heat event on an annual basis. Isolated days with extreme heat occur yearly, and the county has experienced heat waves from time to time and can expect similar conditions in future summers.	4
Vulnerability	The effects of extreme heat vary from event to event, but in almost all cases, the persons most at risk are the elderly, people who work outdoors, and households without air conditioning. Schools will dismiss early during extreme heat events, especially when conditions make it difficult for school officials to adequately cool buildings. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	3
Maximum Geographic Extent	Extreme heat will likely affect the entire county and possibly all of Iowa.	4
Severity of Impact	A. Extreme heat conditions can lead to heat stroke, dehydration and even death. B. Response personnel could suffer heat stroke and dehydration working in extreme heat conditions. C. None directly, see E. D. Transportation impacts include the loss of lift for aircrafts, softening of asphalt roads, buckling of highways and railways, and stress on automobiles and trucks (increase in mechanical failures). E. Electric transmission systems are impacted when power lines sag in high temperatures. High demand for electricity also outstrips supply, causing electric companies to have rolling black outs. The demand for water also increases sharply during periods of extreme heat. This can contribute to fire suppression problems for the county's volunteer fire departments. F. Livestock and other animals are adversely impacted by extreme heat. High temperatures at the wrong time inhibit crop yields as well. G. There is potential for economic costs in transportation, agriculture, production, energy, and infrastructure. These direct costs could impact many other economic sectors indirectly. H. No known impact to contractual obligations. I. No impact if response is adequate and timely.	2
Speed of Onset	As with other weather phenomena, periods of extreme heat are predictable within a few degrees within three days or so. Variations in local conditions can affect the actual temperature within a matter of hours or even minutes. The National Weather Service will initiate alert procedures when the heat index is expected to exceed 105 degrees Fahrenheit for at least two consecutive days.	1

Flash Flood		
Definition	A flood event occurring with little or no warning where water levels rise at an extremely fast rate.	
Description	Flash flooding results from intense rainfall over a brief period, sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces. Most flash flooding is caused by slow moving thunderstorms or thunderstorms repeatedly moving over the same area. Flash flooding is an extremely dangerous form of flooding which can reach full peak in only a few minutes and allows little or no time for protective measures to be taken by those in its path. Flash floodwaters move at very fast speeds and can roll boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. Flash flooding often results in higher loss of life, both human and animal, than slower developing river and stream flooding.	
Historical Occurrence	Mills County experienced numerous significant flash flood events over the past 25 years. On September 2, 1997, Glenwood received over four inches of rain overnight, resulting in flooding of some streets. In August 2002, over three inches of rain in a 24 hour period forced evacuations of some areas along Keg Creek due to rapidly rising waters. Significant flash flooding also occurred in 1993 as part of the widespread flooding problems experienced statewide that year. Mills County was included in two Presidential Disaster Declarations as a result of flash flooding: 1) **August 6-7, 1999, Presidential Declaration FEMA-1282-DR.** A rainstorm deposited up to 13 inches of rain on western and central Mills County in less than 24 hours on August 6 and 7, 1999. 2) **June 14-19, 1998, Presidential Declaration FEMA-1230-DR.** Flooding from record rains and thunderstorms on June 14, 1998 and additional severe thunderstorms on June 19, 1998 caused extensive damage to public infrastructure and homes in Mills County. Up to 13 inches of rain in an 18 hour period was recorded in eastern Mills County on Sunday, June 14. This torrent of rain followed one of the wettest springs on record. The ground was already saturated with water prior to June 14 and the subsequent torrential rains caused instantaneous and widespread flooding. By 1:00 p.m. June 14, creeks and rivers in central and eastern Mills County were above flood stage and rising. Silver Creek, normally two to five feet wide during wet seasons, was a raging torrent between one-quarter and one-third miles wide. Miles of county secondary roads and bridges were under fast moving water. Agricultural damage was extensive. Water from the East Nishnabotna destroyed 2,000 acres of crops. Floodwaters from other creeks and intermittent streams adversely affected another 9,000 acres of crops. Over 2,000 washed out farm terraces caused more damage to crops and cropland. The total agricultural damage was estimated at $2.7 million. Over the past 50 years, the Mills County area has experienced 19 significant flash flood events.	4
Probability	Land converted from fields or woodlands to roads, parking lots, lawns, etc loses its ability to absorb rainfall. Urbanization increases runoff two to six times over what would occur on natural terrain. Larger portions of the county around Glenwood are being developed with impervious surfaces. As development continues, the amount of runoff produced also increases. Unless measures are taken to control the amount of runoff (or slow its movement), flash flooding will continue and possibly increase. Storm sewer systems are necessary to carry increased runoff in certain areas. Flash floods in the East Nishnabotna and Keg-Weeping Water Watersheds are equally probable under the necessary conditions.	3
Vulnerability	Particularly at risk are those in low lying areas; close to dry creek beds or drainage ditches; near water; or downstream from a dam, levee, or storage basin. People and property in areas with insufficient storm sewers and other drainage infrastructure can also be put at risk because the drains cannot rid the area of the runoff quickly enough. Nearly half of all flash flood fatalities are auto related. Motorists often try to traverse water covered roads and bridges and are swept away by the current. Six inches of swiftly moving water can knock persons off their feet and only two feet of water can float a full sized automobile. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	3
Maximum Geographic Extent	People and property located in low lying areas and in areas with narrow stream channels, saturated soil, or on land with large amounts of impermeable surfaces are likely to be impacted in the event of a significant rainfall. Unlike areas affected by a river/stream flood, flash floods can impact areas far from the stream itself. Streets can become moving rivers and basements can fill with water in a matter of minutes.	3
Severity of	A. Flash floods take lives every year in the United States. Those especially vulnerable to flash flooding include people in low lying areas, people close to dry creek beds or	2

Impact	drainage ditches, people downstream or near water, and travelers in automobiles. There are no known fatalities from flash flooding in Mills County. B. Rescuers are at significant risk when attempting to work in swift moving floodwaters associated with flash flooding. C. Continuity of operations can be compromised at least temporarily during flash flooding or severe weather that precedes flooding. Impacts may include flooded critical facilities, downed power and communication, and blocked roadways. D. Personal property can be extensively damaged and destroyed by swift moving water. Land surrounding buildings can be scoured and structural integrity compromised. Because flash floodwater passes through premises quickly, damages similar to standing water are not as prevalent. However, flash floods cause abrasive type damages such as erosion and undercutting. E. Drainage and wastewater services can be compromised during flash flooding. Roadways may also be cut off by water or debris disbursed from floodwaters. F. Contaminated water is a primary environmental impact of flash flooding. Manmade objects can also be disbursed by floodwaters to natural settings where they can create problems. G. Most impacts are indirect due to disruption of business and damage to infrastructure on which industry and services rely on. H. No direct impacts to contractual obligations. I. Flash floods can be damaging to the reputation of a community if proper notification and warning are not given. Victims may blame development or other changes in their communities as the cause of flooding on their properties.	
Speed of Onset	Flash floods are somewhat unpredictable, but there are factors that can point to the likelihood of a flood event. Flash floods occur within a few minutes or hours of excessive rainfall, a dam or levee failure, or a sudden release of water held by an ice jam. Advance warnings for some of these events are not always possible.	4

Grass or Wild Land Fire		
Definition	An uncontrolled fire that threatens life and property in either a rural or wooded area and is beyond normal day-to-day response capabilities.	
Description	Grass and timber fires can occur when conditions are favorable such as during periods of drought when natural vegetation would be drier and subject to combustibility.	
Historical Occurrence	There have been numerous grass and timber fires in rural Mills County, over the last 25 years requiring a response beyond the normal capabilities of any one fire department. There have been no grass or wild land fires that have significantly endangered legal municipalities of Mills County.	3
Probability	Prevailing dry conditions in the county favor grass or timber fires and the probability of such an event in Mills County is relatively high. There is currently no open burning ban ordinance in the unincorporated areas of the county and many cities still allow open burning.	3
Vulnerability	The areas of Mills County that are most vulnerable to a grass or timber fire are the levee areas along the Missouri River and the undeveloped areas along the Loess Hills. As residential development continues throughout the county, the vulnerability of residences to grass fires will increase. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	Most grass fires are contained to highway right-of-way and rail right-of-way ditches and are less than a few acres in size. However, recent trends in the area have shown an increase in the number of large grass fires, consuming over 100 acres and requiring response from multiple agencies. High winds can turn a small flame into a multi-acre grassfire within a matter of minutes. However, due to the land cover throughout the county, it is unlikely that a grass fire would spread to more than a few isolated properties. The majority of grass fires will be small in nature.	2
Severity of Impact	A. Injuries and deaths from fighting the fire most often occur by natural causes such as heart attack or stroke. B. Volunteer fire fighters in Mills County are well equipped and protected from most risks associated with grass and wild land fires. C. Operations would unlikely be disrupted. D. Property damage is usually limited to grass, small trees, etc. Occasionally a house or outbuilding can be damaged or destroyed. E. No known impact to service delivery. F. Environmental impacts of grass and wild land fires do not deviate much from the burning of the grasses, crops, or other low land cover. G. The loss of crops could potentially lead to economic hardships within a jurisdiction. H. Jurisdictions throughout Mills County are engaged in mutual aid agreements for fire response, including grass and wild land fires. I. Grass fires occur frequently and have little impact on reputation.	1
Speed of Onset	As mentioned above, most grass fires occur without warning and travel at a moderate rate. Fires that will impact the county will probably generate along right-of-ways or from burn piles, and will likely be blown toward crop areas and residential sites. In a situation where a grass fire threatens significant numbers of properties, most citizens will have adequate time to evacuate.	3

Hailstorm

Definition	An outgrowth of a severe thunderstorm in which balls or irregularly shaped lumps of ice greater than 0.75 inches in diameter fall with rain.	
Description	Hail is produced by many strong thunderstorms. Strong rising currents of air within a storm carry water droplets to a height where freezing occurs. Ice particles grow in size until they are too heavy to be supported by the updraft. Hail can be smaller than a pea or as large as a softball and can be very destructive to plants and crops. Pets and livestock are particularly vulnerable to hail.	
Historical Occurrence	According to the National Climatic Data Center, there have been 92 documented instances of hail measuring 0.75 inches in diameter or greater in the Mills County area in the last 25 years. These occurrences are listed in Appendix L.	4
Probability	Given the frequency of hail producing thunderstorms in Southwest Iowa and the number of significant hail events that have occurred in Mills County and nearby counties in recent years, there is a good chance that the county will experience another significant hail event sometime in the near future.	3
Vulnerability	Primary risks associated with hailstorms are damage to vehicles, buildings, and crops. Hailstorms can result in injuries from time to time but rarely are attributed to fatalities. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	3
Maximum Geographic Extent	Many hailstorms will cover a large portion of the county. Within a storm there may be isolated areas that receive larger hailstones or more hail than other areas, but hailstorms are rarely isolated to small areas within the county. Most of these storms will impact at least 50% of the county to some degree. In Mills County hail is measured by the **TORRO Hailstorm Intensity Scale**. The scale extends from HO to H10 with its increments on intensity or damage potential related to hail size, texture, number, fall speed, speed of storm translation, and strength of accompanying winds. The scale is described as follows: **HO** — **Typical Hail Diameter (mm)**: 5 (pea) — **Typical Damage Impacts**: No damage H1 — 5-15 (mothball) — Slight general damage to plants, crops H2 — 10-20 (marble) — Significant damage to fruit, crops, vegetation H3 — 20-30 (walnut) — Severe damage to fruit and crops, damage to plastic structures, paint and wood scoured H4 — 25-40 (squash ball) — Widespread glass damage, vehicle bodywork damage H5 — 30-50 (golf ball) — Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries H6 — 40-60 (hen's egg) — Bodywork of grounded aircraft dented, brick walls pitted H7 — 50-75 (tennis ball) — Severe roof damage, risk of series injuries H8 — 60-90 (soft ball) — Severe damage to aircraft bodywork H9 — 75-100 (grapefruit) — Extensive structural damage; Risk of severe or even fatal injuries to persons caught in the open H10 — >100 (melon) — Extensive structural damage; Risk of severe or even fatal injuries to persons caught in the open Any categorization of hail mentioned above can occur in Mills County and impact an area the size of any jurisdiction or greater in the county.	3
Severity of Impact	A. Exposure to hail larger than a nickel can be very dangerous and life threatening. B. Risk to response personnel is the same as the risk to others without shelter form hail. C. Operations should not be affected to any significant degree. D. Damage to property, facilities, and infrastructure is usually limited to broken windows and damaged roofs. According to 2006-10 American Community Survey five year estimates, 77.2% of Mills County's housing stock was built prior to 1990. It is unknown how many of those units are in "good" condition or better. Percentages of housing stock built prior to 1990 in incorporated cities area as follows: Emerson, 94.6%; Glenwood, 87.6%; Hastings, 91.5%; Henderson, 97.1%; Malvern, 87.1%; Pacific Junction, 79.8%; Silver City, 96.4%. E. Delivery of services should not be affected to any significant degree. There may be minor disruptions, but they would likely come from high winds and lightning (usually associated with hailstorms). F. Hail can strip plants of their vegetation in very little time. If this occurs at a critical time in the life cycle of plants, it could have fatal consequences. G. The peak hail activity coincides with the Midwest's peak agricultural season. Significant	3

	hail events can cause hundreds of thousands of dollars in damage, but most damaged crops, vehicles, and buildings are covered with some degree of insurance. Financial impact can be severe. Due to repeated hail losses in this region, insurance premiums have doubled for casualty insurance covering hail loss. H. No known risk to contractual obligations. I. No known impact to jurisdictional reputation.	
Speed of Onset	Forecasting hailstorms, as with their parent thunderstorms, is becoming quite accurate due to the advancement in Doppler radar and other technologies operated by the National Weather Service and many television weather departments. Warnings in the 20 to 30 minute range are usually available prior to the occurrence of the storm.	4

Landslide/Erosion/Slope Failure		
Definition	A downward and outward movement of slope forming materials reacting under the force of gravity.	
Description	Landslides occur when masses of rock, earth, or debris move down a slope. Landslides may be very small or very large, and can move at slow to very high speeds. Many landslides have been occurring over the same terrain since prehistoric times. They are activated by storms, fires and by human modification of the land. New landslides occur as a result of rainstorms, earthquakes, and various human activities.	
Historical Occurrence	In 1993 a landslide occurred along County Road L-31, near Indian Hollow. The landslide was caused in part by saturation of the soil due to significant rain, but also due to poor soil management practices at a quarry. The landslide resulted in complete blockage of the roadway and necessitated repair of the road surface and ditches. After significant rain events in Emerson, the roadbed of Manchester Street is regularly affected by erosion of the Indian Creek basin. Slumping and failure of slopes is quite common in the Loess Hills landform and occurs regularly, however, no landslides have resulted in significant damage to property or loss of life.	1
Probability	Due to the hilly terrain of Mills County and the presence of some very steep Loess Hills bluffs in the western part of the county, it is highly likely that landslides will occur. Loess Hills soil is highly cohesive and tends to stand in cliffs or blocks when dry, however, saturation can cause the slopes to fail, resulting in landslides. Fortunately, the nature of these events is such that damage to property is not widespread and the landslides are usually highly localized and relegated to gullies where little human activity occurs. The mining of Loess Hills soil as fill dirt contributes to the probability of landslides, thus the likelihood of slope failure near quarries is high. Construction practices in the Loess Hills also contribute to the probability of slope failure; sediment and erosion control practices will help to curb this risk.	4
Vulnerability	Any landslide that would occur in Mills County would be limited to a few residences located at the top or bottom of the county's steeper bluffs/hills. Landslides could impact roadways, hindering emergency response capabilities. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	1
Maximum Geographic Extent	A landslide event in Mills County would most likely be limited to an area less than a square mile at the most and would probably only affect a few residential properties and secondary roads. Maximum geographic extent is very limited because of Mills County's gently rolling hills.	1
Severity of Impact	A. Injuries and deaths are very unlikely except in the case of undetected slope failure warning signs in structures overlooking steep slopes. B. Limited if any. C. No known impact to continuity of operations. D. Property would be limited to a very small percentage of structures. Infrastructure damages would be more significant. Utilities such as pipelines, cables, power poles, etc. are often vulnerable to downward movements of the soil. E. Delivery of services would be limited to only those services whose infrastructure was impacted. For example, there may be minor power outages or water disruptions if a landslide shifts or destroys underground utilities. F. This is usually a naturally occurring event and would occur on a very localized scale. G. Landslides have damaged homes, disrupted electricity, water service, communications, and transportation routes. Economic impacts would be secondarily associated with landslides H. No known impact to contractual obligations. I. Occurrences would be very rare and would not have significant impact on the reputation of a jurisdiction.	1
Speed of Onset	Since a landslide would be triggered by other hazards and slowly developing conditions, the lead time for such an event would be a number of days in which an area would become susceptible to slope failure.	1

Levee Failure		
Definition	Loss of structural integrity of a wall, dike, berm, or elevated soil by erosion, piping, saturation, or under seepage causing water to inundate normally dry areas.	
Description	The most significant levees in the county, those that surround the Missouri River, are constructed primarily of sand with compacted clay caps on the top and sides. Other similarly constructed levees are found along Little Pony Creek, Pony Creek, and Keg Creek. During heavy rainfalls that follow dry spells, water fills the cracks and fissures. In addition to increasing the hydrostatic forces, the water is slowly absorbed by the clay. The effect of the absorbed water is an increase in the unit weight of the clay as well as a decrease in its shear strength. This results in a simultaneous increase of the slide (driving) forces and a decrease of the resisting (shear strength) forces. Furthermore, the cyclic shrink/swell behavior of the cracked clay zone results in a progressive reduction of the shear strength of the clay, perhaps approaching its residual strength. It also results in deepening of the cracked clay zone, which may eventually reach a depth of 9 ft (2.74 m) or more, especially for clays with a plasticity index greater than 40. The end result may be a sloughing failure following a heavy rainfall. It is believed that fast removal of the runoff water from the interconnected network of cracks could alleviate this surface instability problem.	
Historical Occurrence	In 1952, the levees along the Missouri River were built to protect surrounding agricultural lands from a 100-year flood event. The massive floods of that year easily overtopped that levee and caused millions of dollars in damage to thousands of properties in southwest Iowa. Levees were later rebuilt to withstand a 500-year flood event. Controlled flooding of the Missouri River by the U.S. Army Corps of Engineers in the summer of 2011 created record flooding conditions over a period of over four months. From May through October, levees along the Missouri River were inundated with water. Though there were no river levee failures during that time, one berm breach occurred in a drainage district waterway. Structural integrity of the levees was significantly compromised due to the prolonged inundation. Repair and reinforcement of levees and drainage systems along the Missouri River will continue into spring of 2012 and likely beyond.	1
Probability	The probability of levee failure post the 2011 flooding of the Missouri River is greater than previously assessed. Record rainfall and snowpack in the upper Missouri River basin created conditions that necessitated substantial releases of reservoir water from dams in South Dakota. The expansive and prolonged flooding inundated levees all along the Missouri River, including levees in Mills County. Due to the extended wear of levees, it is possible levee failure can occur in the event of another significant water inundation.	2
Vulnerability	In the event of a levee failure along the Missouri River it is possible that the entire Missouri River floodplain would be inundated, an area consisting of thousands of acres. Homes, businesses and utilities in the western third of the county would likely be severely damaged or destroyed. Thousands of acres of farmland could be flooded. The community most at risk from levee failure is Pacific Junction. Though only a small portion of the 100-year floodplain traverses Pacific Junction, the entire city lies in the 500-year floodplain. The 2011 Missouri River flood placed significant strain on the levees. Though evacuation did not occur, residents of Pacific Junction were prepared to leave in the event of levee failure. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	Floodwaters that breach a levee are usually contained in the historic floodplain. The levee system in place will prevent most floods from leaving the floodway, but a flood large enough to overtop a levee will inundate approximately one third of the county. Pacific Junction is most at risk from levee failure and city leaders and residents were prepared to evacuate in the summer of 2011 due to prolonged Missouri River flooding. See floodplain maps in Appendix F. Also see Graphic 1 on Page 28 for a visual reference of levees in Mills County.	3
Severity of Impact	A. Citizens in floodplains and near levees are usually given adequate notice to evacuate their homes or businesses before levees breach. Standing water can produce health risks such as hazmat exposure, infectious diseases, electrical exposure, etc. B. See river/stream flood and flash flood. C. There would be no significant impacts to continuity of operations unless critical facilities or services are impacted by the floodwaters. If so, areas of operation will have to be relocated for a period of time until the water recedes. D. Any property and infrastructure located in the 100 or 500-year floodplains face potential damage or all-out destruction, depending on how long water stands in those areas after the breach. E. Services in and near the floodplain may be impacted, but the levee break should still keep the waters within the original floodplain. F. The breach allows large volumes of water to enter formerly dry areas, forming	3

	temporary lakes. Such lakes do not go away immediately, because the lake is blocked from returning to the main channel by levee segments that were not destroyed. Consequently, the water level drops along the main river days before it drops behind breached levees. Pumps behind the levees are often needed to remove floodwaters that breach the levees. This alleviates some of the impacts associated with levee failure. G. Economic losses for homeowners and business owners can be catastrophic in the event of levee failure despite flood insurance and other precautions. Businesses that have been flooded out will be unable to operate for at least the short-term following the incident. The permanent loss of one business in several communities in Mills County may be devastating to their local economies. Flood recovery and levee repair efforts are also expensive to the jurisdictions that are responsible. Costs incurred for repairs may take years or decades to recoup. H. No known impact to contractual obligations. I. Residents behind levees often have a false sense of security. There may be damage to local reputation if a jurisdiction does not communicate to its residents the actual risks of levee failure.	
Speed of Onset	Any levee failure in the county will not happen without days of prior warning signs. The factors that have to be in place for a levee to fail and affect the county are factors that will develop over a prolonged period of time.	1

River/Stream Flood		
Definition	A rising or overflowing of a tributary or body of water that covers adjacent land not usually covered by water when the volume of water in a stream exceeds the channel's capacity.	
Description	Floods are the most common and widespread of all natural disasters, except fire. Many communities nationwide experience some kind of flooding after spring rains, heavy thunderstorms, winter snow thaws, waterway obstructions, or levee or dam failures. Often it is a combination of these elements that causes damaging floods. Floodwaters can be extremely dangerous. The force of six inches of swiftly moving water can knock people off their feet and two feet of water can float a car. Floods can be slow or fast rising but generally develop over a period of days. Flooding is a natural and expected phenomenon that occurs annually, usually restricted to specific streams, rivers or watershed areas.	
Historical Occurrence	NOAA has recorded 31 flood events in the Mills County area since 1993. Until recently, two of the county's worst flooding incidents occurred in 1952 and 1993. During the 1993 flood, more than 20,000 acres were inundated with water from the Missouri and West Nishnabotna Rivers. In June 1998, the East Nishnabotna River flooded, resulting in federal disaster relief funds for major agricultural damage in Mills County. In July of 1998, flooding in Keg Creek occurred in Glenwood. In August 1999, water from Keg Creek caused a deluge that shut down streets and flooded homes on South Vine Street in Glenwood. In 2004, flooding and associated stream blockages resulting from debris both north of Mineola and south of Malvern caused damage in the county. In 2011, Mills County experienced flooding that met or exceeded conditions during 1952 and 1993. In May of 2011, the U.S. Army Corps of Engineers began releasing record amounts (up to 160,000 cubic feet per second) of water from Gavins Point Dam in South Dakota. The controlled flooding was in response to record precipitation and delayed snow melt in the upper Missouri River basin. From May through October, significant portions of Mills County were inundated with water. Homes were evacuated, numerous roads and bridges were closed, and levees and drainage systems along the Missouri River experienced wear due to the prolonged inundation. The 2011 flood was unprecedented because it was manmade and persisted for a period of months. The total impacts of the flood are not yet known.	3
Probability	Given the history of this hazard, it is likely that there will be a minor flood event every three or four years and a high likelihood that a major flood event requiring federal assistance will occur sometime in the next decade.	3
Vulnerability	The entire western boundary of Mills County is bordered by the Missouri River. The Army Corps of Engineers has designed and constructed a levee system to protect much of this area from a direct flood of the Missouri River. Flood Insurance Rate Maps developed by FEMA and updated for the county show that portions of Mills County, Glenwood, Pacific Junction, Malvern, Henderson, and Hastings are located in either a 100 or 500-year floodplain from either the Missouri River or adjacent streams and watersheds. Only one of the county's critical facilities is presently located in the 100-year floodplain; the Glenwood police station, which is identified as Mills County's alternate Emergency Operations Center. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	3
Maximum Geographic Extent	Nearly 15% of the area in Mills County is affected by a 100- or 500-year floodplain, largely in agricultural areas. However, some critical facilities and many residences lie within 100- and 500-year floodplains. The entire City of Pacific Junction lies within 100- or 500-year floodplain. See floodplain maps in Appendix F.	3
Severity of Impact	A. Citizens near floodplains or tributaries are usually given adequate notice to evacuate their homes or businesses before water levels exceed channel capacity. River/stream flood does not have as high a risk as flash flooding because of the slower onset of the former. B. Responding to river flooding often includes sandbagging and working in floodwaters. Response personnel that do not have current tetanus and hepatitis shots face risk of infection. C. Operations can be disrupted from direct impacts if facilities are located in the floodplain and indirectly from loss of critical services to maintain operations. D. Any property and infrastructure located in the 100 or 500-year floodplains face potential damage or all-out destruction. The degree of damage is dependent on the pace of moving water and the duration that water sits in the flooded area. E. Damage and disruption of communications, transportation routes/vehicles, utilities, and other services are likely in serious cases. Water treatment and wastewater treatment	4

	facilities are located in or near floodplains in Mills County and are at high risk for flooding. F. Floodwaters may contain manmade materials, many of which are hazardous and dangerous to the environment. Clean water supplies may become contaminated. G. Economic losses for homeowners and business owners can be catastrophic in the event of flooding despite flood insurance and other precautions. Businesses that have been flooded out will be unable to operate for at least the short-term following the incident. The permanent loss of one business in several communities in Mills County may be devastating to their local economies. Flood recovery efforts are also expensive to the jurisdictions that are responsible, though there is government financial assistance available in many cases. Costs incurred for repairs may take years or decades to recoup. H. No known impact to contractual obligations. I. Participation in the National Flood Insurance Program and providing up to date Flood Insurance Rate Maps will assist jurisdictions head off allegations of poor service or support.	
Speed of Onset	River flooding usually develops over the course of several hours or even days depending on the basin characteristics and external weather patterns. Flood warnings are issued over television, emergency radio, and NOAA weather radio. People in the paths of river floods usually have time to take appropriate actions to limit harm to themselves and their property.	1

Severe Winter Storm		
Definition	Severe winter weather conditions that affect day-to-day activities, including blizzard conditions, heavy snow, blowing snow, freezing rain, heavy sleet, and extreme cold.	
Description	Winter storms are common during the winter months of October through April. The various types of extreme winter weather cause considerable damage. Heavy snows cause immobilized transportation systems, downed trees and power lines, collapsed buildings, and loss of livestock and wildlife. Blizzard conditions are winter storms which last at least three hours with sustained wind speeds of 35 mph or more, reduced visibility of 0.25 miles or less, and whiteout conditions. Heavy snows of more than 6 inches in a 12 hour period or freezing rain greater than 0.25 inches accumulation causing hazardous conditions can slow or stop the flow of vital supplies as well as disrupt emergency and medical services. Loose snow begins to drift when the wind speed reaches 9 to 10 mph under freezing conditions. The potential for some drifting is substantially higher in open country than in urban areas where buildings, trees, and other features obstruct the wind. Ice storms result in fallen trees, broken tree limbs, downed power lines and utility poles, fallen communications towers, and impassable transportation routes. Severe ice storms have caused total electric power losses over large areas of Iowa and rendered assistance unavailable to those in need due to impassable roads. Frigid temperatures and wind chills are dangerous to people, particularly the elderly and the very young. Dangers include frostbite or hypothermia. Water pipes, livestock, fish and wildlife, and pets are also at risk from extreme cold and severe winter weather.	
Historical Occurrence	Halloween 1991 was one of the worst winter storms Mills County has faced. Due to the ice storm, many power lines were downed and tree branches were broken. Residents were without power for three days due to outages. Another severe snowstorm occurred in Mills County in October 1997. Seven inches of snow fell in Glenwood. The wet snow and strong winds combined to snap large tree branches and break nearby power lines. Many residents were without power for 12 hours. The region can typically expect severe winter weather at least once every year. The last significant prolonged blizzard/winter storm to affect the county began December 24 and ended December 27, 2009. Hastings and Glenwood recorded 10 to 12 inches of snowfall. Winds of 25 to 35 mph with gusts over 40 mph occurred for an extended period of time during the height of the storm.	4
Probability	The probability of a major winter storm in the county depends on climatic conditions in the area, but in general, the county receives a major winter storm about once every four or five years. In addition to the major storm events, there are smaller events that occur on a more frequent basis that may serve as more of an inconvenience than a significant hazard to the community.	3
Vulnerability	Hazardous driving conditions and exposure to extreme wind chills and temperatures are the primary threats associated with major winter storms. Additionally, many homes would not be able to stay heated in the event of a power outage during a storm event. Roads may be closed and water pipes could freeze. All types of structures, including critical facilities and vertical infrastructure, could be harmed by high winds. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	3
Maximum Geographic Extent	Winter storms are vast and would likely impact the entire county. Certain local areas may experience variations in storm intensity and quantity of snow or ice.	4
Severity of Impact	A. Exposure to severe winter weather conditions can be dangerous and life threatening to individuals. Particularly at risk are the elderly, young children and people without adequate shelter or heat. People driving in severe winter weather are also at risk from accidents. There have been no casualties due to severe winter weather in the last 25 years. B. Response personnel are exposed to cold temperatures and traffic accidents when responding to the victim needs. C. Potential exists for power and communications failure during severe winter weather, which limits continuity of operations. Dangerous driving conditions or impassable roads can prevent critical staff from reaching their destination or place of work. D. Older and poorly constructed buildings can collapse under heavy snow or high winds. Buildings that are not adequately heated can experience damage from frozen piping. Downed trees, utility poles and towers also pose serious risk to property and structures. However, typical winter storms cause more of a nuisance than significant damage. E. Immobilized vehicles (including law enforcement and rescue), obstructed roadways, power outages, and communications failures are just some of the impacts severe winter weather has on service delivery. Fire is a serious risk since water supplies may freeze	3

	in sub-zero temperatures. F. Winter storms are a natural occurrence and have no impact on the environment. Ice jams on streams and rivers may pose flooding risks once temperatures rise. G. The cost of snow removal, debris cleanup, and utility repair can cost jurisdictions and businesses thousands of dollars for one event. Large storms can shut down businesses for days in some cases. H. Jurisdictions in and including Mills County should continue to maintain snow emergency ordinances. Removal of debris and reinstatement of energy are vital to public safety. Agreements with utility providers and snow removers should be regularly maintained. I. Effective and timely response to a winter storm is key to maintaining a positive reputation. Streets clear of snow and ice are important to the public.	
Speed of Onset	Major winter storms are often forecast at least a few days in advance. However, while citizens generally have advance warning that some kind of weather event is coming, the exact magnitude of a winter storm cannot always be accurately forecast in advance. In most cases people have adequate time to prepare for a storm.	2

Sinkholes		
Definition	The loss of surface elevation due to the removal of subsurface support.	
Description	Sinkholes range from broad, regional lowering of the land surface to localized collapse. The primary causes of most subsidence are human activities: Underground mining of coal, groundwater or petroleum withdraw, and drainage of organic soils. Sinkholes are due also to erosion of limestone of the subsurface.	
Historical Occurrence	There have been no occurrences of sinkholes in Mills County in the last 25 years.	1
Probability	The probability of sinkholes occurring in Mills County is unlikely.	1
Vulnerability	Mills County's vulnerability to sinkholes is negligible. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	1
Maximum Geographic Extent	The maximum geographic extend of sinkholes would be particularly localized, consisting of damage to physical property and infrastructure. Land values would also depreciate. However, the geographic extent of such an event is likely negligible.	1
Severity of Impact	A. Generally, land subsidence poses a greater risk to property than to life. B. No known impact to first responder health and safety. C. Depends on the area damaged and the facilities and infrastructure involved. D. Damage to property, facilities and infrastructure would only occur if the event undermined foundations. E. No known impact to service delivery. F. Sinkholes are a result of a dynamic environment and occurrences would generally be localized. G. Depends on the affected area. Land values could depreciate. H. No known impact to contractual obligations. I. No known impact to jurisdictional reputation.	1
Speed of Onset	This natural hazard occurs gradually over an extended period of time.	1

Thunderstorm and Lightning		
Definition	Atmospheric imbalance and turbulence resulting in heavy rains, winds reaching or exceeding 58 mph, tornadoes, or surface hail at least 0.75 inches in diameter.	
Description	Thunderstorms are common in Iowa and can occur singly, in clusters, or in lines. They are formed from a combination of moisture, rapidly rising warm air, and a lifting mechanism such as clashing warm and cold air masses. Most thunderstorms produce only thunder, lightning, and rain. Severe storms however, can produce tornadoes, high straight-line winds above 58 mph, microbursts, lightning, hailstorms, and flooding. The National Weather Service considers a thunderstorm severe if it produces hail at least 0.75 inches in diameter, wind 58 mph or higher, or tornadoes. High straight-line winds, which can often exceed 60 mph, are common occurrences and are often mistaken for tornadoes. Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a "bolt." This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches temperatures approaching 50,000 degrees Fahrenheit in a split second.	
Historical Occurrence	Thunderstorms occur in Mills County on a yearly basis, most often in the spring and early summer months. Thunderstorms and lightning are often a triggering hazard event for many other hazards, including flash flooding, river flooding, hailstorms, and fires. Lightning and microburst winds associated with thunderstorms cause damage to commercial, residential, and agricultural property throughout the county each year. One of these instances in July 1993 resulted in several homes losing their roofs and mass power outages throughout Mills County.	4
Probability	Based on historical information, Mills County is almost certain to continue to experience thunderstorms and lightning on a regular basis in the years to come. As in the past, the primary products of these storms will be heavy rains, high winds, hail, lightning, and perhaps even a tornado.	4
Vulnerability	All jurisdictions in Mills County are vulnerable to thunderstorms and lightning. Especially vulnerable are those who live in mobile homes or older homes that may have roof or structural deficiencies. According to 2006-10 American Community Survey five year estimates, there are 512 mobile homes in Mills County. Number of mobile homes in incorporated cities are as follows: Emerson, 13; Glenwood, 34; Hastings, 16; Henderson, 5; Malvern, 39; Pacific Junction, 45; Silver City, 9. Also at risk are outdoor workers and people caught outside who cannot reach adequate shelter. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	3
Maximum Geographic Extent	Severe thunderstorms can be quite expansive with areas of localized severe conditions. Most severe thunderstorm cells are 5 to 25 miles wide with a larger area of heavy rain and strong winds. Most non-severe thunderstorms persist for 20 to 30 minutes, while stronger storms can last beyond 30 minutes.	3
Severity of Impact	A. Like tornadoes, thunderstorms and lightning can cause death, serious injury, and substantial property damage. The power of lightning's electrical charge and intense heat can electrocute people and livestock on contact, split trees, ignite fires, and cause electrical failures. Thunderstorms can also bring large hail that can damage homes and businesses, break glass, destroy vehicles, and cause bodily injury to people, pets, and livestock. B. Response personnel are exposed to the same risk as the general public when caught in the storm without shelter. Work on ladders and other apparatus during lightning can expose responders to higher risk situations. C. Continuity of operations would be affected through indirect impacts such as loss of critical services. D. High winds can damage trees, homes (especially mobile homes), and businesses, and can knock vehicles off of the road. Straight-line winds are responsible for most thunderstorm damage. According to 2006-10 American Community Survey five year estimates, 77.2% of Mills County's housing stock was built prior to 1990. It is unknown how many of those units are in "good" condition or better. Percentages of housing stock built prior to 1990 in incorporated cities area as follows: Emerson, 94.6%; Glenwood, 87.6%; Hastings, 91.5%; Henderson, 97.1%; Malvern, 87.1%; Pacific Junction, 79.8%; Silver City, 96.4%. E. Thunderstorms often disable power and communications services. F. High winds can damage trees, but this is a naturally occurring hazard and the environment proves to be resilient following these and other natural hazards. G. Windstorms and lightning occur rapidly and do not persist. The aftermath may cause	2

	moderate economic impacts, but most will be related to cascading hazards such as flooding. H. No known impact to contractual obligations. I. Timely and adequate response and cleanup will stave off any negative reputation that a jurisdiction could be exposed to.	
Speed of Onset	While weather forecasters can generally predict the chance of storms over a broad area two or three days in advance, it is quite difficult to predict exactly when and where a thunderstorm will occur. In most cases, citizens are given a relatively short amount of time to prepare.	4

Tornado		
Definition	A violent, destructive, rotating column of air taking the shape of a funnel shaped cloud that progresses in a narrow, erratic path. Rotating wind speeds can exceed 200 mph and travel across the ground at average speeds of 25 to 30 mph.	
Description	A tornado is a violent whirling wind characteristically accompanied by a funnel shaped cloud extending down from a cumulonimbus cloud. A tornado can be a few yards to about a mile wide where it touches the ground. An average tornado, however, is a few hundred yards wide. It can move over land for distances ranging from short hops to many miles, causing great damage wherever it descends. The funnel is made visible by the dust sucked up and by condensation of water droplets in the center of the funnel. The rating scale used to rate tornado intensity is called the **Enhanced Fujita Scale**.	
Historical Occurrence	Mills County has had a fair number of tornadoes over the past century. According to the National Climatic Data Center, Mills County has experienced 18 tornadoes since 1950. The majority have been at the F0 or F1 level, although there was an F2 tornado in 1992 and an F3 tornado in 1979. An F1 tornado touched down near Pacific Junction in 1999, affecting areas south and east of Glenwood. A funnel cloud was reported near Glenwood in 1997.	2
Probability	In the U.S., Iowa is ranked third in the number of strong to violent (F2 to F5) tornadoes per 10,000 square miles. Historically, 30 to 40 tornadoes are confirmed in Iowa per year. Mills County is located on the northern edge of Tornado Alley, an area delineated by meteorologists and named for the high number of tornadoes that occurs in it on an annual basis. Mills County experienced 18 tornadoes since 1950. Since 1998, the National Climatic Data Center has documented over 400 tornadoes or funnel clouds in Iowa. While the occurrence of a tornado is impossible to predict, there is a reasonable chance that a tornado will strike at some point within Mills County in the near future.	3
Vulnerability	Those most at risk from tornadoes include people living in mobile homes, campgrounds, and other dwellings without secure foundations or basements. According to 2006-10 American Community Survey five year estimates, there are 512 mobile homes in Mills County. Number of mobile homes in incorporated cities are as follows: Emerson, 13; Glenwood, 34; Hastings, 16; Henderson, 5; Malvern, 39; Pacific Junction, 45; Silver City, 9. Pony Creek Park west of Glenwood is a recreational site that offers camping. There are eight other recreational sites in Mills County that can leave citizens exposed during a tornado (see Page 14). People in automobiles are very vulnerable to twisters. The elderly, very young, and the physically and mentally handicapped are especially vulnerable because of their lack of mobility to reach shelter. Also at risk are people who work outdoors. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	4
Maximum Geographic Extent	The area that can be directly affected by a tornado will vary from a couple hundred feet to over a mile in some cases. Tornadic thunderstorms are also accompanied by large hail, lightning, heavy rain, and destructive straight-line winds. Extent of damage is largely dependent on the wind speed and duration of the tornado (see Enhanced Fujita Scale in severity of impact). Extent can be as little as a few city blocks to an entire community.	3
Severity of Impact	A. Injury or death related to tornadoes most often occur from building failure and being caught outdoors. B. Response personnel are exposed to the same risk as the general public when caught without shelter. C. Tornadoes can destroy government facilities just as they could other property. Disruption of critical services can also affect operations. Employees may be affected and unable to attend work-related issues. D. Any type of structure can be damaged or destroyed in a tornado. Impacts can range from broken tree branches, shingle damage to roofs, and some broken windows; all the way to complete destruction and disintegration of structures, infrastructure, and trees. According to 2006-10 American Community Survey five year estimates, 77.2% of Mills County's housing stock was built prior to 1990. It is unknown how many of those units are in "good" condition or better. Percentages of housing stock built prior to 1990 in incorporated cities area as follows: Emerson, 94.6%; Glenwood, 87.6%; Hastings, 91.5%; Henderson, 97.1%; Malvern, 87.1%; Pacific Junction, 79.8%; Silver City, 96.4%. The majority of homes in Mills County are not built to modern severe weather specifications; damage to housing may be critical in any county jurisdiction. See **Enhanced Fujita Scale** in severity of impact. E. Tornadoes can impact many critical services, mainly electrical power. Buried services are not as vulnerable, but can be affected by their system components that are above	3

	ground. F. Tornadoes are naturally occurring phenomena. Damages to the environment could result from spills and other contaminants from the built environment. G. Whole towns have been known to be "wiped off the map." Economic impacts can result from direct damages to facilities or business disruption from the lack of critical services such as power, gas, or water. H. Debris removal is a vital service that is often too vast for Mills County jurisdictions to do without contractual assistance. I. Adequate warning is key to the positive reputation of Mills County. Bringing critical services back on line quickly will assist residents in beginning their personal recovery process. ▪ Currently the severity of tornadoes is measured by intensity based upon the **Enhanced Fujita Scale**. It is based on wind speed and extent of damage as follows: EF0 (65-85 mph); EF1 (86-110 mph); EF2 (111-135 mph); EF3 (136-165 mph); EF4 (166-200 mph); and EF5 (>200 mph). It also breaks down each event by Damage Indicators (DI) and Degrees of Damage (DOD). DIs are broken down into 28 categories of structures. Each individual type of structure is given an abbreviation code as well as a number code for easy reference. DODs are broken down into categories of possible damage that might occur. Each of these categories is also assigned a number. More information can be found on the Storm Prediction Center's website: http://www.spc.noaa.gov/faq/tornado/ef-scale.html.	
Speed of Onset	Tornadoes are often spawned from very powerful thunderstorms. Although in most instances a tornado watch can be issued hours in advance of a storm, an area that experiences a tornado may have virtually no warning. Since many tornadoes strike with little or no warning, persons often have very little time to take shelter. There is no countywide outdoor warning system. All cities in Mills County have outdoor warning systems and many are in the process of upgrading.	4

Windstorm		
Definition	Extreme winds associated with severe winter storms, severe thunderstorms, downbursts, and very steep pressure gradients.	
Description	Extreme winds other than tornados are experienced in all regions of the United States. It is difficult to separate the various wind components that cause damage from other wind related natural events that often occur with or generate windstorms.	
Historical Occurrence	According to the National Climatic Data Center, there have been 77 thunderstorm events containing high winds in Mills County since 1970. In 2004 winds from a thunderstorm event resulted in the county's inclusion in Presidential Disaster Declaration # DR-1518.	4
Probability	Given the historical occurrence of high wind events in Mills County and prevailing conditions, there is a very good chance that the county will experience one or more high wind events in the near future. The effects of this event will depend on the severity of the windstorm and the area it covers.	4
Vulnerability	People in high profile vehicles and persons caught working outside during a windstorm are usually most at risk. Older trees and power lines are also susceptible to wind related damage. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	Unlike tornadoes, windstorms may have a destructive path that is tens of miles wide and several hundred miles long. A windstorm may extend throughout all of Mills County depending on the length/width of the storm and the direction the storm is traveling. The greater the force of wind (measured by the **Beaufort Wind Scale**) contributes to the extent of damage that can occur.	2
Severity of Impact	A. Injury or death related to windstorms most often occur from building failure and being caught outdoors. B. Response personnel are exposed to the same risk as the public when caught in windstorms without shelter. C. Windstorms can damage government facilities just as they could other property. Disruption of critical services can also affect operations. Employees may be affected and unable to attend work-related issues. D. Most structure types can be damages or destroyed in a windstorm. Impacts can range from broken tree branches, shingle damage to roofs, and some broken windows; all the way to complete destruction and disintegration of structures, infrastructure, and trees. According to 2006-10 American Community Survey five year estimates, 77.2% of Mills County's housing stock was built prior to 1990. It is unknown how many of those units are in "good" condition or better. Percentages of housing stock built prior to 1990 in incorporated cities area as follows: Emerson, 94.6%; Glenwood, 87.6%; Hastings, 91.5%; Henderson, 97.1%; Malvern, 87.1%; Pacific Junction, 79.8%; Silver City, 96.4%. The majority of homes in Mills County are not built to modern severe weather specifications; damage to housing may be critical in any county jurisdiction. See the classifications of wind and wind-related damage on the proceeding page. E. Windstorms can affect many critical services, especially electrical power. Buried Services are not as vulnerable, but can be affected by their system components that are above ground. F. Windstorms are naturally occurring phenomena. Damages to the environment could result from hazardous materials spills and other contaminants from the built environment. G. Economic impacts can result from direct damages to facilities or business disruption from the lack of critical services such as power. Crop damage is often associated with windstorms; laying down crops, breaking stalks, and twisting plants, reducing the yield and making it difficult to harvest. H. Debris removal is a vital service that is often too vast for Mills County to do without contractual assistance. I. Adequate warning is key to the positive reputation of Mills County. Bringing critical services back on line quickly will assist residents in beginning their personal recovery process.	2
Speed of Onset	Windstorms, whether they are isolated incidents or part of a larger storm event, generally occur with little or no warning. Weather forecasters can predict gusty conditions but usually cannot pinpoint the exact location where a severe wind event may take place.	4

Beaufort Wind Scale

Force	Wind (mph)	Description	Appearance of Wind Effects
			On Land
0	<1	Calm	Calm; smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction; still wind vanes
2	4-7	Light Breeze	Wind felt on face; leaves rustle; vanes begin to move
3	8-12	Gentle Breeze	Leave and small twigs constantly moving, light flags extended
4	13-17	Moderate Breeze	Dust, leaves and loose paper lifted; small tree branches move
5	18-24	Fresh Breeze	Small trees in leaf begin to sway
6	25-30	Strong Breeze	Larger tree branches moving; whistling in wires
7	31-38	Near Gale	Whole trees moving; resistance felt walking against wind
8	39-46	Gale	Twigs breaking off trees; generally impedes progress
9	47-54	Strong Gale	Slight structural damage occurs; slate blows off roofs
10	55-63	Storm	Trees broken or uprooted; considerable structural damage
11	64-73	Violent Storm	Widespread damage to vegetation; many roofing surfaces are damaged; asphalt tiles that have curled up and/or fractured due to age may break away completely
12	≥74	Hurricane	Very widespread damage to vegetation; some windows may break; mobile homes and poorly constructed sheds and barns are damaged; debris and unsecured objects are hurled about

Air Transportation Incident		
Definition	Any incident involving a military, commercial, or private aircraft.	
Description	A variety of circumstances can result in an air transportation incident. Mechanical failure, pilot error, enemy attack, terrorism, weather conditions, and onboard fire can all lead to an incident at or near an airport. Air transportation incidents can occur in remote unpopulated areas, residential areas, or downtown business districts. Incidents involving military, commercial, or private aircraft can also occur while the aircraft is on the ground.	
Historical Occurrence	Mills County is in the flight pattern of many aircraft. There are many approaches to Eppley Airfield in Omaha over the county, and Mills County is located in the direct flight pattern of Offutt Air Force Base. History indicates that aircraft accidents are more likely to occur near airports where aircraft operate at lower altitudes. In addition, several farming operations feature landing strips and regularly use small aircraft for crop dusting. There have been no air transportation incidents in Mills County in the last 25 years.	1
Probability	Mills County is in the flight pattern of many aircraft. There are many approaches to Eppley Airfield in Omaha over the county, and Glenwood, Pacific Junction and the western third of the county are located in the direct flight pattern of Offutt Air Force Base.	2
Vulnerability	Other than those in the airplane involved, persons and structures most vulnerable to an air transportation incident would be those located closest to the two airports for which many flights travel over the county at low altitudes. Mills County is in the flight pattern for many aircraft, but is still far enough away that most aircraft will pose little threat of crashing in the area. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	An air transportation incident would most likely be restricted to a crash site, which would probably not be more than an acre or two. However, if such an event were to occur near a hazardous materials facility or on an interstate highway, the effects could be much greater.	2
Severity of Impact	The level of severity would depend on the type of aircraft involved, the type of cargo being transported, and the area on the ground on which the accident occurred. A. The lives and health of the pilot, crew, passengers, and the population on the ground would be at risk. B. Response personnel would likely be exposed to fire hazards and other hazards associated with crashes such as sharp objects, glass, and confined spaces. C. No known impact unless the crash affects a critical facility. D. Significant damage can also occur to property on the ground. Often buildings, fences, utility lines, and trees are damaged or destroyed in the event of a plane crash. The cargo aboard a plane that has crashed will likely be damaged or destroyed. E. No known impact unless the crash affects a critical facility. F. Hazardous materials may be on board or result from spilled fuel. Damage would be localized to the crash site. G. Economic impacts would likely be related to cleanup and repair to any damaged structures. H. No known impact to contractual obligations. I. Reputation is based on effective and timely response.	3
Speed of Onset	Since all air transportation incidents are unpredictable, there is usually almost no warning time.	4

Communications Failure		
Definition	The widespread breakdown or disruption of normal communication capabilities. This could include major telephone outages, loss of local government radio facilities, or long-term interruption of electronic broadcast services.	
Description	Emergency 911, law enforcement, fire, emergency medical services, public works, emergency management, and public health are just a few of the vital services which rely on communication systems to effectively protect citizens. Business and industry rely heavily on various communication media as well. Mechanical failure, traffic accidents, power failure, line severance, and weather can affect communication systems and disrupt service. Disruptions and failures can range from localized and temporary to widespread and long-term. If switching stations are affected, outage could be more widespread.	
Historical Occurrence	A washout of a Qwest fiber optic line between Council Bluffs and Oakland in 2004 left several communities, including Glenwood without telephone or 911 service for several hours. A similar incident occurred in Mills County in 2003 when a phone cable was accidentally cut. There have also been instances where severe winter storms, thunderstorms, or windstorms have knocked out communications. The 1991 Halloween ice storm caused a widespread disruption of communications. In November 2002, a contractor performing work near a communications tower in Glenwood Lake Park severed a guy wire causing the tower to fall. The tower provided radio, cable TV, and cellular phone service to a good portion of the county, resulting in significant communications failure. Mills County Communications Center and E-911 service were incapacitated (for a brief period of time) but were restored completely by February 2003.	2
Probability	The risk of a long-term communications failure in Mills County is relatively low. Restoration of communications capabilities during a prolonged blackout would be a priority, and during most hazard events the county will establish a command center and ensure that communications are reestablished as soon as possible.	2
Vulnerability	The impacts of a communication failure on citizens would be indirect and would create more of an inconvenience than a threat to health and safety. Essential communications equipment in the area is supported by backup systems, and nearby communities, along with the Sheriff's Department, can provide limited alternate communications capabilities in the event of a prolonged failure. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	A communications failure can vary from a single property to an entire system, which would affect much of the county. However, since most households and emergency services offices have more than one means of communication, the long-term effects of a failure would be minimal. In the event of an emergency services communications failure, officials would have greater difficulty with incident management at response sites, which could significantly impair emergency response services and response times.	3
Severity of Impact	A. A communications failure would not directly result in injuries or fatalities. If 911 systems were to fail due to phone communication disruption, secondary impacts could occur by the inability of citizens to alert responders of their needs. B. No known impact to first responder health and safety. C. Inter-agency and intra-agency communications would be limited. Data transmission could also be affected. D. Not affected. E. If 911 systems were to fail due to phone communication disruption, secondary impacts could occur by the inability of citizens to alert responders of their needs. F. Failed communications could result in malfunctioning systems and potential does exist for facilities to discharge hazardous materials into the environment. G. Most economic impacts would be felt on those sectors dependent on communications systems. Financial losses could also be incurred due to direct damage to electronic equipment and communication system infrastructure. H. No known impact to contractual obligation. I. Widespread communication failures could moderately harm the reputation of the county. If 911 systems are affected, the reputation damage could be more serious.	3
Speed of Onset	A communications failure will most likely occur with virtually no warning. Planned communications failures, such as those to address maintenance and/or efficiency issues, are usually announced to the public well in advance and alternative measures can be developed to address those outages.	4

Energy Disruption		
Definition	An extended interruption of electric, petroleum or natural gas service, which could create a potential health problem for the population and possibly mass panic.	
Description	International events could potentially affect supplies of energy producing products, while local conditions could affect distribution of electricity, petroleum or natural gas. The magnitude and frequency of energy shortages are associated with international markets. Local and state events such as ice storms can disrupt transportation and distribution systems. If disruptions are long lasting, public shelters may need to be activated to provide shelter from either extreme cold or extreme heat. Stockpiles of energy products eliminate short disruptions, but can also increase the level of risk to the safety of people and property in proximity to the storage site.	
Historical Occurrence	During the past 25 years, there have been minor power outages somewhere in the county at least once a year, many of which were direct results of other hazard events. The most serious power outage to affect the county occurred in 1991 in conjunction with an ice storm. Many residents were without power for up to 72 hours. A February 2001 winter storm left residents without power for 22 hours.	2
Probability	The probability of another extended power outage is dependent on the size, scope, and circumstances under which power might fail. Mid-American Energy provides most of the county's electricity. A widespread failure affecting more than one community or resulting from a major hazard event could result in a long-term power disruption to portions of the county.	2
Vulnerability	Many of the factors that will determine the scope and length of an energy disruption are beyond the county's control. While a few of Mills County's critical facilities have permanent generators, a long-term energy disruption could cause widespread problems. Energy disruption would not cause damage to physical property or infrastructure. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	An energy disruption would most likely affect a localized area but a more significant occurrence could affect the entire county. A few households and critical facilities have backup energy sources available to cover a relatively short or localized disruption, but extended outages would most likely require assistance from regional and state officials. Such an event would affect more than 50% of the county. Mid-American Energy provides service for many areas in the region and would work to have energy restored as soon as possible.	3
Severity of Impact	A. Injuries and fatalities would not be directly caused by an energy shortage. Injuries and fatalities could occur if energy was not available for heating during extreme cold periods or for cooling during extreme heat. B. No know impact to first responder to first responder health and safety. C. Hospitals, shelters, emergency response vehicles and facilities, and other critical facilities would have priority during energy shortages. D. No known impact to property or infrastructure. E. Effects could range from minor heating and air conditioning disruptions to transportation limitations all the way to civil unrest due to the high demand, low supply, and subsequent cost increases. F. No known impact to the environment. G. Practically all businesses rely on an adequate energy supply to operate. The cost imposed on local businesses depends on the length of the disruption and the time of day it occurs. H. No known impact to contractual obligations. I. Reputation could be harmed if the reason for the shortage or failure could have been avoided by good planning. If caused by natural events, there would be no significant impact unless the response to the outage was poor.	2
Speed of Onset	Some energy disruptions, such as those that may be caused by excess usage, can be detected well in advance and mitigated through measures such as issuing peak alerts and encouraging energy conservation. Disruptions caused by hazard events, however, will usually occur with almost no warning.	4

Fixed Hazardous Materials Incident		
Definition	Accidental release of chemical substances or mixtures that presents danger to the public health or safety during production or handling at a fixed facility.	
Description	A hazardous substance is one that may cause damage to persons, property, or the environment when released to soil, water, or air. Chemicals are manufactured and used in ever increasing types and quantities. Up to 500,000 products pose physical or health hazards and can be defined as "hazardous chemicals." Each year, over 1,000 new synthetic chemicals are introduced. Hazardous substances are categorized as toxic, corrosive, flammable, irritant, or explosive. Hazardous materials incidents generally affect a localized area and the use of planning and zoning can minimize the area of impact.	
Historical Occurrence	There have been numerous fixed hazardous materials incidents in Mills County during the last 25 years. Many incidents have involved the spill or release of ammonia, gasoline, fuel oil, and herbicides and pesticides. In April 2002 an anhydrous ammonia leak at the Farm Service Co-Op directly south of Pacific Junction forced the evacuation of approximately 15 residences. In 2003 a 500 gallon ammonia storage tank tipped over northeast of Emerson.	4
Probability	Mills County contains 11 facilities in which the owners use, store or manufacture "extremely hazardous substances" (EHS) at or above reporting threshold levels identified in Section 302 of the Emergency Planning and Community Right to Know Act. The most prevalent EHS is anhydrous ammonia stored in bulk quantities at 7 of the 11 sites. Each of the sites is highly regulated and retains professional safety and environmental engineers to maintain contingency plans for public safety. The main threat of a hazardous material release is through either a catastrophic material failure or human error on the part of the operator. Some EHS sites could become potential targets for terrorist groups.	3
Vulnerability	The primary areas of vulnerability are the public and private properties immediately surrounding the EHS sites within 0.5 to 1 mile radius. The Vulnerability Zone Radius (VZR) is calculated for a worst case spill at each EHS site. A VZR is an area where it may be anticipated that airborne concentrations of a released hazardous substance may reach one-tenth of the concentration considered Immediately Dangerous to Life and Health (IDLH). An IDLH atmosphere will kill or incapacitate within a 30 minute period of time. The most vulnerable areas are those immediately surrounding the facility, but in the event of a major incident the impact of a release could affect a large portion of the county. Such an incident would potentially harm life but not physical or infrastructure. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	Depending upon weather conditions and the amount and type of EHS in a container, a worst-case incident of any of the EHS sites in Mills County in which 100% of the EHS is released during a 10-minute period could result in a VZR of 0.3 to 4.4 miles. Up to 10,000 residents could be affected by a worst-case release. Response time by a hazardous materials response team would normally be under ten minutes, though the incident commander's decision to evacuate or shelter citizens in place may have to be made within minutes of the release.	3
Severity of Impact	A. The release of some toxic gases may cause immediate death, disablement, or sickness if absorbed through the skin, injected, ingested, or inhaled. Some chemicals may cause painful and damaging burns to skin if direct exposure occurs. B. Specialized training is needed to respond to these types of incidents. If inadequately trained personnel attempt to respond, the impacts could be the same as those for the general public exposed to the toxic materials. C. None known impact unless the incident occurs on or near critical facilities or services. D. Damage is usually limited to the immediate property involved. Proper decontamination is needed before the facilities go back in service. E. Contaminated water resources may be unsafe and unusable, depending on the amount of contaminant. F. Contamination of air, ground, or water may result in harm to fish, wildlife, livestock, and crops. The release of hazardous materials into the environment may cause debilitation, disease, or birth defects over a long period of time. G. Loss of livestock and crops may lead to economic hardships within a jurisdiction. Cleanup costs could also be significant to a jurisdiction. H. No known impact to contractual obligations. I. Safe and timely response will greatly limit any damage to a jurisdiction's reputation.	3
Speed of Onset	Fixed facility EHS releases generally occur with no warning. In most cases, the quickness of the response to such an event will be the main determinant of the severity of the incident.	4

Fixed Radiological Incident		
Definition	An incident resulting in a release of radiological material at a fixed facility to include power plants, hospitals, laboratories, etc.	
Description	Although the term "nuclear accident" has no strict technical definition, it generally refers to events involving the release of significant levels of radiation. Most commercial nuclear facilities in the United States were developed in the mid-1960s and are designed to withstand aircraft attack. Therefore, they should withstand most natural hazards even though they may not have been specifically designed for those forces.	
Historical Occurrence	Emergency classifications are divided into four categories. Each calls for a certain level of response from plant and government personnel. From least to most severe, the classifications are: Unusual Event, Alert, Site Area Emergency, and General Emergency. Since 1990, the Cooper Nuclear Station in Brownville, NE has had 18 Unusual Events, 1 Alert, and no Site Area Emergencies or General Emergencies. Since 1990, the Ft. Calhoun Nuclear Station in Fort Calhoun, NE has had 17 Unusual Events, 2 Alerts, and no Site Area Emergencies or General Emergencies.	1
Probability	Operators of facilities that use radioactive materials and transporters of radioactive waste are circumspect in the packaging, handling, and shipment of the radioactive waste; and since they are closely regulated by a variety of federal, state, and local organizations, the likelihood of an incident is remote.	1
Vulnerability	Mills County is within the 50 mile Ingestion Pathway Zone and 10 mile Emergency Planning Zone for both the Cooper and Ft. Calhoun nuclear power stations in Nebraska. Therefore, in the event of a major radiological event at either site, the potential exists for significant portions of Mills County to be affected, depending on the scope of the accident and prevailing wind conditions. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	In 30 years of nuclear power production in the U.S., no deaths or serious injuries from radiation have occurred. Except in a nuclear detonation, exposure to large amounts of radiation is less likely to cause large-scale damage, death and injury than many of the conventional hazards we face. Each of the nuclear facilities in the U.S. identifies a 10-mile radius Emergency Planning Zone and a 50-mile radius Ingestion Pathway Zone.	2
Severity of Impact	A. Depending on the level of exposure, radiation can cause loss of life and long and short- term health effects. Time, distance, and shielding minimize radiation exposure to the body. Nuclear radiation above normal levels could be a health and safety consideration because of its ability to damage living cells. B. Specialized training is needed to respond to these types of incidents. If inadequately trained personnel attempt to respond, the impacts could be the same as those for the general public exposed to the radioactive materials. C. No known impact to continuity of operations. D. Property and infrastructure damage can result from radioactive contamination. E. Power plants may be taken off line for extended periods of time. Other impacts would be indirect and only if in the contaminated area. F. Damage to the environment can be very long-lasting depending on the half-life of the products involved. Land, water, and air would be affected. G. If the land and facilities cannot be used for weeks, months, or even years, the loss of production would be devastating. Economic impacts would be multi-sector and long-lasting, especially in and around the affected region. H. Indemnification would be a vital issue to address in the long-term following a radioactive release. I. Reputation of an entity can be very damaging because of the high profile nature of these events. The negative impact could be felt for decades following contamination.	3
Speed of Onset	Ionizing radiation cannot be seen, smelled, heard, or detected within human senses. Detection instruments are needed to indicate the existence of dangerous radiation. Distance from the incident would dictate the amount of time needed to avoid exposure from damaging radiation. Protective actions directed by state and county officials, will depend upon weather conditions. In an actual emergency, the public can turn to their local Emergency Alert System Station or NOAA Weather Radio.	4

Highway Transportation Incident		
Definition	A single or multi-vehicle incident, which requires responses exceeding normal day-to-day capabilities.	
Description	An extensive surface transportation network exists in Iowa. Local residents, travelers, and businesses rely on this network on a daily basis. Thousands of trips a day are made on the streets, roads, highways, and interstates in the county. If the designed capacity of the roadway is exceeded, the potential for a major highway incident increases. Weather conditions play a major factor in the ability of traffic to flow safely in and through the county, as does the time of day (rush hour) and day of week. Incidents involving buses and other high occupancy vehicles could trigger a response that exceeds the normal day-to-day capabilities of response agencies.	
Historical Occurrence	Traffic accidents occur in the county each year. Many of these accidents are limited to fender benders with damage only to property, but several accidents result in injuries and even deaths in some cases. According to the Iowa Traffic Safety Data Service, between 2004 and 2008 there were 13 accidents in Mills County resulting in 15 fatalities and 173 accidents resulting in at least minor injuries.	3
Probability	There are two US highways and an interstate that intersect the county, all of which handle well over 2,000 vehicles per day. Given the high volume of traffic through the area and historical accident rates, the probability of at least one significant highway transportation incident in the county in the next year is moderately high.	3
Vulnerability	Those most susceptible to a highway transportation incident are drivers and passengers. The risk of an accident will be higher during large gatherings, during morning and evening commutes, and in adverse weather conditions. There may also be situations where a vehicle will leave the roadway and cause damage to property or infrastructure. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	1
Maximum Geographic Extent	Most accidents are isolated to the vehicles and persons directly involved. In the event of an accident involving a vehicle carrying hazardous materials, there are additional risks associated with spills, leaks, or fires. Although accidents may cause serious injury to those involved, most would likely affect less than 10% of the county. The map on Appendix A illustrates the major roadways that traverse Mills County.	1
Severity	A. Highway incidents threaten the health and lives of people in the vehicles, pedestrians, and citizens of a community if hazardous materials are involved. Mass casualty events can occur if mass transit vehicles are involved. B. Response personnel are certainly not immune to traffic accidents. Because of the number of hours that law enforcement are on the road, they have a higher risk than do other response personnel. C. No known impact to continuity of operations. D. Property damage primarily involves affected vehicles and cargo, though roads, bridges, and infrastructure such as light and power poles can be impacted. Third party property adjacent to the accident scenes such as buildings and yards can suffer damage as well. E. There may be short term localized impacts if utility poles are affected or if streets are blocked off. F. Fuel and other fluids can be spilled from the affected vehicles. If vehicles hauling hazardous materials are involved, the impact could be much greater. Thousands of gallons or pounds of product can be released to the environment if the container is damaged. G. No significant impact other than business disruption in the affected area. H. No known impact to contractual obligations. I. Highway incidents occur very frequently and do not have a significant impact on the reputation of any jurisdictions in and including Mills County.	1
Speed of Onset	As they are unplanned in nature, highway transportation incidents generally occur with no warning. During adverse weather conditions that result in deteriorated road conditions, emergency response personnel will generally be more alert for the possibility of an incident.	4

Pipeline Incident		
Definition	A break in a pipeline creating a potential for an explosion or leak of a dangerous substance (oil, gas, etc) possibly requiring evacuation.	
Description	Many high pressure pipelines serve county residents and industries. An underground pipeline incident can be caused by environmental disruption, accidental damage, or sabotage. Incidents can range from a small slow leak that is not ignited to a large rupture in which the gas is ignited. Inspection and maintenance of the pipeline system along with marked gas line locations and an early warning and response procedure can lessen the risk to those in proximity to the pipelines.	
Historical Occurrence	There have been no pipeline incidents in Mills County in the last 25 years.	1
Probability	The primary risk of a pipeline incident in the county would come from construction that would require significant trenching. Such construction would most likely involve infrastructure improvements, which are usually designed and certified by a professional engineer to avoid such an incident.	2
Vulnerability	Five pipeline companies, including B.P. Pipelines Inc., Northern Natural Gas Company, Kinder Morgan Energy Partners, National Cooperative Refinery Association, and Peoples Natural Gas, operate over 260 miles of pipelines in diameters ranging from 2 to 30 inches conveying petroleum and fuel gases. The primary risk of a pipeline incident would be to persons excavating near a pipeline and to structures and the environment around an incident. In the event of a release, persons and residences downhill and downwind would be most at risk. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	Pipelines in Mills County generally traverse unincorporated regions. The map on Appendix G shows the routes of pipelines in the county.	2
Severity of Impact	A. All petroleum liquids pose dangers from fire or explosion and the fire may produce poisonous or irritating gasses. Toxic fumes and direct contact can cause health hazards. Vapor clouds can travel a distance and settle in low lying areas where the fumes may overcome people and animals. Released products should be treated as any other hazardous material. Large areas may need to be evacuated to remove people from the threat of fire, explosion, or exposure. B. Specialized training is required to work around pipelines because of hazardous materials, potential high pressure liquids and gases, and trench rescue techniques. C. Services that depend on products moving through pipelines may be impacted if they do not have an auxiliary source. D. Pipeline leaks and eruptions can cause significant damage to land and structural property, though such damage would likely be localized to the impacted area. E. Many utilities in Mills County are transported via pipelines, such as gas and water. County jurisdictions and residents may experience a delay to any number of services in the event of a pipeline incident. F. Saturated soil and erosion are the primary environmental impacts of a pipeline incident. G. Business disruption can occur to those businesses that rely on regular pipeline service, whether for water, gas, etc. Mass evacuations can also disrupt local business and operations. H. Utility providers in the county would be responsible for any repair or replacement. I. A well informed public before, during, and after an incident will greatly reduce the impact to a jurisdiction's reputation.	2
Speed of Onset	While an actual pipeline incident will occur with no warning, the effects of such an event can usually be detected and mitigated quickly. Fumes, vapors, and sounds will usually alert people to any danger relating to a pipeline incident.	4

Rail Transportation Incident		
Definition	A derailment or a train accident that directly threatens life or property, or which adversely impacts a community's capabilities to provide emergency services.	
Description	Railway incidents may include derailments, collisions, and highway/rail crossing incidents. Train incidents can result from a variety of causes. Human error, mechanical failure, faulty signals, and problems with the track can all lead to railway incidents. Results of an incident can range from minor "track hops" to catastrophic hazardous materials incidents and even passenger casualties. With the many miles of track in Mills County, there are numerous at-grade crossings at which vehicles must cross railroad tracks.	
Historical Occurrence	There have been no derailments or accidents in the last five years in Mills County, though there was a rail incident in 2000 south of Glenwood. Other incidents include a 1998 derailment west of Emerson, a 2002 derailment south of Pacific Junction, and a train-vehicle collision west of Pacific Junction in 2004.	3
Probability	There are two rail corridors in Mills County, one running east and west roughly following the route of US 34, and another running north and south roughly following Interstate 29. Both lines are owned by Burlington Northern-Santa Fe. Pacific Junction is the major rail yard, where the two lines intersect. There are dozens of railroad crossings in Mills County, including at-grade crossings, viaducts, and rail bridges crossing over major roads. The miles of railroad track in the county, combined with the large number of street and highway crossings, makes the probability of a highway/rail collision relatively higher in Mills County than in some other counties. Most street/rail intersections are protected with signals and other traffic controls, which alert motorists and reduce the overall risk of an incident. Derailments are also possible under the right circumstances.	3
Vulnerability	People and property in close proximity to the railway lines, crossings, sidings, switching stations, and loading/unloading points are most at risk. Those away from railroad tracks and facilities are vulnerable only to large scale incidents including those in which hazardous materials are involved. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	There are several miles of railways in the cities of Glenwood, Malvern, Hastings, Emerson, and Pacific Junction. Vehicle/train collisions are usually limited to areas in and near intersections. In rare cases, an incident will result in widespread effects. The direct area of impact is usually quite small, but depending on the products and materials involved, the area could become extensive. If hazardous materials are involved, the effects could reach areas up to 1.5 miles from the scene. Harmful products may contaminate streams, rivers, water distribution systems, and storm water systems. If this occurs, a large portion of the county could be affected. The map on Appendix G shows the routes of rail lines in the county.	2
Severity of Impact	A. Deaths and injuries can range from those directly involved, to citizens in the radius of a hazmat release. Evacuations may occur depending on the materials involved. B. First responders face risk at rail incident sites from fire and hazmat releases. C. No known impact to continuity of operations. D. Damage may be limited to the train, railcars, and cargo involved, but it could also include rail infrastructure and adjacent properties. E. Rail transportation routes may be out of commission until the accident is cleaned up and the infrastructure repaired. Cargo delays will occur for hours or perhaps days. F. Gases, liquids, and solids can contaminate air, soil, and water in and near the incident scene. G. Economic impacts include loss of production, business disruption due to evacuations, and disruptions of those businesses served by the railroad. Disruptions could last several days until cleanup efforts are complete. H. None known impact to contractual obligations. I. Communities with rail routes in Mills County are familiar with the level of rail traffic, but not necessarily familiar with the cargo that may pass through day-to-day. Education, public information, and a timely and effective response will determine the impact to reputation.	3
Speed of Onset	Like other transportation incidents, a railway incident would occur with no warning. There may be a limited amount of time to warn those in the pathway of the harmful effects.	4

Transportation Hazardous Materials Incident		
Definition	Accidental release of chemical substances or mixtures that presents danger to the public health or safety during transportation.	
Description	A hazardous substance is one that may cause damage to persons, property, or the environment when released to soil, water, or air. Chemicals are manufactured and used in ever increasing types and quantities. As many as 500,000 products pose physical or health hazards and can be defined as "hazardous chemicals." Each year, over 1,000 new synthetic chemicals are introduced and transported across the county via semi truck and train. Hazardous substances are categorized as toxic, corrosive, flammable, irritant, or explosive. Transportation hazardous materials incidents generally affect a localized area.	
Historical Occurrence	There have been several transportation hazmat incidents of note in Mills County over the last several years. In 1998, a train derailment near Emerson resulted in the release of some chemicals. A rollover accident along Bunge Avenue in 2003 resulted in the spillage of two anhydrous tanks, with response required by the Pacific Junction Fire Department. Two fuel spills on US Highway 34, one in 2004 at the intersection with US Highway 275, and another in 2006 at the intersection with US Highway 59, reached reportable levels and required an Iowa DNR response. Another notable anhydrous spill was reported west of Malvern in 2005. In addition, there have likely been numerous incidents that have either gone unreported to authorities or did not involve a significant enough level of release to trigger a report.	4
Probability	Hundreds of materials may be transported through the county at any given time, most commonly on Interstate 29, Highways US 275, US 34, and US 59. Hazardous materials are also transported on the Burlington Northern Railroad and on barges on the Missouri River. The most potentially hazardous point in the routes is where US Highway 34 joins Interstate 29 and crosses over the Burlington Northern Railroad southwest of Pacific Junction. Based on the volume of hazardous materials traversing the county, and considering historical events, there is a fair to good possibility that Mills County will experience a significant transportation related hazmat incident at some point in the next one to five years.	3
Vulnerability	The primary areas of vulnerability are the public and private properties immediately surrounding the hazardous material transportation routes within a radius of one mile. The Vulnerability Zone Radius (VZR) can be calculated for a worst case spill at any point along a transportation corridor. A VZR is an area where it may be anticipated that airborne concentrations of a released hazardous substance may reach one-tenth of the concentration considered Immediately Dangerous to Life and Health (IDLH). An IDLH atmosphere is one that will kill or incapacitate within a 30 minute period of time. Since a transportation hazardous materials incident can occur on any road or in any agricultural area, nearly the entire county is vulnerable to an incident. Depending on the location and nature of the accident, the effects could impact a few people or perhaps hundreds. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	The transportation of extremely hazardous substances (EHS) within Mills County poses a threat to communities that are located within five miles of major highways and/or railroad tracks. Such materials cannot be identified precisely in advance. In most cases, the effects of an accident are contained to the accident site and the persons directly involved. However, there may be some extreme instances where a leak, spill or explosion will carry hazardous materials away from the accident site to a larger area of the county. Such an event could cause serious injuries and/or fatalities. If such an event were to occur, it is expected that less than 10% of Mills County would be affected.	3
Severity of Impact	A. The release of some toxic gases may cause immediate death, disablement, or sickness if absorbed through the skin, injected, ingested, or inhaled. Some chemicals may cause painful and damaging burns to skin if direct exposure occurs. B. Specialized training is needed to respond to these types of incidents. If inadequately trained personnel attempt to respond, the impacts could be the same as those for the general public exposed to the toxic materials. C. The occurrence of a transportation hazmat incident often shuts down transportation corridors for hours at a time while the scene is stabilized, the product is off-loaded, and reloaded on a replacement container. D. Damage may be limited to the cargo liner, and cargo involved, but it could also include highway, interstate, or street infrastructure, and adjacent properties. E. Transportation corridors can be shut down for hours at a time. Utilities should continue to function normally unless contamination has occurred.	3

	F. Contamination of air, ground, or water may result in harm to fish, wildlife, livestock, and crops. The release of hazardous materials into the environment may cause debilitation, disease, or birth defects over a long period of time. G. Loss of livestock and crops may lead to economic hardships to those adjacent to the accident site. H. Transportation of hazardous materials is regulated by the Iowa Department of Transportation. However, if a release of hazardous materials were to take place, then the Department of Natural Resources becomes the regulatory and managing agency. I. Although citizens are aware of the shipping industry, they may not be as aware of the dangers that some cargo may pose. Education, public information, and a timely and effective response will determine the impact to reputation.	
Speed of Onset	A transportation hazardous materials incident will almost always occur without warning. Even if reported immediately, people in the area of the release have very little time to be warned and evacuated. During some events, sheltering-in-place is the best alternative to evacuation, since the material has already affected the area and there is no time to evacuate safely. A quick and efficient response to any such incident will be the key to minimizing the threat to the health and safety of those involved.	4

Transportation Radiological Incident		
Definition	An incident resulting in a release of radioactive material during transportation.	
Description	Transportation of radioactive materials through Iowa over the interstate highway system is considered a radiological hazard. The transportation of radioactive material by all means of transport is licensed and regulated by the federal government. As a rule there are two categories of radioactive materials that are shipped over the interstate highways. Low level waste consists primarily of materials that have been contaminated by low level radioactive substances, but pose no serious threat except through long-term exposure. These materials are shipped in sealed drums within placarded trailers. The danger to the public is no more than a wide array of other hazardous materials. High level waste, usually in the form of spent fuel from nuclear plants, is transported in specially constructed casks, which are built to withstand a direct hit from a locomotive. When these materials are moved across Iowa highways, Iowa officials are notified and appropriate escorts are provided.	
Historical Occurrence	There have been no transportation radiological incidents in Mills County in the last 25 years.	1
Probability	Transportation accidents are the most common type of incident involving radioactive materials because of the sheer number of radioactive shipments. Operators of facilities that use radioactive materials and transporters of radioactive waste are circumspect in the packaging, handling, and shipment of the radioactive waste; and, since they are closely regulated by a variety of federal, state, and local organizations, the likelihood of an incident is remote.	1
Vulnerability	Transportation of radioactive materials is mostly low level waste consisting primarily of materials that pose no serious threat except through long-term exposure. The danger to the public is no more than a wide array of other hazardous materials. Those working with or near sources of radiation are at a greater risk than the general citizens of the area. Those responding to a radiological incident should be trained in recognizing a radiological incident and minimizing exposure to radioactive materials. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	1
Maximum Geographic Extent	Other than a transportation incident involving large amounts of high-level radioactive materials, radiation exposure will be limited to localized areas.	1
Severity of Impact	A. Time, distance, and shielding minimize radiation exposure to the body. Nuclear radiation above normal levels could be a health and safety consideration because of its ability to damage living cells. B. Specialized training is needed to respond to these types of incidents. If inadequately trained personnel attempt to respond, the impacts could be the same as those for the general public exposed to the radioactive materials. C. No known impact to continuity of operations. D. Property and infrastructure damage can result from radioactive contamination. E. Some services may need to be temporarily cancelled until it is determined the affected area is free of radioactive contaminants. F. Long lasting impacts on the environment from a radiological incident could include soil, air, and water contamination. These impacts could last decades. G. If contaminated land and facilities cannot be used for weeks, months, or even years, the loss of production would be devastating. Economic impacts would be multi-sector and long-lasting, especially in and around the affected region. H. Indemnification would be a vital issue to address in the long-term following a radioactive release. I. Reputation of an entity can be very damaging because of the high profile nature of these events. The negative impact could be felt for decades following contamination.	2
Speed of Onset	A radiological incident in Mills County would result from an incident in handling or transporting radioactive materials. This accident would occur with little or no warning. Distance from the incident would dictate the amount of time needed to avoid exposure from damaging radiation. The U.S. Department of Transportation requires the use of placards to indicate to the public and first responders the types of materials on board.	4

Waterway/Waterbody Incident		
Definition	An accident involving any vessel that threatens life or which adversely impacts a community's capability to provide emergency services.	
Description	Waterway incidents will primarily involve pleasure craft on area rivers and lakes. In the event of an incident involving a water vessel, the greatest threats would be drowning, fuel spillage, and property damage. Water rescue events would largely be handled by first responding agencies. Waterway incidents may also include events in which persons fell through the ice on partially frozen water bodies.	
Historical Occurrence	In the past 25 years, there have been instances where the Lewis Township and Red Oak Fire Departments have responded to water related incidents, primarily involving boaters and swimmers in small crafts. While there have been a few injuries and drowning incidents, there have not been any large scale water related incidents involving commercial boats or barges.	1
Probability	Due to the presence of the Missouri River on the western border of the county, there is a slightly increased risk of a waterbody incident requiring county response in the future. No municipalities in Mills County face any likelihood of waterway/water body incidents.	1
Vulnerability	Passengers of pleasure craft are vulnerable to a waterway incident. Operators of barges are also vulnerable. The environment is vulnerable to potentially damaging materials aboard the numerous barges that normally operate year round on the Missouri River. The U.S. Coast Guard Auxiliary Eighth Western Rivers Division 33 maintains and executes a disaster emergency plan for that portion of the Missouri River that borders Mills County. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	The maximum extent of a waterway incident would be limited. Impacts would not extend beyond the immediate incident scene. The only exception would include a search and rescue event that could expand downstream. If a hazardous material were released to the waterway, the impact could expand considerably.	1
Severity of Impact	A. Impacts would be limited to personal injuries and possibly death of the persons directly involved. B. First responders may face risk from fuel spills. C. Minor disruption to operations may occur due to the possibility of conflicting operations in the area. Site may be restricted until the rescue, salvage or possible cleanup/decontamination operations have been completed. For example salvage operations may not be able to get underway until a successful testing and decontaminating operation is completed. D. Property damage would be restricted to the watercraft involved. E. Refer to C. F. Environmental damage could impact aquatic flora and fauna. Water quality could be compromised if hazardous materials are released from boats or barges. G. Economic damages would largely rest on the watercraft owners involved. H. The Department of Natural Resources monitors watercraft regulations and serves as an aquatic police force (shore patrol) in the State of Iowa. I. Impact to reputation would mainly be connected to the watercraft owner(s)/operator(s) involved in an incident.	2
Speed of Onset	Most incidents occur with little or no warning and can be attributed to inclement weather and/or operator error. Weather forecasts are usually available days in advance and would give ample time to take shelter off the water.	4

Enemy Attack		
Definition	An incident that would cause massive destruction and extensive casualties. An all out war would affect the entire population. Some areas would experience direct weapons effects: blast, heat, and nuclear radiation; others would experience indirect weapons effects, primarily radioactive fallout.	
Description	The federal government monitors the international political and military activities of other nations and would notify the State of Iowa of escalating military threats. There are many smaller military installations in Iowa. Most are Iowa National Guard assets spread throughout the state comprised of various military units and functions.	
Historical Occurrence	There have been no enemy attacks on or in Mills County in modern times.	1
Probability	Enemy attack is still a possibility due to international conflicts and the large number of weapons still in existence in the world. Mills County, while a small county, is part of the 59th largest metropolitan area in the United States, which is home to STRATCOM, the strategic headquarters of much of the military's planning and operations, and a very critical facility on the national level. The presence of that facility and its many employees throughout the Omaha/Council Bluffs metropolitan area slightly increases the risk of an enemy attack in the region.	1
Vulnerability	The targets of attacks on critical infrastructure in the county would likely include both facilities in the economy and those in the government. These critical infrastructures include information and communication systems; electrical power systems; gas and oil production, storage, and transportation systems; banking and finance organizations; transportation and distribution systems; water supply systems; emergency services; and government services. Nearly every citizen, business, and organization depends on these for normal operation as well as safety and security. If not affected directly, the entire county would be vulnerable through indirect impacts.	3
Maximum Geographic Extent	In the event of an enemy attack in Mills County, population centers and areas with critical facilities are at greater risk than sparsely populated rural areas.	3
Severity of Impact	A. Severity of impact would depend on the type of weapons deployed and the scale of attack. Nuclear, chemical, biological, or conventional weapons have various types of impacts. In a full-scale attack on the state/county, there could be mass casualties and fatalities. Lives not threatened by the primary attack would be in jeopardy from many various post-attack threats such as sickness, starvation, and exposure to the elements. B. See A. C. Continuity of operations would be disrupted at least initially during the primary attack. D. Catastrophic property and infrastructure damage could result from an enemy attack. E. Services would at least be temporarily cancelled during the duration of an attack. F. In a full-scale attack on the state/county, there could be radiological, chemical, or biological contamination of the air, soil, water, and food supply. G. A full-scale attack could result in millions of dollars of damages to the county. Business production of all kinds could be ceased, at least in the initial aftermath. H. No known impact to contractual obligations. I. There would be little to no adverse impact to Mills County's reputation. Response would be focused on the federal government.	3
Speed of Onset	As mentioned above, the United States government monitors worldwide political and military activity. The citizens and states of the U.S. would be put on heightened alert during periods of intense political or military conflict. With Iowa's position in the interior of the U.S., there would likely be significant warning of an impending enemy attack.	1

Public Disorder		
Definition	Mass demonstrations or direct conflict by large groups of citizens, as in marches, protest rallies, riots, and non-peaceful strikes.	
Description	People assembled together in a manner to substantially interfere with public peace constitute a threat, by use of unlawful force or violence against another person, causing property damage; or attempting to interfere with, disrupting, or destroying the government, political subdivision, or group of people. Labor strikes and work stoppages are not considered in this hazard unless they escalate into a threat to the public. Vandalism is usually initiated by a small number of individuals and limited to a small target group or institution. Most events are within the capacity of local law enforcement.	
Historical Occurrence	There have been no large scale civil disturbances in Mills County in the last 25 years. Non-peaceful incidents have occurred in the past, but all were within the response capabilities of local law enforcement.	1
Probability	Although destructive civil disturbances are rare, the potential is always there for an incident to occur. In a time where television, radio, and the internet provide the ability to instantly broadcast information (factual or not) to thousands of people, an already precarious situation can grow very quickly. This also allows insightful people, previously not involved, to participate in the disturbance for no other reason than to riot, loot, burn, and destruct. Alcohol is often involved in public disorder, especially as it relates to sporting events and concerts. Also, the presence of organizations perceived by some as controversial in the community increases the risk of a demonstration that could lead to public disorder.	1
Vulnerability	Large scale civil disturbances are often difficult for local communities to handle. Fortunately, most demonstrations and large public gatherings are held in a peaceful, responsible manner. However, there will always be groups whose aim is to create civil disturbances, whether or not drugs and/or alcohol are involved. People at risk are mainly the willing participants and law enforcement officials. In some cases, innocent bystanders and their property can be at risk as well.	1
Maximum Geographic Extent	Events usually affect a localized area. Often times only a couple of blocks or streets are affected. In the event of public disorder in Mills County, it is likely that less than 5% of the population would be affected.	1
Severity of Impact	A. Citizens at risk would be those involved in the disorder and likely some innocent bystanders. B. There are inherent risks for first responders in dealing with public disturbances such as violence from rioters. Fires can also result which create additional risks for rescuers. C. None likely unless a critical facility is a casualty of a riot. D. Property damage is often a result of public disturbances. The scope of damage is dependent on the number of rioters and the duration of the disturbance. E. Some businesses and services may be unable to function during the duration of a disturbance. Street access may also be blocked off. F. None expected. Public disturbances often take place in urbanized settings. G. Businesses that sustained damage from rioters could face potential short-term economic hardships. Total economic distress in a community would be unlikely. H. No known impact to contractual obligations. I. Any jurisdiction that suffers from a public disturbance will very likely see damage to their reputation, at least in the short-term. The degree of negative image depends largely on the duration of the disturbance, damage done, and response by law enforcement officials.	2
Speed of Onset	Events that incite such activity can build up over hours, days, or years, and the violent disturbance is a culmination of the long-term situation. Civil disruptions can also escalate very rapidly following events where people are gathered such as sporting events, concerts, or speeches.	3

Biological Terrorism (includes Agricultural Terrorism)		
Definition	Use of biological agents against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom.	
Description	Liquid or solid contaminants can be dispersed using sprayers/aerosol generators or by point or line sources such as munitions, covert deposits, and moving sprayers. Biological agents may pose viable threats from hours to years depending upon the agent and the conditions in which it exits. Depending on the agent used and the effectiveness with which it is deployed, contamination can be spread via wind and water. Infections can be spread via human or animal vectors. Agro-terrorism is the direct, generally covert contamination of food supplies or introduction of pests or disease agents to crops and livestock.	
Historical Occurrence	There have been no occurrences of biological terrorism in Mills County in the last 25 years.	1
Probability	While the probability of an act of biological terrorism in Mills County is relatively low, the threat of such an event to the U.S. and the Omaha/Council Bluffs metropolitan area has increased in the last 25 years, particularly since the terrorist attacks on September 11, 2001.	1
Vulnerability	Innocent people are often victims of terrorist activity targeted at specific organizations and activities. Based on the method of delivery, the general public is vulnerable to bio-terrorism. Most Americans are not vaccinated for many of the agents used as weapons by terrorist groups. In early 2003, a few hospitals in the State of Iowa issued smallpox vaccinations to volunteers and first responders. In any case, the entire county faces some vulnerability to terrorist activities.	3
Maximum Geographic Extent	Because of the characteristics of the bio-weapons terrorists can use, the area affected can range from a room to the entire county. Depending on the agent used and the effectiveness with which it is deployed, contamination can be spread via wind and water or by humans and animals. Because of the variables described above, the geographic extent of an incident could grow quite broad before the incident is recognized as a terrorist act.	3
Severity of Impact	A. The intent of terrorism is to cause fear based on illness, injury, and death. A bio-terrorism incident would likely result in illness at a minimum, with multiple deaths and long-term health problems as a worst-case. B. Responders may not initially be aware that they are responding to a biological incident and may not have the personal protective equipment necessary to protect them against the released agent. This could result in injuries, illness, and death among responders. C. Evacuations would shut down most operations until an alternative operations site could be set up outside the affected area. This may take days be a degraded operation because of assets that are unable to be duplicated. D. A highly persistent biological agent would not destroy property, facilities, or infrastructure, but would render the facility useless until the facility was decontaminated. E. Critical services could be affected such as health care. Capability of health care services to diagnose and treat a biological agent may be severely limited in rural areas. Most services would be impacted by being overwhelmed. F. Biological agents could contaminate soil, air, and water not only in the target area but in other pockets by agent migration. G. Economic impacts from an agro-terrorism incident would be far-reaching and severely damaging because of loss of production and long-term disruption of commodity flows. H. Widespread losses of crops would affect many contractual obligations related to commodity flows. I. Timely and adequate response will minimize damage to the jurisdiction's reputation. Given today's environment, even a small bio-terrorism incident will receive national media attention.	3
Speed of Onset	While a lone terrorist or terrorist organization may threaten action in advance of an event, most attacks will occur without warning. Many times terrorists will use the threat of an attack to spread fear, and all credible threats should be taken very seriously. A bio-terrorism event could be "stealthy" in that responders would not realize an attack had occurred until illnesses and casualties started being reported.	4

Chemical Terrorism		
Definition	Use of chemical agents against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom.	
Description	Liquid/aerosol contaminants can be dispersed using sprayers or other aerosol generators; liquids vaporizing from puddles/containers; or munitions. Chemical agents may pose viable threats for hours to weeks depending on the agent. Persons, vehicles, water, and wind can carry contamination out of the initial target area. Chemicals may be corrosive or otherwise damaging over time if not mitigated.	
Historical Occurrence	The county has received some white powder threats in the last 10 years, but all testing of materials found has been negative.	1
Probability	While the probability of an act of chemical terrorism in Mills County is relatively low, the threat of such an event to the U.S. and the Omaha/Council Bluffs metropolitan area has increased in the last 25 years, particularly since the terrorist attacks on September 11, 2001.	1
Vulnerability	All types of terrorism are generally directed at specific groups, persons, public venues, critical assets, and public infrastructure. Per the State of Iowa Critical Asset Protection Plan, Mills County contains at least 26 critical assets that are vulnerable to various terrorist methods unless specific actions to "harden" those assets against terrorist attacks are taken. For these reasons, the entire county faces some vulnerability.	3
Maximum Geographic Extent	A terrorist-induced release of chemicals could result in a Vulnerability Zone Radius of up to nine miles. Persons, vehicles, water, and wind can carry contaminants out of the initial target area. The chemical type, method of dispersal, and possible prevailing wind conditions (if release is outdoors) will determine the extent of a chemical outbreak in Mills County.	3
Severity of Impact	A. The intent of terrorism is to cause fear based on illness, injury, and death. A chemical terrorism incident would likely result in illness at a minimum, with multiple deaths and long-term health problems as a worst-case. B. Responders may not initially be aware that they are responding to a chemical incident and may not have the personal protective equipment necessary to protect them against the released compound. This could result in injuries, illness, and death among responders. C. Evacuations would shut down most operations until an alternative operations site could be set up outside the affected area. This may take days be a degraded operation because of assets that are unable to be duplicated. D. A highly persistent chemical would not destroy property, facilities, or infrastructure, but would render the facility useless until the facility was decontaminated. E. Critical services could be affected such as health care. Capability of health care services to diagnose and treat a chemical agent may be severely limited in rural areas. Most services would be impacted by being overwhelmed. F. Depending upon the chemicals used, soil, air, and water could be affected. Dilution, disbursement, and natural factors may lessen the impact over time depending upon the chemical's persistence. G. Economic impacts would vary depending upon the persistence of the chemical used and the time required for decontamination. H. None known impact to contractual obligation. I. Timely and adequate response will minimize damage to the jurisdiction's reputation. Given today's environment, even a small chemical terrorism incident will receive national media attention.	3
Speed of Onset	While a lone terrorist or terrorist organization may threaten action in advance of an event, most attacks will occur without warning. Many times terrorists will use the threat of an attack to spread fear, and all credible threats should be taken very seriously.	4

Conventional Terrorism		
Definition	Use of conventional weapons and explosives against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom.	
Description	Conventional terrorism includes detonation of an explosive device on or near a target delivered via person, vehicle, or projectile. Hazard effects are instantaneous; additional secondary devices may be used, lengthening the duration of the hazard until the attack site is determined to be clear. The extent of damage is determined by the type and quantity of explosive. Effects are generally static other than cascading consequences, such as incremental structural failures, etc. Conventional terrorism can also include tactical assault or sniping from remote locations.	
Historical Occurrence	Local conventional terrorism incidents have become more commonplace during the last 25 years. In just two years, 1998 and 1999, 25 bomb threats (and one chemical threat) were recorded by the Mills County 911 Communications Center. Additional bomb threats have been received since, and in at least one instance, pipe bombs were discovered. These types of incidents appear to have been perpetrated by individuals not associated with organized terrorist groups. Additionally, schools in the county typically receive one or two bomb threats via telephone every couple of years.	2
Probability	While the probability of an act of conventional terrorism in Mills County is relatively low, the threat of such an event to the U.S. and the Omaha/Council Bluffs metropolitan area has increased in the last 25 years, particularly since the terrorist attacks on September 11, 2001. Based on the historical occurrence of bomb threats throughout the county, there is a 1 to 10 percent possibility that a conventional terrorist act may occur in a given year.	2
Vulnerability	Many terrorist acts are intended to generate fear through randomness of attacks, therefore Mills County is no more or less vulnerable to an attack than other jurisdictions of similar size and resources. However, if a lone terrorist or terrorist group planned an attack of a target in Mills County without warning or notice, that target would be particularly vulnerable and mass casualties could occur.	3
Maximum Geographic Extent	Conventional terrorist acts are usually target-specific. A target may be attacked to debilitate an area of strategic importance or to inflict mass casualties. The hazard will likely be limited to the immediate area of impact.	2
Severity of Impact	A. The intent of terrorism is to cause fear based on illness, injury, and death. A terrorism incident would likely result in numerous injuries and perhaps fatalities. B. Secondary devices have been used to intentionally harm the responders assisting victims of the initial attack. Injuries and deaths could also result from unstable structures, fire, etc. C. Operations will be minimally affected unless the target is a critical facility such as government buildings, emergency operations centers, communication hubs, etc. D. Damage to property, facilities and infrastructure is often a result of conventional terrorism, whether intended or unintended. E. Delivery of services will be moderately affected unless the target is a particular service. Other impacts could result from reallocation of resources to respond to the incident. F. Environmental impact would be minimal unless the target contained a hazardous material and that material was released. G. Threats and scares have psychological impacts and disrupt activities at a cost to productivity. Damaged facilities disrupt productivity. H. None known impact to contractual obligations. I. Timely and adequate response will minimize damage to the jurisdiction's reputation. Given today's environment, even a small terrorism incident will receive national media attention.	3
Speed of Onset	While a lone terrorist or terrorist organization may threaten action in advance of an event, most attacks will occur without warning. Many times terrorists will use the threat of an attack to spread fear, and all credible threats should be taken very seriously.	4

Cyber Terrorism		
Definition	Electronic attack using one computer system against another in order to intimidate people or disrupt other systems.	
Description	Cyber terrorism may last from minutes to days depending upon the type of intrusion, disruption, or infection. Generally, there are no direct effects on the built environment, but secondary effects may be felt depending upon the system being terrorized. Inadequate security can facilitate access to critical computer systems, allowing them to be used to conduct attacks.	
Historical Occurrence	There have been no documented occurrences of cyber terrorism or cyber related attacks in Mills County.	1
Probability	With the growing number of computer hackers and the automation of all activities and records, there is a good chance that at least an attempt to disrupt or shut down electronic activities will occur in Mills County or will impact the county directly in the next few years.	3
Vulnerability	All persons and businesses that maintain records electronically are at risk of an act of cyber terrorism. Improper security of sensitive information could lead to other terrorist activities if that information were to be provided to the wrong people. Such an event would affect electronic infrastructure but not physical structures.	3
Maximum Geographic Extent	Due to the ease of connecting to computers worldwide, an attack can be generated from anywhere and can impact a single computer or an entire network.	3
Severity of Impact	A. No direct loss of life. Indirect injuries or deaths may result from secondary impacts to critical life sustaining sectors such as energy, water, etc. B. None known impact to first responder health and safety. C. Severe impacts to continuity of operations could result if a cyber attack reached critical operational systems. D. There would be no impacts on the built environment. E. Impacts can range from annoyance to complete shutdown of critical services. Secondary impacts could affect citizen welfare by denying service or providing false readings. F. Impacts would result only if systems were infiltrated and directed to malfunction by shutting down, overloading, etc. G. Many businesses and operations today rely heavily on electronic and digital technology. Disruptions to computer hardware and/or systems could incapacitate a single business or perhaps even a local economy. H. There is the potential for the elimination of electronic records and information. I. Any jurisdiction that failed to recognize cyber threats or prepare for an attack would face negative consequences to reputation by local residents and the media.	2
Speed of Onset	Because of the networks (formal and informal) that exist to share intrusion attempts and impacts, warnings can be put out in advance to alert those in similar situations to take protective security recommendations such as updating virus detection software, making sure security patches are in place, etc. Warning times can range from no warning to days.	4

Radiological Terrorism		
Definition	Use of radiological materials against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion or ransom.	
Description	Radioactive contaminants can be dispersed using sprayers/aerosol generators, or by point of line sources such as munitions, covert deposits, and moving sprayers. Detonation of a nuclear device may be underground, at the surface, in the air, or at high altitude.	
Historical Occurrence	There is no history of radiological terrorism in Mills County.	1
Probability	Given the relatively low number of radiological weapons in existence and the realization by all parties involved that any radiological event would be catastrophic, the probability of such an event is extremely low.	1
Vulnerability	In the event of an attack, all living organisms and environmental assets would be vulnerable to radiation.	2
Maximum Geographic Extent	Any radiological attack could result in a fallout area hundreds of miles in diameter, meaning an attack would likely impact several states to some degree.	2
Severity of Impact	A. Nuclear detonation by terrorists will endanger public health and safety. The potential for mass casualties is great if the event were to take place but the amount of people affected is dependent on several factors: 1) the amount and type of material used to make the device; 2) the construction of the device; 3) the site of detonation and number of people in the blast radius; and 4) the wind direction. Illness and death from radiological terrorism can result from the initial blast, radioactive fallout, fire, building collapse, flying debris, and other secondary conditions. B. First responders face the same risks as the general public and the danger to their health is dependent on the factors identified above. A radiological terrorism incident in Mills County would require response materials and expertise outside the normal day-to-day capabilities of local volunteer rescue units. C. Continuity of operations will be disrupted in any of the incorporated cities in Mills County if a radiological incident were to occur. The targeted area would depend on assistance from neighboring jurisdictions in the aftermath. D. The extent of destruction to property and infrastructure is dependent on the size and the location of the blast itself. E. Service delivery from within the blast area will be rendered incapable. F. The impacts to the environment would be devastating and long-term. Decades may pass before a fallout area is safe to inhabit. G. Any businesses in the area of impact would be disrupted. A single radiological incident could irreparably cripple a local economy and perhaps an entire region's economy. H. No known impact to contractual obligations. I. The reputation of a jurisdiction targeted by radiological terrorism would be significantly tarnished even if the jurisdiction was permanently evacuated because of contamination. The negative impacts would persist for decades after the event.	4
Speed of Onset	While a terrorist organization may threaten action in advance of an event, an actual attack will occur without warning. Many times terrorists will use the threat of an attack to spread fear, and all credible threats should be taken very seriously.	4

Animal Disease Epidemic		
Definition	A medical, health, or sanitation threat to the wildlife or domestic animals (such as contamination, epidemics, plagues, and insect infestation).	
Description	Infectious diseases introduced onto an operation can have a devastating effect on cash flow and equity. Major animal diseases include foot and mouth disease, rinderpest, African swine fever, classical swine fever, brucellosis, lumpy skin disease, and others. Adverse effects of infectious diseases can occur at the farm or industry level. Some diseases may severely limit or eliminate animal marketing options. In the future producers may be responsible for potential pathogen contamination of the food supply or environment. Negative effects may be short or long-term, depending on the nature of the pathogen and level of concern among producers and consumers. Presence of some pathogens can also affect market access for larger portions of the industry.	
Historical Occurrence	The current animal disease epidemic is the West Nile Virus (WNV). Carried by birds and mosquitoes, WNV causes severe neurological infections in humans, horses, and other mammal species. As of early 2004, the disease has been found in nearly all states east of the Rocky Mountains, where many confirmed human cases, birds and horses have tested positive. While there have been some historical cases of WNV reported in Mills County among humans, none have been fatal.	1
Probability	The presence of several grain and livestock processing facilities in the county increases the possibility of a diseased animal coming into the area and potentially compromising the safety of the products generated in those facilities. Close monitoring of vaccinations, animal handling procedures, and cases identified by local veterinarians will help to mitigate the spread of any disease that may affect a large number of animals or the food supply.	2
Vulnerability	The most vulnerable in Mills County to animal diseases would be people who work or have interaction at livestock processing and food production facilities. These operations handle thousands of animals each year, making them a rich environment for a disease epidemic to spread, even if it did not originate there. Domestic animals would be much less at risk to most epidemics, but the very mobile nature of some diseases (such as WNV) also places those animals and their handlers at some risk. Infrastructure and property would not be harmed by such an event. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	The extent to which an animal disease outbreak would affect Mills County would depend on the nature of the outbreak and the types of animals affected. Any epidemic discovered in a processing facility would most likely be detected and isolated quickly with minimal threat to health and safety to the general public. More mobile epidemics, such as WNV, may spread more quickly, causing illness and perhaps death for animals and some humans. According to the 2007 Agriculture Census there is an inventory of 9,481 various livestock in Mills County. That number has more than likely increased in the last five years. There were 511 farms in the county that year but not all of those farms would have raised livestock.	2
Severity of Impact	A. No known impact to public health and safety. B. No known impact to first responder health and safety. C. No known impact to continuity of operations. D. No known impact to the built environment. E. A large enough animal disease outbreak could overwhelm animal care professionals throughout Mills County. F. Some disease outbreaks can threaten non-agricultural indigenous species in the region. G. Economic losses can be significant to livestock handlers and food processors. This would be especially detrimental in Mills County due to the strong presence of livestock and related industries. H. Animal handlers and food producers would face inquiry from state and federal agencies and potentially suffer penalties if mandated controls were not followed. I. The reputation of handlers and producers would likely be more impacted and scrutinized than any local government entity.	2
Speed of Onset	Local veterinarians are the first line of defense and will undoubtedly be the first to witness the symptoms of animal disease epidemics. The U.S. Department of Agriculture monitors reports submitted by veterinarians and labs to identify patterns. In the event of an epidemic, these professionals will be able to warn the public and take preventative measures to minimize any threats.	2

Human Disease Epidemic		
Definition	A medical, health, or sanitation threat to the general public (such as contamination, epidemics, plagues, and insect infestation).	
Description	Public health action to control infectious diseases in the 21st century is based on the 19th century discovery of microorganisms as the cause of many serious diseases (e.g. cholera and TB). Disease control has resulted from improvements in sanitation and hygiene, the discovery of antibiotics, and the implementation of universal childhood vaccination programs. Scientific and technologic advances have played a major role in each of these areas and are the foundation for today's disease surveillance and control systems. Scientific findings also have contributed to a new understanding of the evolving relation between humans and microbes. There are over 60 notifiable diseases identified by the Centers for Disease Control as of 2011. A notifiable disease is one for which regular, frequent, and timely information regarding individual cases is considered necessary for the prevention and control of the disease.	
Historical Occurrence	There have been no human disease epidemics in Mills County in the last 25 years.	1
Probability	Local, regional, and state public health officials work diligently to protect citizens from the risk of widespread disease by tracking infectious disease reports in the area, educating citizens on preventative measures, and informing health care officials of signs of an outbreak. The probability of a widespread disease outbreak that would affect a significant portion of the population in Mills County is very low.	1
Vulnerability	Public health agencies at the county, state, and federal levels work to reduce the impact of communicable diseases and to eliminate the morbidity associated with these diseases. Prevention and care services target HIV/AIDS, STDs, tuberculosis, and other infectious diseases. While vaccines are available for many diseases, local citizens remain vulnerable to other diseases known and unknown. Depending on the type of disease and the ease with which it spreads, an epidemic could impact a significant portion of the county in a very short period of time. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	3
Maximum Geographic Extent	Due to the fact that modern society is highly mobile, diseases can spread from one place to another and affect multiple people very quickly. According to the 2010 census Mills County has a population of 15,059 (34.4 persons per square mile). The nearest hospitals for Mills County residents are the Montgomery County Memorial Hospital in Red Oak, IA and the Jennie Edmundson Hospital in Council Bluffs, IA.	3
Severity of Impact	A. Many of the diseases on the national notification list result in serious illness if not death. Some diseases are treatable, but for others only the symptoms can be treated. B. Doctors, nurses, paramedics, and emergency medical technicians are vulnerable to contagious diseases. Universal precautions can greatly diminish the transfer rate and risk to responders and medical professionals. C. No known impact to continuity of operations. D. No known impact to the build environment. E. Healthcare services throughout the county may be at the limits of capacity. Some service providers may be under-staffed due to illness. F. No known impact to the environment. G. Large outbreaks may warrant travel advisories to the area. General commerce could suffer as a result. H. No known impact to contractual obligations. I. Adequate disease prevention programs and response to outbreaks can limit the damage to a jurisdiction's reputation.	3
Speed of Onset	Local health care professionals will be the first to identify a notifiable disease or a significant number of cases of any other ailment. State and federal agencies monitor reports submitted by local professionals to identify patterns. In the event of a widespread outbreak, a disease could spread very quickly and compromise the effectiveness of the local health care system.	2

Plant/Crop Disease Epidemic		
Definition	The threat of transmittable disease or pest infestation to indigenous plant life and agricultural crops.	
Description	Plant/crop diseases and infestations can cause widespread loss and economic hardship on farmers, landowners and related businesses. Infections or infestations may become endemic, causing repeated losses in subsequent years.	
Historical Occurrence	There have been no plant/crop disease epidemics in Mills County in the last 25 years.	1
Probability	Due to the rural nature of Mills County, it is possible there is a 1 to 10 percent chance an epidemic could occur in the next year.	2
Vulnerability	Mills County is largely rural and is thus somewhat vulnerable to plant/crop disease epidemics. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	According to the Iowa State Extension and Outreach Office, Mills County farmers own and manage 196,840 acres of land, 70 percent of all the land in the county.	3
Severity of Impact	A. No known impact to public health and safety. B. No known impact to first responder health and safety. C. No known impact to continuity of operations. D. No Known impact to the built environment. E. No known impact to service delivery. F. The propagation of certain diseases and/or pests can threaten indigenous plant life, which could ultimately impact the regional ecosystem over time. G. Loss of crop yields due to infestation or disease can significantly impact economic gains of agriculture producers and related industries throughout Mills County. H. No known impact to contractual obligations. I. Plant/crop diseases usually occur naturally. An impacted jurisdiction would likely not suffer any damage to its reputation unless the spread of a disease or pest could have been prevented or reduced.	1
Speed of Onset	Plant and crop diseases are monitored by state and federal agencies. Such agencies typically forecast and release information that can assist local residents and officials mitigate oncoming disease outbreaks.	1

Structural Failure		
Definition	The collapse (part or all) of any public or private structure including roads, bridges, towers, and buildings.	
Description	A road, bridge, or building may collapse due to the failure of the structural components or because the structure was overloaded. Natural events such as heavy snow may cause a roof of a building to collapse under the weight of the snow. Heavy rains and flooding can undercut and washout a road or bridge. The age of the structure is sometimes independent of the cause of the failure. Enforcement of building codes can better guarantee that structures are designed to hold up under normal conditions. Routine inspection of older structures may alert inspectors to "weak" points. The level of damage and severity of the failure is dependent on factors such as the size of the building or bridge, the number of occupants of the building, the time of day, day of week, amount of traffic on the road or bridge, and the type and amount of products stored in the structure.	
Historical Occurrence	There have been at least two building collapses in the last 25 years. In 1999 a four unit apartment collapsed in Glenwood and in 2003 a storage building leased by Malvern collapsed.	1
Probability	Due to the inconsistent approach to infrastructure improvements and the enforcement of building codes across the county, structure failure due to age or condition is probable. There is always a possibility of a structural failure occurring as a result of another hazard event.	1
Vulnerability	Older homes and commercial structures are most vulnerable to the risk of a structural failure. Infrastructure at risk for failure includes streets, bridges, and wells, but prevailing conditions would have to be extreme for these structures to fail. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	The impacts of a structural failure would be limited to the structure itself and adjoining properties. Approximately 32% of owner occupied homes in Mills County were built in 1939 or prior; that percentage is higher in Emerson, Hastings, Henderson, Malvern and Silver City. In the extreme case of an infrastructure failure, such as a bridge collapse, traffic delays could result.	1
Severity of Impact	A. Personal injury or death may occur from building collapse itself or by falling debris. B. Structural collapse rescue is a specialized form of rescue and can result in injury or death to responders. C. Continuity of operations would only be impacted if structural failure occurred at or near a critical facility. D. All structures including residential homes, businesses, government facilities, etc. can experience structural damage or total collapse. Adjacent buildings and infrastructure can be damaged as well. E. Bridge failures and debris in the streets and sidewalks would interrupt normal routes of travel. Utilities may be cut off to surrounding areas and communication transmissions may be lost for a period of time. F. There would be little to no impact to the environment unless a structural failure released a hazardous material. G. Cost to repair or replace structures would be significant to those impacted. The loss of a business's physical location would naturally cease or hinder commerce and day-to-day operations. In smaller communities, the loss of a building could be socially and economically devastating. H. Failure during construction can be the liability of the contractor or owner. This would depend upon the contract for construction and at which time the property ownership is transferred. I. A jurisdiction's reputation could suffer if a structural collapse could have been averted or limited by code enforcement.	1
Speed of Onset	While a failing structure may show signs of deterioration for weeks or months in advance, an unplanned structural failure will often occur with little or no warning. If weather conditions are responsible for a failure (e.g. high winds), occupants will usually have time to evacuate that structure.	3

Structural Fire		
Definition	An uncontrolled fire in a populated area that threatens life and property and is beyond normal day-to-day response capabilities.	
Description	Structural fires present a far greater threat to life and property and the potential for much larger economic losses. Modern fire codes and fire suppression requirements in new construction and building renovations, coupled with improved firefighting equipment, training, and techniques, lessen the chance and impact of a major urban fire. Most structural fires occur in residential structures, but the occurrence of a fire in a commercial or industrial facility could affect more people and pose a greater threat to those near the fire or fighting the fire because of the volume or type of material involved.	
Historical Occurrence	The fire departments throughout the county respond to an average of 42 structural fires each year, with structures affected ranging from single-family dwellings to larger commercial structures. Most of these fires are small in nature. In nearly every case, structural fires in the county exceed the response capabilities of a single volunteer fire department each year.	3
Probability	Based on the call volume received by the local fire departments and historical information, there is a good chance that the county will experience a structural fire at some point in the next year. However, the chance that a fire would be uncontrolled for a prolonged amount of time and affect a significant area of developed land is relatively low.	3
Vulnerability	Older structures with obsolete wiring systems and buildings not built to current fire codes are most vulnerable to fires. Businesses that use heat, fire, or combustible materials are also at increased risk for fires. Rural areas are not served by fire hydrants; so in the event of a larger fire impacting more than one building, it is necessary to bring in additional water. All types of infrastructure within or adjacent to the buildings would also be damaged. Building occupants could also become trapped within the building. Vulnerability by incorporated city is further discussed beginning on Page 78 of this plan.	2
Maximum Geographic Extent	Most structural fires are isolated to a single building, and in many cases only a portion of the building is affected. However, a structural fire in a concentrated area can easily spread to multiple buildings quickly. Due to sufficient countywide fire protection coverage and quality response times, most structural fires will not spread beyond their source.	1
Severity of Impact	A. Injuries and fatalities are often a result of structural fires. B. First responders, especially fire fighters, are at high risk of injury or death when responding to structural fires. C. Only in rare cases would a structural fire affect continuity of operations. Fire may occur at a critical facility, data center, communications hub, etc. D. Each structural fire will cause damage or destruction to one or more buildings. E. Fires that occur at critical facilities or utility hubs may impact service delivery on rare occasion. F. Structural fires may spur grass or wild land fires in rural areas but overall environmental impact is limited. G. Structural fires will lead to repair or rebuilding costs but there is insurance that covers fire incidents. The loss of a business's physical location would naturally cease or hinder commerce and day-to-day operations. In smaller communities, the loss of a building could be socially and economically devastating. H. No known impact to contractual obligations. I. Structural fires are common occurrences and usually have little impact on jurisdictional reputation.	2
Speed of Onset	Almost all structural fires occur with no warning. However, most buildings are equipped with detection and warning alarms that alert occupants and responders, allowing for time to evacuate.	3

Vulnerability by Incorporated City

Dam Failure

All incorporated cities classify this hazard as "Will Not Occur." There are no dams on rivers, streams or waterways that run through any of the incorporated cities in Mills County.

Drought

Vulnerability among incorporated cities in Mills County is generally uniform. Depleted water levels over an extended period could compel jurisdictions to enact water use restrictions. Water pressure could also suffer. There are no industries in any Mills County incorporated cities that rely on extensive water use to operate.

Earthquake

Emerson	A powerful earthquake could lead to a hazmat release at any one of Emerson's containment sites. Older homes might be vulnerable to foundation damage or total structural collapse; 53.8% of Emerson's housing stock was built in 1939 or earlier.
Glenwood	Glenwood has numerous hazmat sites (fertilizer, propane, sulfuric acid, etc.) that can be compromised during a powerful earthquake. Glenwood also has the largest number of vulnerable population facilities and multi-family apartments in the county. People in older homes might be at risk from structural failure; 22.8% of Glenwood's housing stock was built in 1939 or earlier.
Hastings	Older homes in Hastings might be vulnerable to foundation damage or total structural collapse; 59.0% of Hastings' housing stock was built in 1939 or earlier. East Mills Middle and Nishna Valley Elementary schools are both located in Hastings; both schools are in good structural condition.
Henderson	Older homes in Henderson might be vulnerable to foundation damage or total structural collapse; 72.5% of Henderson's housing stock was built in 1939 or earlier.
Malvern	Older homes in Malvern might be vulnerable to foundation damage or total structural collapse; 60.4% of Malvern's housing stock was built in 1939 or earlier. Chantry Elementary and East Mills High schools are located in Malvern; both schools are in good structural condition.
Pacific Junction	Pacific Junction is at the junction of two rail lines. A powerful earthquake could potentially shift tracks or derail a train. Pacific Junction also has numerous hazmat sites that can be damaged or breached. Older homes in Pacific Junction might be vulnerable to foundation damage or total structural collapse; 29.7% of Pacific Junction's housing stock was built in 1939 or earlier.
Silver City	Older homes in Silver City might be vulnerable to foundation damage or total structural collapse; 73.0% of Silver City's housing stock was built in 1939 or earlier. There is also a Farm Service Co. location that maintains hazardous materials that could potentially be released.

Expansive Soils

All incorporated cities classify this hazard as "Will Not Occur." No incorporated cities in Mills County contain soil that consists of clay having "high swelling potential."

Extreme Heat

Vulnerability among incorporated cities in Mills County is generally uniform. Extreme heat can lead to illness and possibly death. The young and elderly are especially at risk, in addition to those who work or spend several hours a day outdoors. Extreme heat can even affect those indoors who do not have air conditioning or an effective means to keep cool. It is unknown how many homes in Mills County lack air conditioning. There are four schools in Glenwood, two in Hastings, and two in Malvern. Students are let out early when temperatures are dangerous and school officials cannot keep facilities cool. Glen Haven Home and Glenwood Resource Center, both in Glenwood, and Faith Ridge Life Center in Malvern have populations that could be at risk if heat conditions become dangerously high.

Flash Flood

Every incorporated city in Mills County has a degree of vulnerability to flash flooding, either due to topography, proximity to creeks and stream channels, or lack of storm sewers. However, few historical occurrences and nominal record keeping have made it difficult to accurately estimate vulnerability in terms of property, critical assets, vulnerable populations, etc. Furthermore, jurisdictions in Mills County do

not have the technical resources to project vulnerability in a reliable or scientific manner. There is no community that is immune from flash flooding, though forecasting where it is most likely to occur beyond general descriptions is currently unfeasible. There are no creeks or streams in the Cities of Emerson, Henderson and Silver City that might channelize rapidly rising water. However, there are no storm sewers in those cities to absorb heavy rains and snow melt. Glenwood, Hastings, Malvern, and Pacific Junction do have waterways that run through their city limits. These low-lying channels may inundate adjacent areas. Glenwood and Malvern do have some storm water piping but there are areas that rely on ditch networks for drainage.

Grass or Wild Land Fire

Mills County is a predominately rural county and all incorporated cities are generally surrounded by rural crop land or grass lands. All incorporated cities share similar vulnerabilities related to grass fire due to surrounding land characteristics. Jurisdictions would be most vulnerable during periods of drought and extreme heat. Though local volunteer fire departments have the capabilities to contain most grass fires, inter-local agreements may need to be implemented if a fire becomes too extensive for one single department to control. In addition, all cities have at least some equipment and vehicles that are aged and not as reliable. Worn firefighting tools can endanger firefighters and the land/property threatened by fire.

Hailstorm

The vulnerability from hail among incorporated cities in Mills County is generally uniform. Storms can damage homes, vehicles and other property by the size and sheer force of hail. Persons caught outside during a hailstorm are at risk. Hail can wipe out entire fields of crop, though cropland is located in rural areas.

Landslide/Erosion/Slope Failure

This hazard will not occur in Pacific Junction due to the city's topography. The remaining six incorporated cities in Mills County do have more sloped terrain that would allow for landslides. Though there are several residential and commercial structures built on hills or slopes, there is no inventory of vulnerable buildings in any of the county's cities.

Levee Failure

Pacific Junction has greatest vulnerability to levee failure due to the presence of a levee at Pony Creek, directly west of the city. The levee averages a height of 14', is 10' wide at the top, and has a base of 94', which does not include a 15' right-of-way. The levee was built in 1986, and has a 500-year flood event designed into its structure. There are no levees that would directly impact the Cities of Emerson, Glenwood, Henderson, Malvern, and Silver City. Levee failure at the West Nishnabotna River near Hastings could cause inundation in the northern part of the city. Land north of S. Railway Street is in the 100-year floodplain. There are a few residential properties and a grain elevator in this area. Otherwise, the remainder of floodplain land in Hastings is undeveloped.

River/Stream Flood

Emerson	Indian Creek flows near the southern edge of Emerson. There are five residences in the 100-year floodplain, which covers an area of 0.05 square miles in Emerson. The fire station and a business that maintains some hazardous materials are also located in the floodplain. Floodwaters would likely cover much of South Avenue and some of U.S. Highway 59.
Glenwood	Keg Creek flows through the city limits of Glenwood. There are approximately 140 structures located in the 100-year floodplain, including 50 single-family homes, 3 multi-family apartments, and various commercial properties. The Glenwood Police Department and wastewater and water treatment facilities are also in the floodplain. The 100-year floodplain covers an area of 0.42 square miles in the city.
Hastings	The West Nishnabotna River flows west of Hastings and Indian Creek flows across the northern section of the city. City officials claim there are no structures or critical facilities in the 100-year floodplain, which covers an area of 0.15 square miles in Hastings.
Henderson	There are no special flood hazard areas in Henderson.
Malvern	Silver Creek flows near the western edge of Malvern. Much of the southwestern section of the city is in the 100-year floodplain, which covers an area of 0.22 square miles. It is currently unknown how may structures are in the floodplain, though all identified critical facilities are out of the flood hazard area.

Pacific Junction	The Missouri River flows approximately two miles west of Pacific Junction. Pony Creek flows through the western section of the city along 195th Street and Keg Creek flows about one half mile southeast. The 100-year floodplain is limited to the area immediately adjacent to Pony Creek where there are very few structures. However, all of Pacific Junction is in the Missouri River 500-year floodplain.
Silver City	Silver Creek flows near the eastern edge of Silver City, though less than one square mile of undeveloped land is in the 500-year floodplain.
Severe Winter Storm	
Emerson	A severe winter storm could hinder or entirely shut down access in or out of Emerson, particularly if U.S. Highway 34 and 59 are impassable. Fire and rescue workers may not be able to respond to calls if road conditions are dangerous. All business and government operations may be shut down if power fails and roads cannot be cleared. It is unknown how many residents lack backup power or have a secondary means to heat their homes.
Glenwood	Glenwood is the location of several critical facilities that provide vital functions or house vulnerable populations: Mills County Courthouse, Glenwood Police Department, Glenwood Community Schools (4 facilities), Glen Haven Nursing Home, Glenwood Resource Center, Hospice with Heart, Linnwood Estates, Loess Hills Estates, and Park Place Nursing Home. Schools and care facilities are especially vulnerable if long term power failure occurs. Fire and rescue workers may be unable to respond to calls if roads are impassable.
Hastings	East Mills Middle School and Nishna Valley Elementary School are located in Hastings. These schools may need to release students early or close in the event a winter storm makes travel conditions dangerous. All business and government operations may be shut down if power fails and roads cannot be cleared. Fire and rescue workers may be unable to respond to calls if roads are impassable. It is unknown how many residents lack backup power or have a secondary means to heat their homes.
Henderson	A severe winter storm could hinder or entirely shut down access in or out of Henderson, particularly if County Highway H12 and U.S. Highway 59 are impassable. Fire and rescue workers may not be able to respond to calls if road conditions are dangerous. All business and government operations may be shut down if power fails and roads cannot be cleared. It is unknown how many residents lack backup power or have a secondary means to heat their homes.
Malvern	Malvern is the location of several critical facilities that provide vital functions or house vulnerable populations: Chantry Elementary School, East Mills High School, and Faith Ridge Life Center. Schools and care facilities are especially vulnerable if long term power failure occurs. Fire and rescue workers may be unable to respond to calls if roads are impassable. It is unknown how many residents lack backup power or have a secondary means to heat their homes.
Pacific Junction	Pacific Junction is less than a mile from Interstate 29. Accidents are likely if a winter storm causes slick roads or whiteout conditions. Though I-29 does not run through Pacific Junction's city limits, local first responders may assist with an emergency call. Access in or out of Pacific Junction may be problematic if major roadways, such as 195th Street, are impassable. Roads that are snow-packed or icy may prevent fire and rescue workers from responding to an emergency. It is unknown how many residents lack backup power or have a secondary means to heat their homes.
Silver City	Access in or out of Silver City could be hindered if any of the county roads or state highways are obstructed by severe winter weather; Silver City has the greatest distance to any major U.S. highway (either 34 or 92) among incorporated cities in Mills County. Fire and rescue workers may not be able to respond to calls if road conditions are dangerous. All business and government operations may be shut down if power fails and roads cannot be cleared. It is unknown how many residents lack backup power or have a secondary means to heat their homes.
Sink Holes	

Though sink hole is classified by incorporated cities in Mills County as a "may occur" hazard, there are no known developed areas where a sink hole is likely to occur. Therefore, it is problematic to confidently state what a city's vulnerability to sink holes is without further data.

Thunderstorm and Lightning

All incorporated cities in Mills County are vulnerable to thunderstorms and lightning. High winds can damage trees, residences, and businesses, and can knock vehicles off of the road. Straight-line winds are responsible for most thunderstorm damage. Older homes can likely expect greater damage from wind and hail. The following lists the percentages of housing units in incorporated cities built prior to 1990 and in 1939 or earlier. (It is unknown how many units are in "good" condition or better.):

- Emerson- 94.6% prior to 1990, 53.8% in 1939 or earlier
- Glenwood- 87.6% prior to 1990, 22.7% in 1939 or earlier
- Hastings- 91.5% prior to 1990, 59.0% in 1939 or earlier
- Henderson- 97.1% prior to 1990, 72.5% in 1939 or earlier
- Malvern- 87.1% prior to 1990, 60.4% in 1939 or earlier
- Pacific Junction- 79.8% prior to 1990, 28.2% in 1939 or earlier
- Silver City- 96.4% prior to 1990, 73.0% in 1939 or earlier

Power and communications failures often result from thunderstorms. However, loss of systems is usually temporary and many critical functions have backup capabilities. Those most at risk are people caught outside when severe weather starts.

Tornado

Emerson	There are 13 mobile homes in Emerson. Of the 195 housing units in Emerson, it is unknown how many lack adequate shelter. In addition, there are two outdoor recreational areas near Emerson where people can be left exposed to tornadic activity: Indian Creek Greenbelt Area and Lake George.
Glenwood	The total assessed value of commercial, industrial and residential properties in Glenwood is $251,319,112. There are 2,125 total housing units in Glenwood city limits, 34 of which are mobile homes. The Glenwood Community School District may require greater shelter capacity in the future if enrollment continues to grow in any of the district's four school facilities. The Glenwood Resource Center and Glen Haven Assisted Living Facility house elderly/disabled residents who may not be able to reach shelter if a warning is short-notice.
Hastings	East Mills Middle School and Nishna Valley Elementary are located in Hastings. If there is robust growth in the school-aged population in the near future, current shelter capacity in both facilities may become inadequate. There are 86 total housing units in Hastings, 16 of which are mobile homes.
Henderson	There are 77 housing units, including 5 mobile homes, but it is unknown how many homes lack adequate shelter.
Malvern	The Mills County Fairgrounds is located in Malvern. Numerous events are held at the fairgrounds on an annual basis, though there is no shelter for citizens to use during dangerous weather conditions. East Mills High School and Chantry Elementary are located in Malvern. As enrollment continues to grow, shelters in the schools may become inadequate.
Pacific Junction	There are 45 mobile homes in Pacific Junction, the most of any incorporated city in Mills County. Of the total 185 housing units in Pacific Junction, it is unknown how many lack adequate shelter.
Silver City	There are 111 housing units, including 9 mobile homes, but it is unknown how many homes lack adequate shelter. At any given time there may be people utilizing the Wabash Trace Nature Trail, which has an access point in Silver City. People using the trail can be left exposed to tornadic activity.

Windstorm

Windstorm vulnerability for all incorporated cities in Mills County is generally similar to what is stated in tornado vulnerability. Older homes in cities not built to modern standards may face risk of some kind of structural failure. Roof and siding damage to homes and structures is likely regardless of age. Power and telephone lines may be knocked down. Falling trees or tree limbs can likely be expected. Trees and limbs can damage automobiles and sometimes break through homes and other structures. Flying debris can itself cause damage and injuries.	
Air Transportation Incident	
There are no airports or air transportation facilities in Mills County. However, many approaches to Eppley Airfield and Offutt Air Force Base, both in Nebraska, are over the county and incorporated cities. History indicates that aircraft accidents are more likely to occur near airports where aircraft operate at lower altitudes. Glenwood and Pacific Junction are the closest cities to either airport in Nebraska, but by roughly ten miles. Any casualties would have to be sent to hospitals outside the county.	
Communications Failure	
Disruption of continuity of operations would be the primary vulnerability among incorporated cities in Mills County. There would likely be a void in emergency response and coordination until a secondary means to communicate could be established. The 911 and communications center for all of Mills County is located at the county courthouse in Glenwood. CenturyLink (formerly Qwest) maintains major phone switching terminals in Glenwood and Malvern that serve a large base of customers. A countywide communications tower is located in Glenwood as well.	
Energy Disruption	
Emerson	Those most vulnerable to energy disruption in Emerson are those without adequate means to stay warm or cool if a failure were to occur during a period of extreme temperatures. Approximately 90% of workers in Emerson 16 years of age and over take a vehicle to work and there is no public transportation available in the city; a shortage of gasoline and oil would limit means of travel for most residents, especially those who commute.
Glenwood	The Mills County Courthouse, Sheriff's Department and Glenwood Police Department are located in Glenwood. These facilities have backup power capabilities, though the courthouse's permanent generator is aged and should not be used for extended periods. An extended power disruption during periods of extreme heat or cold could be dangerous for residents at the elderly/special needs facilities in the city. Glenwood also has several hazmat/utility sites that rely on electrical power. These sites should not operate on portable generator power for an extended period due to safety considerations. Most local businesses would at least be temporarily disabled. Approximately 83% of workers in Glenwood 16 years of age and over take a vehicle to work and there is no public transportation available in the city; a shortage of gasoline and oil would limit means of travel for most residents, especially those who commute.
Hastings	East Mills Middle School and Nishna Valley Elementary would have to shut down and send students home if an energy failure occurred during school hours. Those in Hastings without adequate means to stay warm or cool would be vulnerable if the disruption was prolonged. All workers in Hastings 16 years of age and over take a vehicle to work and there is no public transportation available in the city; a shortage of gasoline and oil would limit means of travel for most residents, especially those who commute.
Henderson	Those most vulnerable to energy disruption in Henderson are those without adequate means to stay warm or cool if a failure were to occur during a period of extreme temperatures. Approximately 91% of workers in Henderson 16 years of age and over take a vehicle to work and there is no public transportation available in the city; a shortage of gasoline and oil would limit means of travel for most residents, especially those who commute.
Malvern	Chantry Elementary School and East Mills High School would have to shut down and send students home if an energy failure occurred during school hours. Faith Ridge Life Center houses an elderly population that would be vulnerable if a prolonged energy disruption occurred during a period of extreme temperatures. Most local

	businesses would at least be temporarily disabled. Approximately 94% of workers in Malvern 16 years of age and over take a vehicle to work and there is no public transportation available in the city; a shortage of gasoline and oil would limit means of travel for most residents, especially those who commute.
Pacific Junction	Pacific Junction has several agriculture/industrial sites that contain hazardous materials and rely on electrical power. Residents without secondary power capabilities would be vulnerable in periods of extreme temperatures. Approximately 94% of workers in Pacific Junction 16 years of age and over take a vehicle to work and there is no public transportation available in the city; a shortage of gasoline and oil would limit means of travel for most residents, especially those who commute.
Silver City	Those most vulnerable to energy disruption in Silver City are those without adequate means to stay warm or cool if a failure were to occur during a period of extreme temperatures. Approximately 99% of workers in Silver City 16 years of age and over take a vehicle to work and there is no public transportation available in the city; a shortage of gasoline and oil would limit means of travel for most residents, especially those who commute.
Fixed Hazardous Materials Incident	
Emerson	There are chemical storage tanks, some that include anhydrous ammonia, located in the southern end of Emerson.
Glenwood	Glenwood has the largest collection of hazmat facilities among incorporated cities. These sites contain a variation of materials that include gasoline, propane, sulfuric acid, chlorine, among others.
Hastings	There are no fixed hazmat sites in Hastings that pose a significant threat.
Henderson	There are some storage tanks that contain hazardous materials in Henderson but none of the materials are considered noxious.
Malvern	Agriland and Farm Service have locations in Malvern that contain noxious substances. Incidents at either of these facilities could endanger significant portions of the city.
Pacific Junction	Feed Energy, United Suppliers and Vinton Fertilizer have locations in Pacific Junction that contain anhydrous ammonia, fertilizer, etc. The entire city could be endangered if a release of hazardous materials occurs.
Silver City	There is a Farm Service facility in southeast Silver City that contains some amount of hazardous substances. There are also above ground storage tanks in various locations.
Fixed Radiological Incident	
Each incorporated city in Mills County is in the 50 mile Ingestion Pathway Zone for the Cooper Nuclear Station in Brownville, NE and the Fort Calhoun Nuclear Station in Fort Calhoun, NE. Depending on the severity of the incident and wind conditions, all citizens in each city could be endangered. In the event of a mass evacuation from Mills County, residents would need to travel east and possibly north or south, depending on which facility the incident occurred.	
Highway Transportation Incident	
Emerson	U.S. Highway 59 runs north-south just east of Emerson. There are no critical facilities in close proximity to the highway. Accidents on this highway in Mills County are not uncommon.
Glenwood	U.S. Highway 34 runs east-west along the southern edge of Glenwood. U.S. 34 has the highest traffic volume in Mills County and accidents are not uncommon. Glenwood also has the greatest number of streets of any of the incorporated cities in the county. The likelihood of a traffic accident, small or major, is greater in Glenwood than the other cities in Mills county.
Hastings	U.S. Highway 34 runs east-west along the northern edge of Hastings; there are no structures or critical facilities in close proximity to the highway. Indian Avenue is the main thoroughfare in Hastings, which runs north-south and connects to U.S. 34.
Henderson	There are no major highways that run through Henderson. Lack of major thoroughfares, limited highway access and low traffic volume make Henderson's vulnerability to a highway transportation incident relatively low.

Malvern	Malvern has the second highest traffic volume among incorporated cities in Mills County. Main Street (County Highway L63) is Malvern's major thoroughfare and is adjacent to the city's central business district. Main Street connects to U.S. 34 when traveling northbound.
Pacific Junction	Though Pacific Junction is in close proximity to Interstate 29, there is no access for drivers. 195th Street connects to U.S. 34 north of Pacific Junction.
Silver City	There are no major highways that run through Silver City; U.S. 34 is six miles south of the city. Main Street/278th Street is Silver City's major thoroughfare.
Pipeline Incident	
Five companies operate 260 miles of pipeline that run throughout Mills County. There are no major pipelines within any incorporated city limits in Mills County. However, any one of the local volunteer fire departments in Mills County may be called on to respond to a major incident. The largest concentration of pipelines is in the west-central section of Mills County.	
Rail Transportation Incident	
Emerson	There are rail tracks that run through the southern end of Emerson. Harris Street intersects the tracks but it is a low volume residential street.
Glenwood	There is one rail line that runs through the southeast portion of Glenwood and impacts an area that is primarily commercial and industrial with low residential density. South Vine/Main Street intersects the tracks.
Hastings	There are rail tracks that run east-west through the center of Hastings. Indian Avenue intersects the tracks. There is little development along the tracks in Hastings but a grain elevator is adjacent in the northwest section of the city.
Henderson	There are no active rail tracks that run through Henderson.
Malvern	Rail tracks run east-west through northern Malvern, an area that is generally residential but has low building density.
Pacific Junction	Several rail lines intersect near the center of Pacific Junction. The area at the intersection of the lines is mostly industrial. The north-south tracks cross Lincoln and Jinkins Avenue. Approximately 15-20 trains pass through Pacific Junction during a given day.
Silver City	There are no rail tracks that run through Silver City.
Transportation Hazardous Materials Incident	
Emerson	U.S. Highway 59 runs north-south just east of Emerson. Any hazardous materials released near Emerson could impact all of Emerson depending on wind conditions.
Glenwood	Hazardous materials are often transported on U.S. Highway 34, which runs east-west just south of Glenwood. A hazmat release could occur in or near Glenwood at any time.
Hastings	Hazardous materials are often transported on U.S. Highway 34, which runs east-west just north of Hastings. A hazmat release could occur in or near Hastings at any time.
Henderson	U.S. Highway 59 is approximately two miles east of Henderson. Fumes from a hazardous materials release could affect most of Henderson depending on wind conditions.
Malvern	Hazardous materials are often transported on U.S. 34, which runs east-west approximately two miles north of Malvern. It is possible for hazardous materials to be transported on Main Street (County Highway L63), which leads to U.S. 34 and is Malvern's major thoroughfare.
Pacific Junction	Interstate 29 is less than one mile west of Pacific Junction. Numerous hazardous materials are transported on I-29 each day and a hazmat release could easily affect all of Pacific Junction due to proximity with the interstate and the small area of the city.
Silver City	Though there are no major highways that run directly through Silver City, vehicles containing hazardous materials may pass through the city using Main Street/County Road L55 when connecting to U.S. Highway 34 (6 miles south) or 92 (8 miles north in Pottawattamie County). Main Street is Silver City's major thoroughfare.
Transportation Radiological Incident	

Two U.S. Highways run through Mills County. U.S. 34, an east-west route, runs through or in close proximity to the Cities of Emerson, Glenwood, Hastings, and Malvern. U.S. 59, a north-south route, runs through or in close proximity to Emerson and Henderson. Interstate 29 runs north-south through the county and is less than one mile from Pacific Junction. In addition, rail lines traverse through Emerson, Glenwood, Hastings, Malvern, and Pacific Junction. Radioactive waste that is transported is typically low level waste and would not pose any serious health threats unless exposure was long-term. However, any incident in the incorporated cities of Mills County would require assistance from outside resources.

Waterway/Water Body Incident

Keg Creek runs through the eastern/southeastern sections of Glenwood. Glenwood Lake Park is located just southeast of the city. No large water vessels, recreational or commercial, access the creek or lake. Drowning is the most likely incident to occur. There are no water bodies in the city limits of Emerson, Hastings, Henderson, Malvern, Pacific Junction, and Silver City. There are creek/stream channels that flow through Hastings, Malvern, and Pacific Junction (see river/stream flood), though they are not recreational waterways.

Animal Disease Epidemic

There are no livestock processing operations in any of Mills County's incorporated cities but livestock production generates the greatest portion of farm sales in the county. The value of livestock marketed by Mills County farmers totaled $6.7 million in 2007 according to the 2007 Agriculture Census. That amount accounted for 1% of the county's total economic output. There were 2,752 hogs and pigs and 4,731 cattle sold in Mills County in 2007. It is unknown how many of the 511 farms in Mills County raise livestock. An animal disease epidemic in any of the county's incorporated cities would likely have a greater impact on household pets than livestock, which is raised in unincorporated areas. There is one full service veterinarian clinic in Mills County that is located in Glenwood.

Human Disease Epidemic

There are no hospitals or major medical clinics in Mills County. The following lists the nearest hospital and approximate distance for each incorporated city:

- Emerson- Montgomery County Memorial Hospital (Red Oak, IA), 10 miles
- Glenwood- Jennie Edmundson Hospital (Council Bluffs, IA), 21 miles
- Hastings- Montgomery County Memorial Hospital, 15 miles
- Henderson- Montgomery County Memorial Hospital, 20 miles
- Malvern- Montgomery County Memorial Hospital, 21 miles
- Pacific Junction- Jennie Edmundson Hospital, 19 miles
- Silver City- Jennie Edmundson Hospital, 22 miles

There are seven sites in Glenwood that could become especially susceptible to a human disease epidemic: Glenwood high and middle schools, Northeast Elementary and West Elementary, Glen Haven Home, Linnwood Estates Assisted Living, and Glenwood Resource Center. East Mills Middle and Nishna Valley Elementary schools in Hastings, and Chantry Elementary and East Mills High schools in Malvern are also sites that may face higher vulnerability.

Plant/Crop Disease Epidemic

According to the Iowa State Extension and Outreach Office, Mills County farmers own and manage 196,840 acres of land, 70% of all the land in the county. This includes cropland, pastures and trees. The main crops produced in Mills County are corn and soybeans. Based on data from the Agriculture Census, Mills County farmers harvested 11.4 million bushels of corn and 3.6 million bushels of beans in 2007. Production of all crops in the county contributed to $61 million or 9.3% of the county's economic output. Each incorporated city in Mills County has a facility or employer related to the crop agriculture sector, though the extent a crop disease epidemic would have on local economies is not quantifiable at this time.

Structural Failure

Much of the housing stock in Mills County and incorporated cities is older and potentially more vulnerable to structural failure than homes built to modern standards. The following lists the percentages of housing units in incorporated cities built prior to 1990 and in 1939 or earlier (It is unknown how many units are in "good" condition or better.):

- Emerson- 94.6% prior to 1990, 53.8% in 1939 or earlier
- Glenwood- 87.6% prior to 1990, 22.7% in 1939 or earlier
- Hastings- 91.5% prior to 1990, 59.0% in 1939 or earlier

▪ Henderson- 97.1% prior to 1990, 72.5% in 1939 or earlier ▪ Malvern- 87.1% prior to 1990, 60.4% in 1939 or earlier ▪ Pacific Junction- 79.8% prior to 1990, 28.2% in 1939 or earlier ▪ Silver City- 96.4% prior to 1990, 73.0% in 1939 or earlier	
Structural Fire	
Emerson	There is high density of commercial structures between Bartlett and King Streets, south of Bradford Avenue. Fire at one building could easily spread to connecting structures.
Glenwood	Glenwood has the most vulnerable population sites in Mills County, including schools, assisted living facilities, and multi-family residences. Safely evacuating vulnerable persons in the event of a fire is critical. Any fire in downtown Glenwood could be economically and socially damaging to the entire city. Downtown has a high density of businesses and services. There are several contiguous structures in this area and fire in one building could easily spread to others.
Hastings	Hastings has two vulnerable population sites, East Mills Middle School and Nishna Valley Elementary School. Safely evacuating children in the event of a fire is critical and evacuation procedures should be adopted and practiced.
Henderson	Henderson's city hall, community center and library are located in the same building. This facility is exceptionally critical to Henderson and all efforts should be made to ensure its safety from fire.
Malvern	Chantry Elementary School, East Mills High School and Faith Ridge Life Center have vulnerable populations that would need to be safely evacuated during a fire. There are numerous commercial buildings along Main Street, some of which are contiguous. Fire at one building could easily spread to connecting structures.
Pacific Junction	There are several hazmat storage sites throughout Pacific Junction. Fire at or near any of these sites could trigger a significantly dangerous environment to those responding to the incident and any residents in close proximity.
Silver City	There is a high concentration of commercial buildings, some contiguous, along County Road L55/Main Street, including city hall. Fire at one building could easily spread to connecting structures.

Note: Human-caused purposeful hazards have been omitted from the supplemental analysis of vulnerability by incorporated city. This is due to no historical occurrences, low probability and the unpredictable nature of such hazards.

Prioritizing Hazards

Using the rankings described in the above tables, each hazard was assigned a Calculated Priority Risk Index (CPRI). The CPRI formula, including the weighting factors, was developed in consultation with Iowa HSEMD mitigation planning staff.

CPRI Formula: (Historical x 0.20) + (Probability x 0.20) + (Vulnerability x 0.30) + (Maximum Threat x 0.20) + (Severity of Impact x 0.30) + (Speed of Onset x 0.15) = CPRI

Based on their CPRI, hazards were separated into three categories of planning significance:

- Low (1.35-2.69)
- Moderate (2.70-4.04)
- High (4.05-5.4)

The CPRI formula provides a supplement to overall planning significance. Table 16 summarizes the CPRI rankings and identifies planning significance solely on the calculations. The PDM Planning Committee took CPRI calculations into account when prioritizing hazards, though adjustments were made in the organization of hazards based on level of priority (see Table 17). For instance, some hazards with low CPRI scores are organized as Priority 2 or 3 and other hazards with high scores are organized as Priority 2. This is due to the agreement among planning participants that some hazards are difficult to mitigate because of unpredictability (e.g. highway transportation incident) or because hazards will occur regardless of mitigation actions and are a part of life in Mills County.

CPRI calculations and priority groupings/rankings for each incorporated city can be found in Appendix K. Human-caused hazards are excluded from city analyses due to no recorded historical occurrences and low probability. Because dam failure and waterway/water body incidents will not occur at the municipal level (due to geographic and engineering considerations), those hazards are also excluded. Furthermore, hazard prioritization and rankings for incorporated cities is determined similarly to the composite countywide list, though planning partners consider local circumstances, thereby creating variation in what is presented in Table 17. For example, Pacific Junction classifies rail transportation incident as a Priority 1 hazard, whereas Silver City does not classify the hazard at all since there are no rail lines within city limits. Dissimilarities such as these are common among jurisdictions in Mills County.

Table 16: Calculated Priority Risk Index

Hazard Type	Historical	Probability	Vulnerability	Maximum Threat	Severity	Speed of Onset	CPRI	Planning Significance
Dam Failure	1	2	2	2	2	3	2.65	Low
Drought	2	3	2	4	2	1	3.15	Moderate
Earthquake	1	1	1	4	1	4	2.4	Low
Expansive Soils	1	1	1	1	1	1	1.35	Low
Extreme Heat	4	4	3	4	2	1	4.05	High
Flash Flood	4	3	3	3	2	4	4.1	High
Grass or Wild Land Fire	3	3	2	2	1	3	2.95	Moderate
Hailstorm	4	3	3	3	3	4	4.4	High
Landslide/Erosion/Slope Failure	1	4	1	1	1	1	1.95	Low
Levee Failure	1	2	2	3	3	1	2.85	Moderate
River/Stream Flood	3	3	3	3	4	1	4.05	High
Severe Winter Storm	4	3	3	4	3	2	4.3	High
Sink Holes	1	1	1	1	1	1	1.35	Low
Thunderstorm and	4	4	3	3	2	4	4.9	High

Lightning								
Tornado	2	3	4	3	3	4	4.3	High
Windstorm	4	4	2	2	3	4	4.1	High
Air Transportation Incident	1	2	2	2	3	4	3.1	Moderate
Communications Failure	2	2	2	3	3	4	3.5	Moderate
Energy Disruption	2	2	2	3	2	4	3.2	Moderate
Fixed Hazmat Incident	4	3	2	3	3	4	4.1	High
Fixed Radiological Incident	1	1	2	2	3	4	2.9	Moderate
Highway Transportation Incident	3	3	1	1	1	4	2.6	Low
Pipeline Incident	1	2	2	2	2	4	2.8	Moderate
Rail Transportation Incident	3	3	2	2	3	4	3.7	Moderate
Transportation Hazmat Incident	4	3	2	3	3	4	4.1	High
Transportation Radiological Incident	1	1	1	1	2	4	2.1	Low
Waterway/Water Body Incident	1	1	2	1	2	4	2.4	Low
Enemy Attack	1	1	3	3	3	1	2.95	Moderate
Public Disorder	1	1	1	1	2	3	1.95	Low
Terrorism – Agricultural/Biological	1	1	3	3	3	4	3.4	Moderate
Terrorism – Chemical	1	1	3	3	3	4	3.4	Moderate
Terrorism – Conventional	2	2	3	2	3	4	3.6	Moderate
Terrorism – Cyber	1	3	3	3	2	4	3.5	Moderate
Terrorism – Radiological	1	1	2	2	4	4	3.2	Moderate
Animal Disease Epidemic	1	2	2	2	2	2	2.5	Low
Human Disease Epidemic	1	1	3	3	3	2	3.1	Moderate
Plant/Crop Disease Epidemic	1	2	2	3	1	1	2.25	Low
Structural Failure	1	1	2	1	1	3	1.95	Low
Structural Fire	3	3	2	1	2	3	3.05	Moderate

Table 17: Hazard Priority Table

Priority 1 (High) Hazards	Priority 2 (Moderate) Hazards	Priority 3 (Low) Hazards
Flash Flood	Dam Failure	Earthquake
River/Stream Flood	Air Transportation Incident	Fixed Radiological Incident
Severe Winter Storm	Grass or Wild Land Fire	Pipeline Incident
Thunderstorm and Lightning	Hailstorm	Transportation Radiological Incident
Tornado	Agricultural/Biological Terrorism	Plant/Crop Disease Epidemic
Fixed Hazmat Incident	Chemical Terrorism	Enemy Attack
Transportation Hazmat Incident	Conventional Terrorism	Radiological Terrorism
Communications Failure	Cyber Terrorism	Public Disorder
Energy Disruption	Animal Disease Epidemic	Waterway/Water Body Incident
Drought	Human Disease Epidemic	Expansive Soils
Highway Transportation Incident	Structural Failure	Sink Holes
Windstorm	Structural Fire	
	Extreme Heat	
	Levee Failure	
	Rail Transportation Incident	
	Landslide/Erosion/Slope Failure	

V. CURRENT PRE-DISASTER MITIGATION ACTIVITIES

The following is a synopsis of the significant pre-disaster mitigation accomplishments and ongoing activities in Mills County.

A. Mills County

1. Mills County Emergency Management Agency (EMA) provides public awareness on NOAA weather radios, as well as information on potential hazards and mitigation, response, and recovery activities.
2. Mills County has a mass casualty trailer with emergency supplies available throughout the county in the event of a large scale disaster event. The county also possesses a decontamination trailer, a command vehicle containing backup communications and weather detection equipment, a pet trailer to be utilized when pet owners are forced to evacuate from their homes, and a rehabilitation vehicle to support first responders in extended disaster situations. Mills County has acquired a Public Health/EMA response trailer with a mobile medicine dispensary and a first responder rehabilitation vehicle.
3. Fire departments in the county maintain mutual aid agreements with each other to provide assistance as needed.
4. First responders throughout the county are provided with ongoing training and updated equipment as needed and as resources allow.
5. Mills County maintains open burning and burning notification ordinances.
6. In the event of a large scale disaster event, the county has designated official shelter locations and has a memorandum of understanding with those property owners outlining the conditions under which those facilities will be needed for sheltering purposes.
7. Mills County EMA is working to develop minimum specifications for outdoor warning sirens throughout the county and to assess needs in areas of population concentration as they relate to the presence and quality of sirens and coverage. In addition, the county evaluates the need for new sirens based on age and functional reliability of sirens currently in place.
8. Some rural areas of the county have dry hydrants in place, which improve fire protection.
9. Mills County EMA is working with each individual jurisdiction to develop emergency response plans, and also maintains and updates an overall countywide Emergency Operations Plan, consisting of response, mitigation, and recovery strategies.
10. Some of the county's critical facilities, including the county courthouse, sheriff's office, Glenwood Police Department, and Glenwood Resource Center are equipped with permanent backup generators, which provide auxiliary power in the event of a prolonged outage.
11. Mills County provides safety training and incident management training for all of its employees.
12. Mills County has a security committee in place and is in the process of reviewing and updating strategies to secure all county facilities.
13. The Mills County Fair Board is planning for the construction of a new building on the fairgrounds, which will be built to meet safe room specifications to protection for patrons in the event of a tornado or other high wind event.
14. Mills County maintains a 28E service agreement with the Council Bluffs, IA Hazmat team. Local hazmat ordinances have been developed.
15. Mills County continues to participate in the National Incident Management System (NIMS) training program.

B. Emerson
   1. One property within Emerson city limits and two properties just outside the city's jurisdiction were acquired and demolished with Community Development Block Grant and FEMA funds because of numerous flood events and flood related damages.
   2. Emerson has adopted and enforces ordinances pertaining to snow emergencies, water restrictions, and floodplain management.
   3. Emerson maintains and enforces a floodplain ordinance and participates in the NFIP.
   4. Emerson follows Mills County policies regarding open burning and any necessary burning restrictions.
   5. Emerson has a portable generator at the fire station in the event of a prolonged power outage, and has permanent generators at the water treatment facility and the sewer plant.
   6. Emerson has designated the community building as an emergency operations center/disaster shelter and installed a portable generator there.
   7. Emerson has contracted for a study of the water system, which is now underway that will identify issues of quality, distribution (pressure) and needed maintenance. It will also identify nitrate levels in the water.
   8. Emerson has terraced and tiled a field north of town to prevent it from constantly flooding the streets in the north part of the city. This has reduced storm water drainage, but there are still problems in other parts of town that need to be addressed.
   9. Emerson has a tree trimming program in place and works with Mid-American Energy to keep limbs away from power lines.
   10. Emerson Fire and Rescue provides updated equipment and training for first responders on an ongoing basis.
   11. The Emerson Fire Department has instituted training programs for hazardous materials response capability and incident command.
   12. Officials of the Emerson Fire Department speak with service organizations about hazard awareness and safety procedures on a regular basis, in addition to holding open house events and inspecting smoke detectors for residents.
   13. Emerson is working to produce minimum specifications for outdoor warning sirens and to assess siren needs in newly developed areas.

C. Glenwood
   1. Glenwood conducts periodic cleanup activities along Keg Creek to improve water flow and drainage in the community.
   2. Glenwood has designated churches and schools, the American Legion Hall, Glenwood Resource Center, and YMCA as emergency shelter locations. Many local businesses have also been trained to provide shelter-in-place in the event of a hazard.
   3. Glenwood maintains and enforces a floodplain ordinance and participates in the NFIP.
   4. The Glenwood Fire Department has service agreements with Mills County.
   5. Glenwood maintains and enforces ordinances pertaining to water restrictions, snow emergencies, and open burning in the community.
   6. Permanent generators are in place at the Glenwood Resource Center, the city's water and sewage treatment facilities, and the Glenwood Police Department.
   7. Glenwood has a tree trimming program in place and works with Mid-American Energy to keep limbs away from power lines.
   8. Glenwood Volunteer Fire and Rescue provides updated equipment and training for first responders on an ongoing basis.
   9. The Glenwood Fire Department has instituted training programs for hazardous materials response capability and incident command.
   10. Glenwood is working to produce minimum specifications for outdoor warning sirens and

to assess siren needs in newly developed areas.

D. Hastings
   1. Hastings has adopted and enforces ordinances pertaining to snow emergencies and floodplain management.
   2. Hastings follows Mills County policies regarding open burning and any necessary burning restrictions.
   3. Hastings provides training and equipment for its first responders on an ongoing basis.
   4. Hastings will continue to participate in NIMS training.
   5. The Hastings Fire Department has instituted training programs for hazardous materials response capability and incident command.
   6. Hastings has a portable generator available for use in the event of power failure.
   7. Hastings is working to produce minimum specifications for outdoor warning sirens and to assess siren needs in newly developed areas.

E. Henderson
   1. Henderson conducts numerous training exercises for its first responders, including hazmat, weather spotting, and CPR.
   2. The Henderson Fire Department has instituted training programs for hazardous materials response capability and incident command.
   3. Henderson has adopted and enforces an ordinance pertaining to water restrictions during dry periods.
   4. Henderson City Halls (which includes the library and community center) is designated as the official shelter in case of an emergency.
   5. Henderson has two portable generators: one designated for water and sewer functions, and one for critical facility sites.
   6. Henderson has implemented a water chlorination system to minimize the risk of a public health threat due to water contamination.
   7. The Farm Service Company maintains plans for Anhydrous Ammonia storage and handling for federal compliance.
   8. Henderson follows Mills County policies regarding open burning and any necessary burning restrictions.
   9. Henderson is working to produce minimum specifications for outdoor warning sirens and to assess siren needs in newly developed areas.

F. Malvern
   1. Malvern has adopted and enforces ordinances pertaining to snow emergencies, water restrictions, floodplain management, and open burning.
   2. Malvern maintains and enforces a floodplain ordinance and participates in the NFIP.
   3. Malvern recently completed installation of a permanent generator to provide backup power for the main sewer lift station.
   4. Malvern follows Mills County policies regarding open burning and any necessary burning restrictions.
   5. Malvern provides training and equipment for its first responders on an ongoing basis. The fire department has acquired a thermal imaging system.
   6. Malvern recently acquired a new emergency warning siren. Sirens in Malvern can be remotely activated by Mills County EMA and are equipped with battery backup power.
   7. Both Faith Ridge Life Center and the community center have been designated by Malvern as emergency shelter locations.
   8. Malvern will continue to participate in NIMS training. City staff, first responders, and elected officials have been trained to utilize the processes, protocols, and procedures

established through NIMS.

9. The Malvern Fire Department has instituted training programs for hazardous materials response capability and incident command.
10. Facilities which store anhydrous ammonia have obtained tank locks and Malvern is actively working with businesses to ensure adequate security at hazmat sites.
11. Malvern is working to produce minimum specifications for outdoor warning sirens and to assess siren needs in newly developed areas.

G. Pacific Junction

1. Pacific Junction has adopted and enforces ordinances pertaining to snow emergencies, water restrictions, and floodplain management.
2. Pacific Junction maintains and enforces a floodplain ordinance and participates in the NFIP.
3. Pacific Junction has two portable generators, one at the community center and one at the fire department, available to protect critical facilities in the event of a prolonged power outage.
4. Officials with the Pacific Junction Fire Department speak to service organizations about hazard awareness and safety procedures on a regular basis, in addition to holding open house events and inspecting smoke detectors for residents.
5. Pacific Junction has a tree trimming program in place and works with Mid-American Energy to keep limbs away from power lines.
6. Pacific Junction Volunteer Fire and Rescue provides updated equipment and training for first responders on an ongoing basis.
7. The Pacific Junction Fire Department has instituted training programs for hazardous materials response capability and incident command.
8. Pacific Junction follows Mills County policies regarding open burning and any necessary burning restrictions.
9. Pacific Junction works to educate residents about keeping ditches and culverts free of debris that could impede the free flow of water during and after a heavy rain.
10. Pacific Junction is working to produce minimum specifications for outdoor warning sirens and to assess siren needs in newly developed areas.

H. Silver City

1. Silver City has adopted and enforces ordinances pertaining to snow emergencies, water restrictions, and floodplain management.
2. Silver City maintains and enforces a floodplain ordinance and participates in the NFIP.
3. Silver City has a portable generator available to protect critical facilities in the event of a prolonged power outage, and has a permanent generator at the water treatment facility.
4. Officials with the Silver City Fire Department speak to service organizations about hazard awareness and safety procedures on a regular basis, in addition to holding open house events and inspecting smoke detectors for residents.
5. Silver City has a tree trimming program in place and works with Mid-American Energy to keep limbs away from power lines.
6. Silver City Volunteer Fire and Rescue provides updated equipment and training for first responders on an ongoing basis.
7. The Silver City Fire Department has instituted training programs for hazardous materials response capability and incident command.
8. Silver City follows Mills County policies regarding open burning and any necessary burning restrictions.
9. Silver City is working to produce minimum specifications for outdoor warning sirens and to assess siren needs in newly developed areas.

VI. HAZARD MITIGATION GOALS, OBJECTIVES AND ACTIONS

In spite of previous and ongoing efforts throughout Mills County to minimize the threat of hazard events and their potential impact on residents and facilities, the county and its legal jurisdictions realize that much more can be done to improve preparedness, response and recovery efforts through the development of mitigation goals and objectives. These goals and objectives are a list of activities and processes that will ultimately make all of Mills County a safer place. As many of the hazards previously discussed have similar mitigation solutions, mitigation goals and objectives are categorized into goals listed below. Goals and objectives for hazards not specifically mentioned in this section are included with the General Mitigation Activities category, as mitigation of these hazards can be completed most effectively through general measures.

As part of the development of this multi-jurisdictional plan, it was necessary to review the goals and objectives of previous single-jurisdiction plans from the unincorporated county and cities within Mills County. The PDM Planning Committee then reviewed previous goals and objectives to determine present validity and usefulness. New goals and objectives were added to the section that represents current mitigation needs. After reviewing and developing goals and objectives in response to identified hazards, the Planning Committee continued discussion of potential action items to address each hazard category. Many of the actions listed are ongoing activities or continuation of existing policies and procedures and therefore can be completed with little or no additional cost to the county or the county's legal jurisdictions. Other actions, however, may require substantial technical and/or financial resources to complete and will likely only be implemented with outside assistance.

Goal 1: Continue development of plans, policies and procedures to minimize the effects of any hazard event that may occur in Mills County.	
Hazards Addressed: All identified natural or human caused hazards	
Objective 1.1	Maintain comprehensive emergency management and hazard mitigation planning documents.
Objective 1.2	Improve comprehensive emergency management and maintain a high level of service and response.
Objective 1.3	Implement programs, procedures and ordinances that further mitigation.
Objective 1.4	Ensure inter-local cooperation among jurisdictions in Pottawattamie County to develop and maintain plans that further mitigation.
Objective 1.5	Train county and city staff, first responders, and elected officials to utilize the processes, protocols, and procedures established through the National Incident Command System (NIMS).
Objective 1.6	Enhance capabilities to monitor and assess hazard sites.

Goal 2: Minimize the potential damage from and impact of flooding events.	
Hazards Addressed: Dam Failure, Flash Flood, Levee Failure, River/Stream Flood	
Objective 2.1	Provide for the safe and efficient flow of rivers and streams throughout the county.
Objective 2.2	Provide for the safe and efficient flow of stormwater throughout the county.
Objective 2.3	Maintain and improve dam and levee structures as necessary.
Objective 2.4	Maintain, enforce and update zoning ordinances and floodplain management ordinances as needed.
Objective 2.5	Continued participation in the NFIP.

Objective 2.6	Protect public and private property from flooding.
Objective 2.7	Educate and provide technical information to residents and businesses regarding flood prevention.

Goal 3: Minimize the potential impact of erosion along the banks of creeks, streams, recreational lakes or ponds, and areas with steep grades.	
Hazards Addressed: Erosion, Flash Flood, River/Stream Flood	
Objective 3.1	Implement stabilization projects on stream and river banks where necessary.

Goal 4: Minimize the potential damage from and impact of soil and land hazards.	
Hazards Addressed: Earthquake, Expansive Soils, Sink Holes	
Objective 4.1	Provide for safe development practices related to soil and land.
Objective 4.2	Maintain local building codes and land use regulations.

Goal 5: Minimize the potential damage from and impact of severe weather events.	
Hazards Addressed: Flash Flood, Severe Winter Storm, Thunderstorm and Lightning, Tornado, Windstorm	
Objective 5.1	Maintain and modernize weather emergency notification equipment.
Objective 5.2	Educate residents on severe weather safety and how to stay alert to severe weather events.
Objective 5.3	Ensure residents can access shelters during severe weather events by designating public shelters in area of public use and high density.
Objective 5.4	Encourage interested parties, including school districts, to construct safe rooms, especially in structures or outdoor venues where no shelter is available.
Objective 5.5	Continue to enforce local building codes to ensure the structural integrity of all buildings throughout the county.
Objective 5.6	Continue to enforce snow emergency ordinances throughout the county.

Goal 6: Minimize the potential impact of communication and energy failures.	
Hazards Addressed: Communications Failure, Energy Disruption	
Objective 6.1	Ensure shelters and critical facilities have adequate backup power capabilities and are equipped to handle generator power.
Objective 6.2	Monitor tree trimming of limbs near power lines that may pose a threat to power service during windstorms and other hazards.
Objective 6.3	Encourage residents to acquire and maintain disaster kits.
Objective 6.4	Educate residents on the proper and safe use of generators.
Objective 6.5	Analyze the cost benefit of placing electrical utilities underground.

Goal 7: Minimize the potential damage from and impact of transportation incidents.	
Hazards Addressed: Air, Highway, Rail, and Waterway/Waterbody Incidents	
Objective 7.1	Ensure rescue personnel are fully equipped and capable to perform traffic rescue activities.
Objective 7.2	Ensure road conditions are conducive to driver safety by implementing capital

	improvement programs to upgrade roads and safety devices.

Goal 8: Minimize the potential damage from and impact of hazardous substance releases.	
Hazards Addressed: Fixed Hazmat Incident, Fixed Radiological Incident, Pipeline Incident, Transportation Hazmat Incident, Transportation Radiological Incident	
Objective 8.1	Ensure all firefighters and first responders are trained to the operations level of hazardous material response capability.
Objective 8.2	Continue to support appropriate regional hazardous materials response teams, such as the one maintained by the Council Bluffs Fire Department.
Objective 8.3	Foster the creation of a countywide shelter-in-place public education program.
Objective 8.4	Maintain, enforce and update hazardous substance ordinances as needed.
Objective 8.5	Maximize safety and security of hazardous materials locations throughout the county.
Objective 8.6	Promote safe disposal of household hazardous waste.

Goal 9: Minimize the potential human, physical and financial threats caused by purposeful hazards.	
Hazards Addressed: Enemy Attack, Public Disorder, Terrorism	
Objective 9.1	Foster surveillance and reporting procedures.
Objective 9.2	Properly train and equip local officials and first responders.
Objective 9.3	Collaborate with regional, state and federal agencies to mitigate manmade purposeful threats.
Objective 9.4	Develop and maintain plans that mitigate manmade purposeful threats.

Goal 10: Minimize the potential impact of public health incidents.	
Hazards Addressed: Animal, Human and Plant/Crop Disease Epidemics	
Objective 10.1	Inform residents of any public health or agriculture/plant related threats. Also provide information on how to manage health threats.
Objective 10.2	Foster improved monitoring and reporting procedures for potential health hazards.

Goal 11: Minimize the potential damage from and impact of fires.	
Hazards Addressed: Grass or Wild Land Fire, Structural Fire	
Objective 11.1	Maintain and upgrade firefighting equipment and facilities to maximize firefighting capabilities.
Objective 11.2	Continue public awareness on fire prevention and fire related ordinances.
Objective 11.3	Enforce open burning bans.

Goal 12: Minimize the potential impact of prolonged drought and extreme heat conditions.	
Hazards Addressed: Drought, Extreme Heat	
Objective 12.1	Monitor water levels during periods of prolonged drought.
Objective 12.2	Ensure relief is available to those most vulnerable during extreme heat conditions.
Objective 12.3	Enact water restrictions when necessary.

VII. MITIGATION PLAN IMPLEMENTATION AND EVALUATION

Prioritization and Implementation

The process of implementing the Mills Countywide Pre-Disaster Mitigation Plan requires prioritizing and phasing the objectives so as to recognize the financial limitations of the county and all inclusive jurisdictions. The actions listed in Table 18 have been selected by the PDM Planning Committee based on the immediate need, scope, and cost of implementation. These factors indicate project feasibility for implementation, which is classified as "good," "fair," or "poor." Action items are arranged according to the jurisdiction responsible for implementation: A) exclusively Mills County; or B) one or more jurisdictions that may include Mills County. Though jurisdictions do not have the same priorities with respect to mitigation actions, Mills County and incorporated cities attempted to retain similar criteria for implementation of actions. Table 19 on Page 91 ranks mitigation actions by incorporated city.

Six mitigation actions stated in previous single-jurisdictional plans were omitted from this current document:

- "Continue participation in organizations that address hazard mitigation activities."
- "Continue public awareness of hazards and mitigation activities, and enforcement of local codes that further mitigation."
- "Consider hazard mitigation when making future land use decisions."
- "Establish a list of elderly and special needs persons that would require assistance during hazards."
- "Enact emergency curfews during critical periods."
- "Encourage regular tree trimming near power lines."

Four mitigation actions were once considered but then rescinded in this current plan:

- "Ensure that shelter locations are wired for generator power."
- "Encourage rural property owners to conduct controlled burns as necessary."
- "Consider implementation of a household hazardous waste initiative."
- "Develop code language to restrict new construction within hazard zones along rail lines."

It was ultimately decided by the Planning Committee to exclude these mitigation actions from the final plan because they are generally minimal-to-no-cost actions or they can be completed under the regular auspices of the applicable jurisdiction. All remaining actions have been migrated to the multi-jurisdictional plan due to continued relevance. New action items will be considered priority in subsequent plans unless actions in the most current plan remain relevant.

County and municipal governing bodies and special purpose districts (e.g. school districts), as a part of their normal budget processes, shall consider investment into these needed hazard mitigation projects as pertinent to their jurisdictional requirements. For projects that require local funding, governing bodies should begin to allocate funds as their budget processes allow. The county and all legal jurisdictions should also consider these mitigation projects and policies when developing updates to any existing plans and ordinances. Many of the actions are relatively low cost, but can have tremendous benefit when implemented. In order to select the most beneficial actions, or those with the biggest benefits versus cost, the PDM Planning Committee considered social, technical, administrative, political, legal, economic, and environmental (STAPLEE process) elements.

Table 18: Selected Mitigation Action Items

Mills County as the Responsible Jurisdiction			
			Project Feasibility
Selected Action Item	Corresponding Goal and Objective	Coordinating Department/Staff	Good/Fair/Poor (comments)
Provide permanent generator at Emergency Operations Center and 911 communications center.	Goal 6, Objective 1	▪ Mills Co. EMA	**Good**- Generators are commonly funded by FEMA/Iowa HSEMD. This activity will ensure continued continuity of operations.
Ensure Missouri River levee accreditation; make necessary repairs.	Goal 2, Objective 3	▪ Mills Co. EMA ▪ M&P Levee District	**Good**- The county has applied for funding assistance from the Economic Development Administration.
Monitor existing and planned private flood control structures in Mills County.	Goal 2, Objective 6	▪ Mills Co. Engineer	**Good**- As the county completes its zoning ordinance and land use plan, the Engineer's Office can take responsibility for implementation.
Modernize indoor warning systems to meet 01/01/2013 federal mandate.	Goal 5, Objective 1	▪ Mills Co. EMA	**Good**- Mills County is mandated by the Federal Communications Commission to complete this activity.
Construct safe room at county fairgrounds in Malvern.	Goal 5, Objective 4	▪ Mills Co. EMA	**Fair**- Safe room projects are costly and the application process can be time consuming and difficult to complete. However, the county is aware of the importance of shelter at the fairgrounds.
Maintain the Mills Countywide Pre-Disaster Mitigation Plan.	Goal 1, Objective 1	▪ Mills Co. Board of Supervisors; EMA	**Good**- Funds are available through FEMA and Iowa HSEMD. The county has previously contributed in-kind match to meet the local funding obligation.
Regularly remove debris and obstructions from floodways and stream channels.	Goal 2, Objective 1	▪ Mills Co. Soil & Water Conservation District	**Good**- This activity is completed by county and private interests and should be continued.
Develop a notification strategy for recreational properties within the Missouri River floodway.	Goal 2, Objective 6	▪ Mills Co. Building & Zoning; EMA	**Fair**- Recreational properties are generally secondary residences and are held by absentee owners. There is little guarantee mobile structures can be moved in a timely manner.
Consider funding for acquisition of flood prone residential properties.	Goal 2, Objective 6	▪ Mills Co. Board of Supervisors; EMA	**Poor**- Acquisition projects are costly and often times politically unpopular for various reasons. This action also demands significant staff time and the county may have to contract services out for management.
Continue operations and maintenance of PL 83-566 and PL 84-99 structures in Mills County.	Goal 3, Objective 1	▪ Mills Co. Engineer	**Good**- This activity is in place and should be continued.
Update Mills County Breach Rating Study.	Goal 2, Objective 6	▪ Mills Co. Board of Supervisors ▪ Mills Co. EMA ▪ Mills Co. Soil & Water Conservation District	**Fair**- Development in northwest Mills County has rendered the existing plan obsolete. Outside funding is likely necessary though funding sources are not readily available.
Work to pursue a joint countywide position to enforce building codes and complete inspections.	Goal 4, Objective 4	▪ Mills Co. Building & Zoning ▪ Planning & Zoning Boards of Glenwood and Malvern ▪ City Councils of Emerson, Hastings, Henderson, Pacific Junction, & Silver City	**Fair**- Acquiring multi-jurisdictional support for a shared position may be challenging in addition to determining how such a position would be funded.
One or More Responsible Jurisdictions			
			Project Feasibility
Selected Action Item	Corresponding Goal and Objective	Coordinating Department/Staff	Good/Fair/Poor (comments)
Continue to train and equip first responders and local officials as needed.	Goal 1, Objective 2 Goal 8, Objectives 1 & 2 Goal 9, Objective 2	▪ Mills Co. EMA ▪ Fire Chiefs of the Emerson, Glenwood, Hastings, Henderson, Malvern, Mineola Township, Pacific Junction, & Silver City Volunteer FDs	**Good**- Training is conducted on an annual basis among jurisdictions and will continue as time and funding allows. Funding is typically set aside in local budgets.
Purchase portable generator(s) to support continuity of operations and	Goal 6, Objective 1	▪ Mills Co. Board of Supervisors; EMA ▪ City Councils of Emerson, Glenwood,	**Fair**- There are enough portable generators for use throughout the

emergency response.		Hastings, Henderson, Malvern, Pacific Junction, & Silver City	county, however, many of the current units are aged and could use backups.
Purchase backup batteries for all outdoor warning sirens.	Goal 6, Objective 1	▪ Mills Co. Board of Supervisors; EMA ▪ City Councils of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, & Silver City	**Fair**- This activity is dependent on the availability of local funds by jurisdiction.
Purchase NOAA weather radios for public critical facilities.	Goal 5, Objective 1	▪ Mills Co. EMA; Board of Supervisors ▪ City Councils of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, & Silver City	**Good**- Most weather radios cost $20-$80 and only one unit would be required per facility.
Designate and publicize official shelter locations in areas of population concentration.	Goal 5, Objective 3	▪ Mills Co. Board of Supervisors; EMA ▪ City Councils and City Clerks of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, & Silver City	**Good**- Shelter locations are designated by jurisdictional governing bodies with cooperation from building owners/supervisors. There is little to no money associated with this action though some designations may require verbal or written agreements.
Improve security at hazmat locations and public utility facilities.	Goal 8, Objective 5	▪ Mills Co. Sheriff ▪ Glenwood Police Department ▪ Maintenance staff of all legal jurisdictions	**Good**- Law enforcement departments and local councils throughout the county should work with hazmat site operators to ensure they have adequate security measures in place. All efforts should be made to improve security when budgets and funding allow.
Establish/Maintain EOC with 24 hour operational capability in Mills County and incorporated cities.	Goal 1, Objective 2	▪ Mills Co. EMA ▪ Emerson, Glenwood, Hastings, Henderson, Malvern, Mineola Township, Pacific Junction, & Silver City Volunteer FDs	**Fair**- Startup costs can be significant, especially to municipal jurisdictions and it may be necessary to purchase new or updated equipment. Benefit may not outweigh immediate need.
Install storm sewers or make storm water drainage improvements in areas of need.	Goal 2, Objective 2	▪ Mills County Engineer ▪ City Councils & Public Works Staff of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, & Silver City	**Poor**- Capital improvement projects are costly and there are currently no areas in the county where benefit is greater than potential costs.
Maintain and update firefighting equipment throughout Mills County.	Goal 11, Objective 1	▪ Mills Co. EMA ▪ Emerson, Glenwood, Hastings, Henderson, Malvern, Mineola Township, Pacific Junction, & Silver City Volunteer FDs	**Fair**- Grants are available to assist jurisdictions acquire upgraded equipment, though funding under particular programs is highly competitive. Loans also exist if governing bodies can agree to the program's terms.
Purchase outdoor warning sirens for areas of poor coverage.	Goal 6, Objective 1	▪ Mills Co. Board of Supervisors; EMA ▪ City Councils of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, & Silver City	**Fair**- Funding resources for warning sirens are limited, though the county and municipalities monitor application opportunities.
Develop and maintain EOP/Continuity of Operations Plan in Mills County and cities.	Goal 1, Objective 1	▪ Mills Co. EMA ▪ Fire Chiefs, Mayors, & Council members of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, & Silver City	**Fair**- Development of EOPs and COPs at the county and municipal levels will require technical assistance.
Construct safe rooms in public facilities or near open areas that lack shelter space or have inadequate shelter.	Goal 5, Objective 4	▪ Mills Co. EMA ▪ Glenwood Planning & Zoning Board ▪ Glenwood City Council	**Poor**- Safe room projects are costly and the application process can be time consuming and difficult to complete. Smaller jurisdictions may likely require technical assistance to prepare an application.
Construct safe rooms at schools that require or will require additional shelter space.	Goal 5, Objective 4	▪ Mills Co. EMA ▪ Glenwood Community Schools District ▪ East Mills Community Schools District	**Poor**- Safe room projects are costly and the application process can be time consuming and difficult to complete. School districts may likely require technical assistance to prepare an application.
Floodproof or relocate critical facilities that are located in flood hazard areas, including Glenwood's water treatment facility.	Goal 2, Objective 6	▪ Mills Co. EMA; Board of Supervisors ▪ City Councils of Emerson, Glenwood, Henderson, Malvern, & Pacific Junction	**Poor**- This action is costly and will likely require funding assistance. This action may also require third party administrative assistance.
Purchase fixed generator(s) for use at critical facilities.	Goal 6, Objective 1	▪ City Councils of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, & Silver City	**Poor**- Though funding assistance for this activity is available, incorporated jurisdictions have

			budget limitations that make necessary match obligations problematic.
Regularly clean and maintain storm sewers and drainage areas.	Goal 2, Objective 2	▪ Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, & Silver City Maintenance/Public Works Departments	**Good**- This activity is currently accomplished by jurisdictional maintenance/public works staff. Large debris following a disaster may require more time and resources to clear.
Maintain building codes to ensure safe development practices and to minimize erosion.	Goal 4, Objective 1	▪ Mills Co. Building & Zoning ▪ Planning & Zoning Boards of Glenwood and Malvern ▪ City Councils of Emerson, Hastings, Henderson, Pacific Junction, & Silver City	**Good**- Jurisdictions need to allocate resources to ensure staff is properly trained to follow and enforce codes.
Adopt alternative transportation routes for vehicles carrying hazardous materials.	Goal 8, Objective 4	▪ Mills Co. Board of Supervisors ▪ City Council of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, & Silver City	**Good**- This activity can be achieved by county board/city council action.
Update building codes to require underground installation of utilities for new construction.	Goal 6, Objective 5	▪ Mills Co. Building & Zoning ▪ Planning & Zoning Boards of Glenwood and Malvern ▪ City Councils of Emerson, Hastings, Henderson, Pacific Junction, & Silver City	**Fair**- This activity can be achieved by county board/city council action but utility and new construction costs may rise with new requirements.
Amend local ordinances to require notification of hazardous materials traveling though jurisdictional boundaries.	Goal 8, Objective 4	▪ Mills Co. Board of Supervisors ▪ City Councils of Emerson, Glenwood, Hastings, Henderson, Malvern, Pacific Junction, & Silver City	**Fair**- This activity can be achieved by county board/city council action but enforcing such an ordinance may be challenging.

Table 19: Mitigation Action Rankings by Incorporated City

	Emerson	Glenwood	Hastings	Henderson	Malvern	Pacific Junction	Silver City
Continue to train and equip first responders and local officials as needed.	1	1	1	1	1	1	1
Purchase portable generator(s) to support continuity of operations and emergency response.	4	6	7	7	5	4	4
Purchase backup batteries for all outdoor warning sirens.	6	8	8	4	7	5	5
Purchase NOAA weather radios for public critical facilities.	3	3	5	8	6	3	3
Designate and publicize official shelter locations in areas of population concentration.	2	14	6	6	8	2	2
Improve security at hazmat locations and public utility facilities.	9	12	3	3	4	6	6
Establish/Maintain EOC with 24 hour operational capability in Mills County and incorporated cities.	13	2	9	2	2	7	8
Install storm sewers or make storm water drainage improvements in areas of need.	7	11	2	5	3	15	9
Maintain and update firefighting equipment throughout Mills County.	11	13	4	9	9	9	7
Purchase outdoor warning sirens for areas of poor coverage.	5	16	10	10	16	12	11
Develop and maintain EOP/Continuity of Operations Plan in Mills County and cities.	12	5	11	11	10	10	14
Construct safe rooms in public facilities or near open areas that lack shelter space or have inadequate shelter.	14	9	13	15	11	13	13
Construct safe rooms at schools that require or will require additional shelter space.*	N/A	15	12	N/A	12	N/A	N/A
Floodproof or relocate critical facilities that are located in flood hazard areas.**	15	10	N/A	12	13	11	N/A
Purchase fixed generator(s) for use at critical facilities.	10	17	16	13	14	8	10
Regularly clean and maintain storm sewers and drainage areas.	8	7	14	14	15	14	12
Maintain building codes to ensure safe development practices and to minimize erosion.	16	4	17	18	20	19	15
Adopt alternative transportation routes for vehicles carrying hazardous materials.	17	18	15	16	17	16	17
Update building codes to require underground installation of utilities for new construction.	18	20	18	17	19	17	16
Amend local ordinances to require notification of hazardous materials traveling though jurisdictional boundaries.	19	19	19	19	18	18	18

*There are no school facilities in Emerson, Henderson, Pacific Junction, and Silver City.
**Hastings and Silver City have no critical facilities located in flood hazard areas.

Evaluation and Continued Public Participation

Mills County EMA is responsible for monitoring and implementing the Multi-Jurisdictional Pre-Disaster Mitigation Plan as it relates to the county; elected and administrative officials of the seven incorporated municipalities will assume responsibility for local implementation of mitigation activities. It is suggested that at a minimum, the plan be reviewed annually by the Mills County Emergency Management Commission, EMA staff, local city representatives, and other stakeholders. This annual monitoring and evaluation will determine progress made in addressing the mitigation goals and objectives outlined in the plan. As part of that evaluation, certain goals may need adjustment to ensure that they continue to meet the needs of all jurisdictions. The functionality of the plan should also be assessed following a significant hazard event within the county. Near the end of five years, the plan will go through the process of full reevaluation in order to remain eligible for state and federal funding assistance. Future reviews and updates will follow the procedure of:

<u>Procedure and Techniques</u>

Task A: *Evaluate the effectiveness of the planning process*

1. Reconvene the Planning Committee
2. Review Planning Process (Items to discuss)
    a. Building the planning team
    b. Engaging the public
    c. Data gathering and analysis
    d. Coordinating with other agencies

Task B: *Evaluate the effectiveness of actions*

1. What were the results of the implemented action? Did the results achieve the goals/objectives outlined in the plan? Did the actions have the intended results?
2. Were the actions cost-effective? Did (or would) the project result in the reduction of potential losses?
3. Document actions that were slow to get started or were not implemented.

Task C: *Determine why the actions worked or did not work*

1. Lack of available resources/funds
2. Political and/or popular support
3. Distribution of assigned tasks among responsible parties
4. Actual time necessary to implement actions

While the Mills County Emergency Management Commission provides the best source of continuity in local leadership, as well as the necessary authority to ensure active implementation of planning initiatives and activities, significant input shall be obtained from PDM Planning Committee representatives, interested citizens, and neighboring jurisdictions. In conducting periodic evaluations of the plan, the Planning Committee will first consider any material changes to data in the adopted document, such as the release of new demographic information or the addition of new critical facilities. Once those tasks are completed, the Committee will evaluate its list of recommended mitigation goals, objectives, and projects, making revisions to account for completed projects and outcomes achieved. For projects that either have not been completed or have been bypassed on the list, the Planning Committee will explore the reasons for delays to those projects and reevaluate their priority, not only within the context of the multi-jurisdictional plan, but in the overall scheme of the county's/local city's short-term strategic planning priorities.

VIII. SUMMARY OF MITIGATION RECOMMENDATIONS

In discussing which mitigation action items to implement in Mills County and legal jurisdictions, a number of factors were considered, including availability of financial and technical resources, legal and social impacts of activities, and overall importance of each project or policy as it relates to the area's overall goals. Prior to implementation of all projects, especially those requiring outside financial resources to compete, jurisdictions will need to complete a detailed cost-benefit review showing the quantifiable benefits of a project in relation to project expenses. However, until the process of implementing a selected project begins, it may be difficult to accurately determine the physical costs and benefits of certain mitigation activities. Below is a summary table of the PDM Planning Committee's recommendations for implementation of selected action items prioritized in Section VI, which includes actions, implementation timeframe, priority, possible funding sources, estimated cost, and funding distribution:

Table 20: Mitigation Action Implementation

Mills County Mitigation Actions						
Immediate/Short-term (within 2 years)	**Priority**	**Funding Source(s)**	**Estimated Cost**	**Funding Distribution**		
				Federal	**State**	**Local**
Provide permanent generator at Emergency Operations Center and 911 communications center.	High	▪ Hazard Mitigation Grant Program (HMGP) grants	$194,000	$129,000	$17,000	$26,000
Make necessary levee repairs to ensure accreditation.	High	▪ M&P Missouri River Levee District ▪ Community Development Block Grant Program ▪ Economic Development Administration	$1.5M	$1.2M	$0	$311,000
Modernize indoor warning systems to meet 01/01/2013 federal mandate.	High	▪ Mills County	TBD	--	--	--
Develop a notification strategy for recreational properties within the Missouri River floodway.	Medium	▪ Mills County	$2,500	$0	$0	$2,500
Update Mills County Breach Rating Study.	Medium	▪ Mills County	$50,000	$37,500	$5,000	$7,500
Ongoing	**Priority**	**Funding Source(s)**	**Estimated Cost**	**Funding Distribution**		
				Federal	**State**	**Local**
Maintain the Mills Countywide Pre-Disaster Mitigation Plan.	High	▪ Mills County	$30,000	$22,500	$3,000	$4,500
Regularly remove debris and obstructions from floodways and stream channels.	High	▪ Iowa Dept. of Natural Resources	$20,000/yr	$0	$0	$20,000
Monitor existing and planned private flood control structures in Mills County.	Medium	▪ Iowa Dept. of Natural Resources	$5,000/yr	$0	$0	$5,000
Consider funding for acquisition of flood prone residential properties.	Medium	▪ HMGP grants	$2M +	$1.5M	$200,000	$300,000
Continue operations and maintenance of PL 83-566 and PL 84-99 structures in Mills County.	High	▪ Iowa Dept. of Natural Resources	$30,000/yr	$0	$0	$30,000
Long-term (beyond 2 years)	**Priority**	**Funding Source(s)**	**Estimated Cost**	**Funding Distribution**		
				Federal	**State**	**Local**
Construct safe room at county fairgrounds in Malvern.	High	▪ HMGP grants	$150,000-$300,000	$113K-$225K	$15K-$300K	$22K-45K
Work to pursue a joint countywide position to enforce building codes and complete inspections.	Low	▪ Mills County ▪ Local jurisdictions	No cost	N/A	N/A	N/A
Jurisdiction-Wide Mitigation Actions						
Immediate/Short-term (within 2 years)	**Priority**	**Funding Source(s)**	**Estimated Cost**	**Funding Distribution**		
				Federal	**State**	**Local**
Purchase NOAA weather radios for public critical facilities.	High	▪ Mills County ▪ Local jurisdictions	$20-$80/unit	$0	$0	$20-$80
Improve security at hazmat locations and public utility facilities.	High	▪ Mills County ▪ Local jurisdictions	$500-$1,000	$0	$0	$500-$1,000
Adopt alternative transportation routes for vehicles carrying hazardous materials.	Low	▪ Iowa Dept. of Transportation	No cost	N/A	N/A	N/A
Ongoing	**Priority**	**Funding Source(s)**	**Estimated**	**Funding Distribution**		

			Cost	Federal	State	Local
Continue to train and equip first responders and local officials as needed.	High	▪ Iowa HSEMD	$1,000-$5,000	$0	$0	$1,000-$5,000
Purchase portable generator(s) to support continuity of operations and emergency response.	High	▪ HMGP grants	$3,000-$7,000/unit	$2,250-$5,250	$300-$700	$450-$1,050
Designate and publicize official shelter locations in areas of population concentration.	High	▪ Mills County ▪ Local jurisdictions	No cost	N/A	N/A	N/A
Maintain and update firefighting equipment throughout Mills County.	Medium	▪ Assistance to Firefighters Grant Program	$2,000-$10,000	$0	$0	$2,000-$10,000
Regularly clean and maintain storm sewers and drainage areas.	Medium	▪ Mills County ▪ Local jurisdictions	$5,000-$20,000	$0	$0	$5,000-$20,000
Maintain building codes to ensure safe development practices and to minimize erosion.	Low	▪ Local jurisdictions	No cost	N/A	N/A	N/A
Long-term (beyond 2 years)	**Priority**	**Funding Source(s)**	**Estimated Cost**	**Funding Distribution**		
				Federal	**State**	**Local**
Purchase backup batteries for all outdoor warning sirens.	High	▪ HMGP grants	$2,000/unit	$0	$0	$2,000
Establish/Maintain EOC with 24 hour operational capability in Mills County and incorporated cities.	High	▪ FEMA ▪ Iowa HSEMD	$5,000-$10,000	$0	$0	$5,000-$10,000
Install storm sewers or make storm water drainage improvements in areas of need.	High	▪ HMGP grants ▪ Community Development Block Grant Program ▪ Local capital improvement funds	$100,000-$500,000	$75,000-$375,000	$10,000-$50,000	$15,000-$75,000
Purchase outdoor warning sirens for areas of poor coverage.	Medium	▪ HMGP grants	$10,000-$50,000	$7,500-$37,500	$1,000-$5,000	$1,500-$7,500
Develop and maintain EOP/Continuity of Operations Plan in Mills County and cities.	Medium	▪ FEMA ▪ Iowa HSEMD	$5,000/plan	$0	$0	$5,000
Construct safe rooms in public facilities or near open areas that lack shelter space or have inadequate shelter.	Medium	▪ HMGP grants	$150,000	$113,000	$15,000	$22,000
Construct safe rooms at schools that require or will require additional shelter space.	Medium	▪ HMGP grants	$150,000	$113,000	$15,000	$22,000
Floodproof or relocate critical facilities that are located in flood hazard areas, including Glenwood's water treatment facility.	Medium	▪ HMGP grants	$50,000-$2M	$37,500-$1.5M	$5,000-$200,000	$7,500-$300,000
Purchase fixed generator(s) for use at critical facilities.	Medium	▪ HMGP grants	$15,000-$120,000	$11,250-$90,000	$1,500-$12,000	$2,250-$18,000
Update building codes to require underground installation of utilities for new construction.	Low	▪ Mills County ▪ Local jurisdictions	No cost	N/A	N/A	N/A
Amend local ordinances to require notification of hazardous materials traveling though jurisdictional boundaries.	Low	▪ Mills County ▪ Local jurisdictions	No cost	N/A	N/A	N/A

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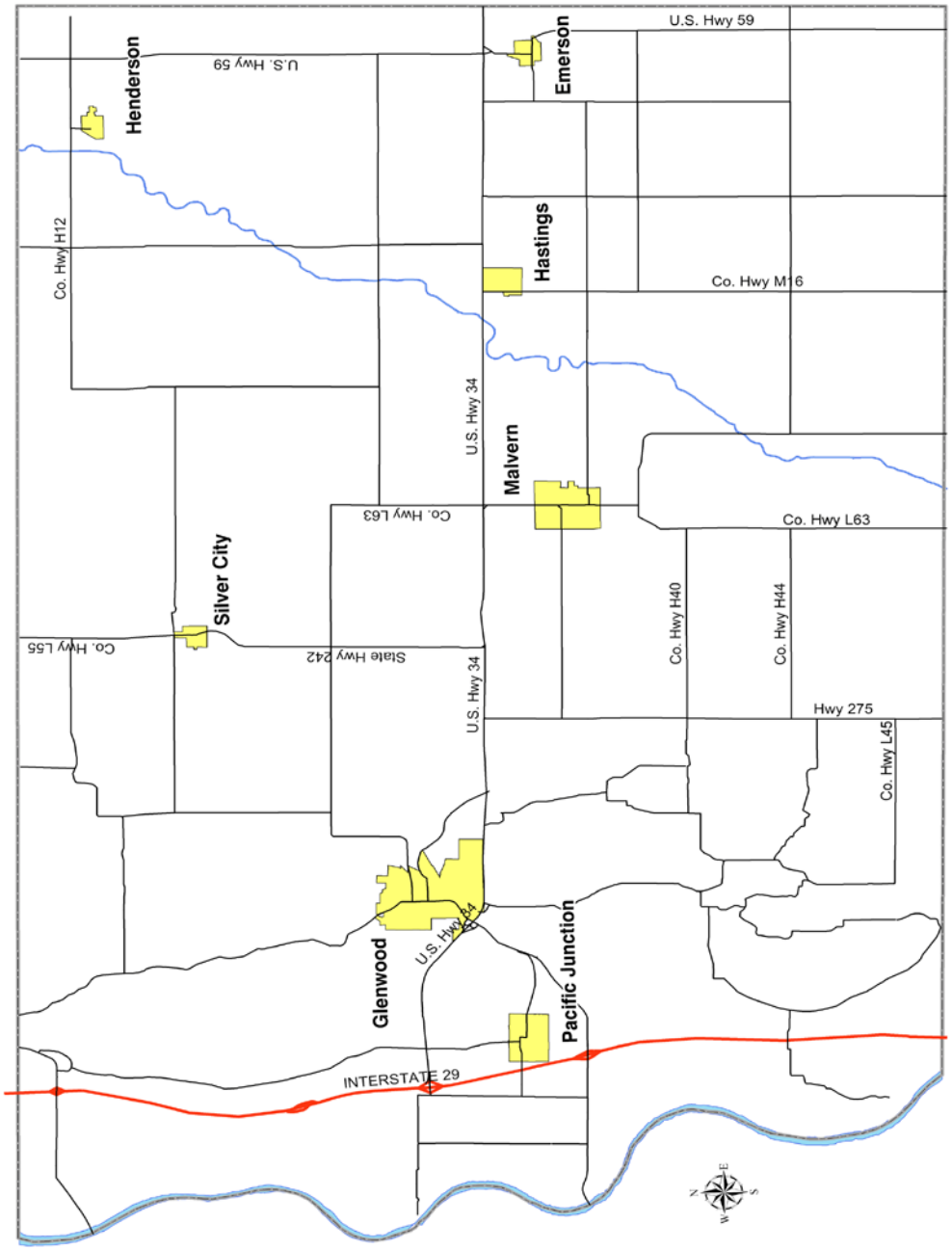
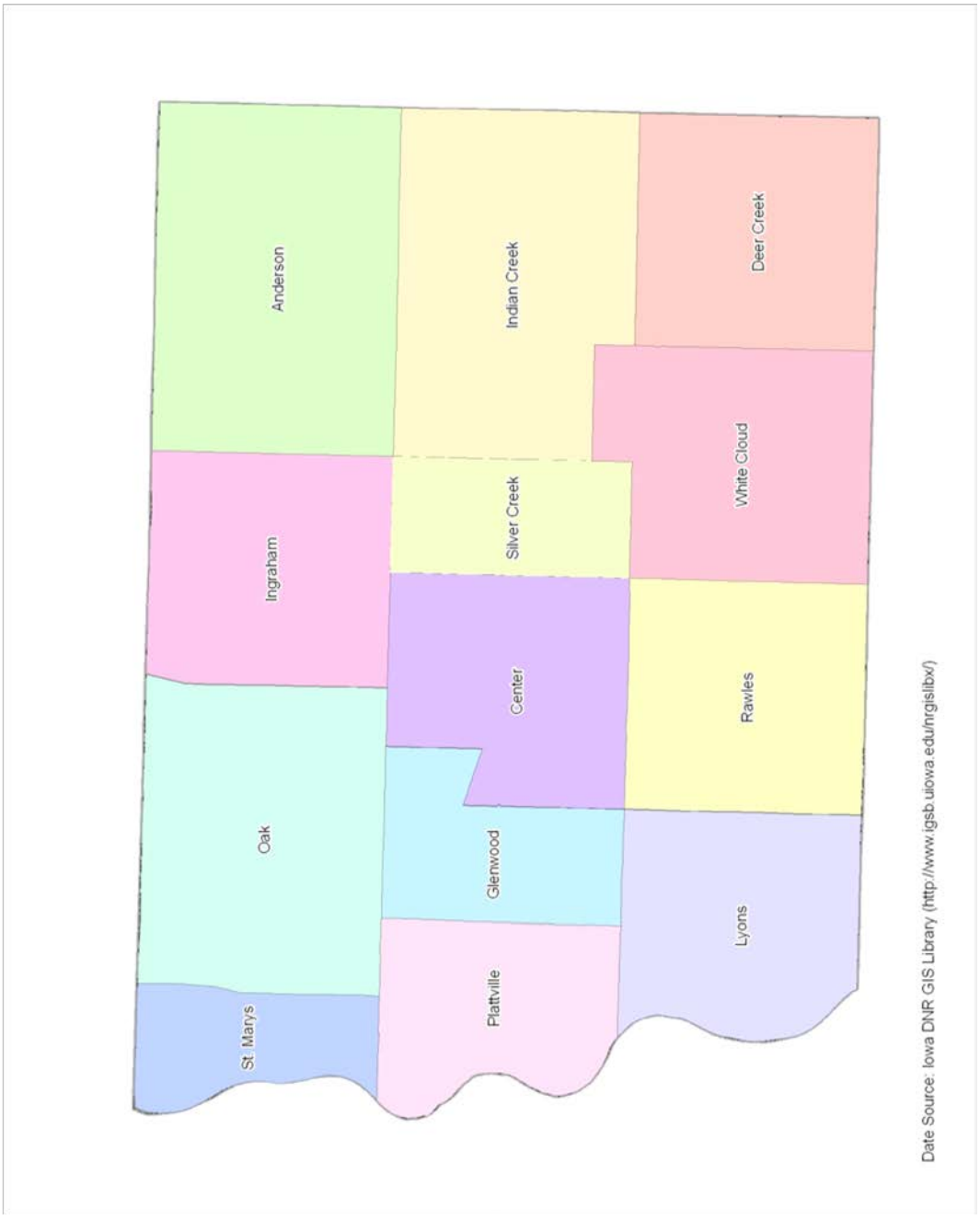
APPENDICES

APPENDIX A
Mills County Road Map



APPENDIX B
Township Boundary Map



APPENDIX C
City Street Maps

Emerson

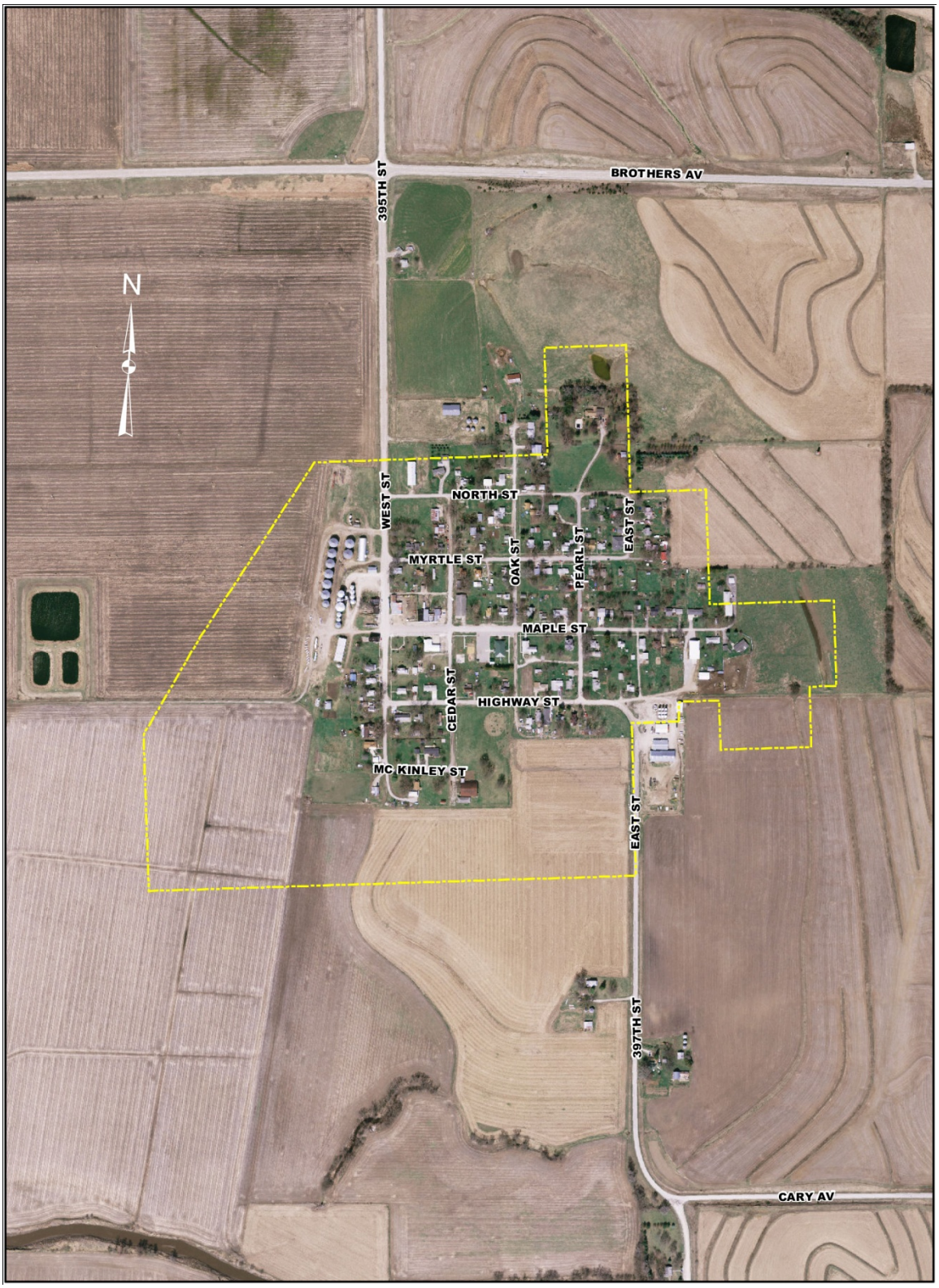
Glenwood


GILLEN AVE
225TH ST
220TH ST
240TH ST
245TH ST
N
117TH ST
10TH ST
N LINN ST
TIMBERLIN
6TH ST
5TH ST
4TH ST
3RD ST
2ND ST
1ST ST
SIVERS RD
HERSHEY AVE
MARIAN AVE
N ELM ST
N GROVE ST
N MYRTLE ST
N HAZEL ST
N LOCUST ST
N WALNUT ST
N VINE ST
HILMAN RD
PARK AVE
S ELM ST
S GROVE ST
SHARP ST
COOLIDGE ST
TYSON ST
LAKE DR
INGRUM AVE
GREEN ST
NUCKOLLS ST
TOWNSEND ST
ARNOLD ST
S HAZEL ST
S LOCUST ST
S WALNUT ST
S VINE ST
S CHESTNUT ST
S LINN ST
IVES AVE
240 ST
221ST CR
US 34

Hastings


365TH ST
USHWY 34
UNKNOWN
N
FRANKLIN ST
BUFFALO AV
PLATTE AV
INDIAN AV
N RAILWAY ST
N DEPOT ST
S RAILWAY ST
JEFFERSON ST
TARKIO AV
HALE ST
HARRIS ST
PLATTE AV
BUFFALO AV
SILVER AV
HALE ST
STATE ST
PEARL ST
360TH ST

Henderson

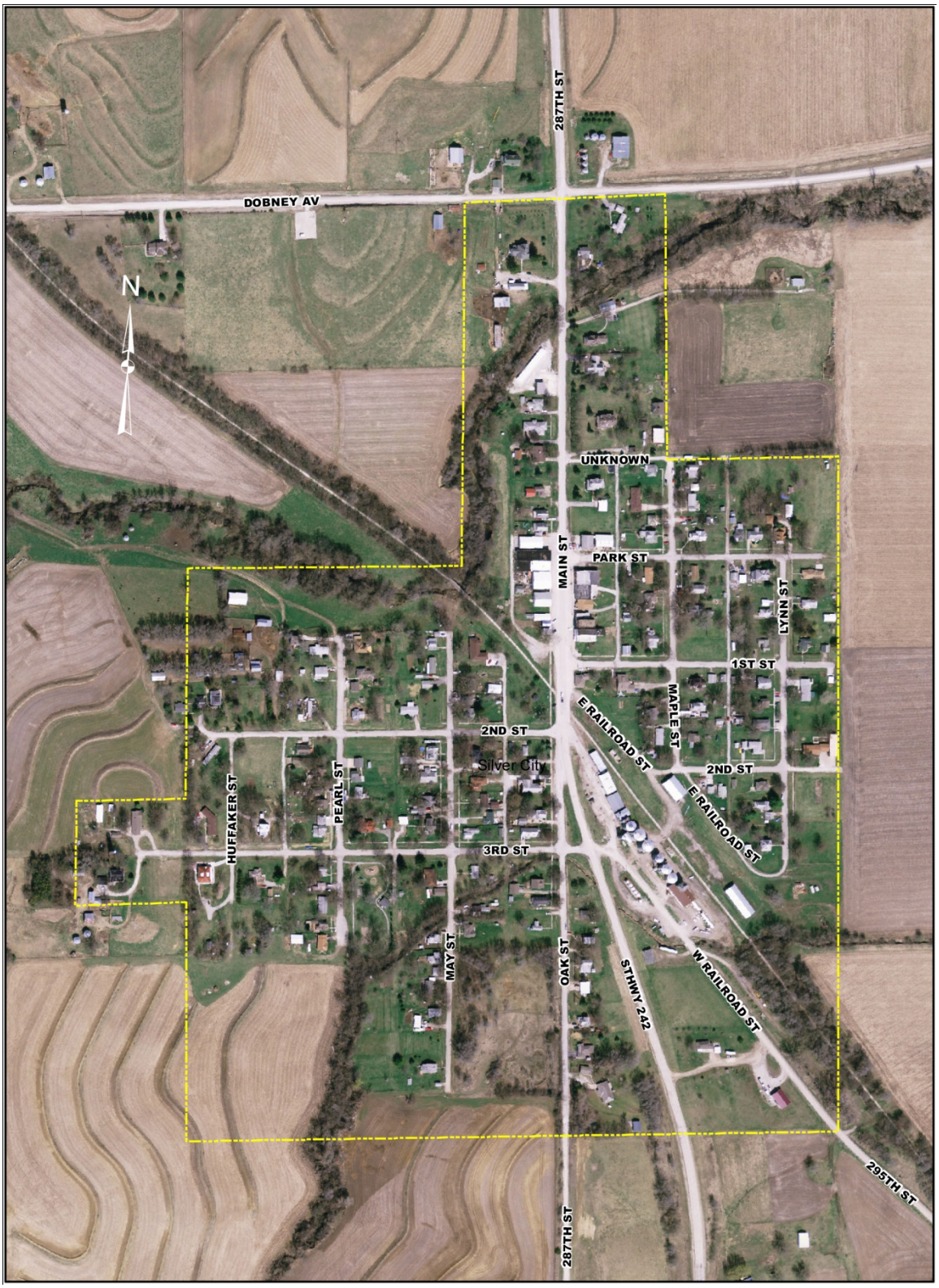

BROTHERS AV
395TH ST
N
WEST ST
NORTH ST
EAST ST
MYRTLE ST
OAK ST
PEARL ST
MAPLE ST
CEDAR ST
HIGHWAY ST
MC KINLEY ST
EAST ST
397TH ST
CARY AV

Malvern

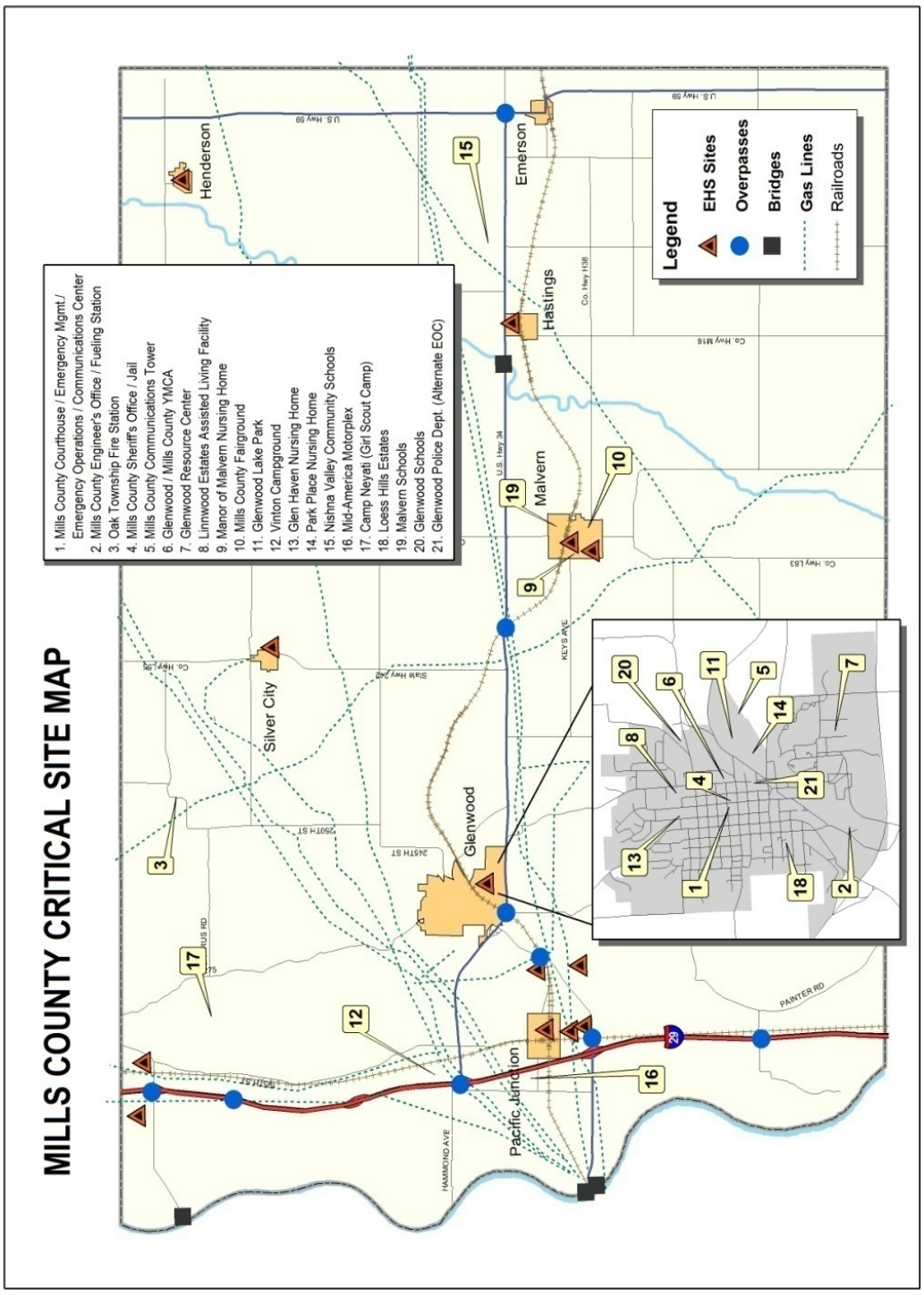

315TH ST
N
E 14TH ST
E 13TH ST
CUT OFF RD
KEYS AV
KEYS AV
W 11TH ST
E 11TH ST
E 10TH ST
8TH AV
W 9TH ST
E 9TH ST
W 8TH ST
E 8TH ST
KEARNEY AV
WILSON AV
GRANDVIEW AV
W 7TH ST
E 7TH ST
LINCOLN AV
GARY ST
3RD AV
MAIN ST
MARION AV
W 6TH ST
E 6TH ST
UNKNOWN
UNKNOWN
PROSPECT AV
W 5TH ST
E 5TH ST
6TH AV
5TH AV
4TH AV
W 4TH ST
E 4TH ST
UNKNOWN
LAMBERT AV
W 3RD ST
E 3RD ST
7TH AV
2ND AV
E 2ND ST
W 2ND ST
6TH AV
5TH AV
W 1ST ST
UNKNOWN
UNKNOWN
315TH ST

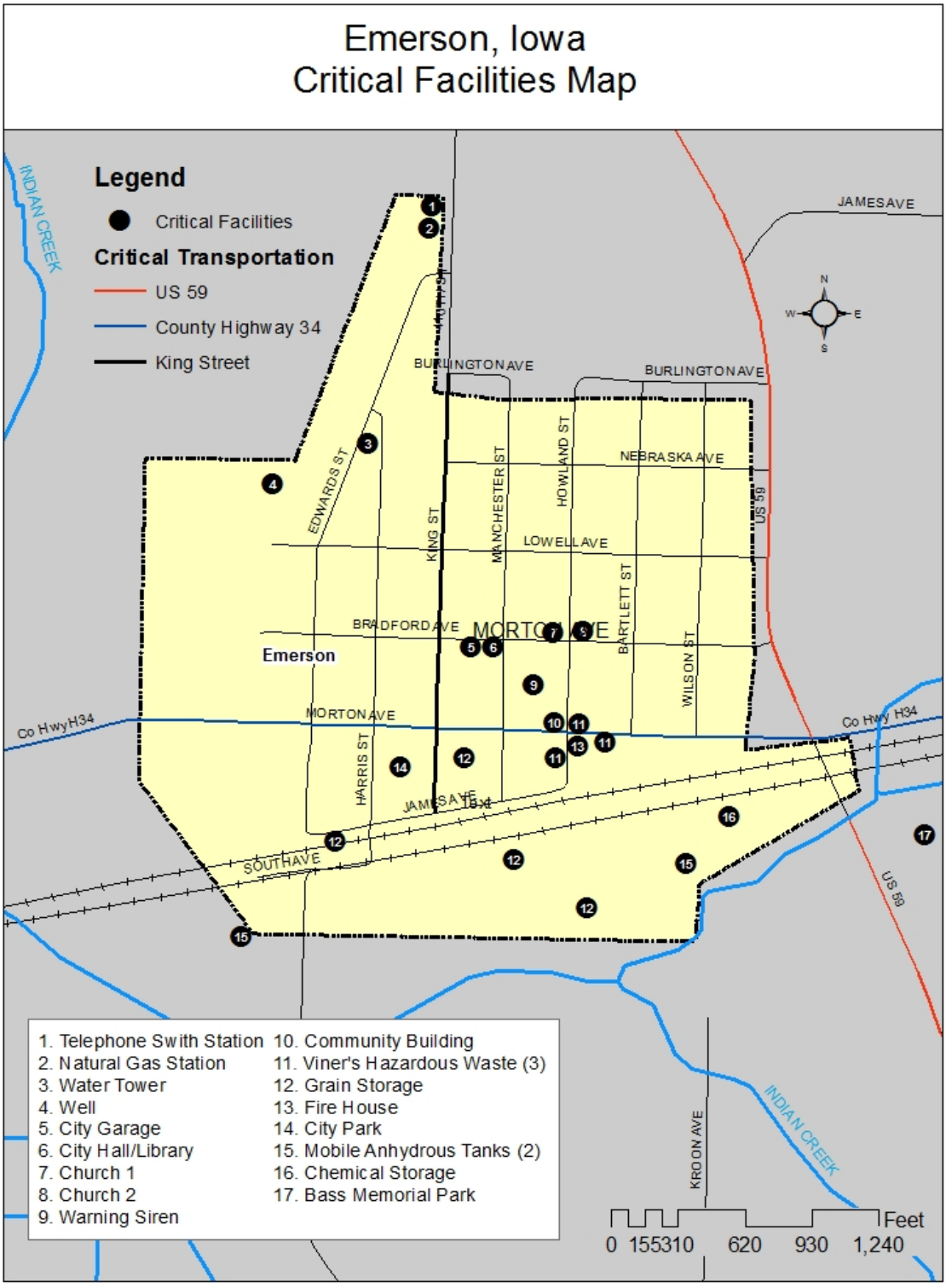
Pacific Junction

Silver City

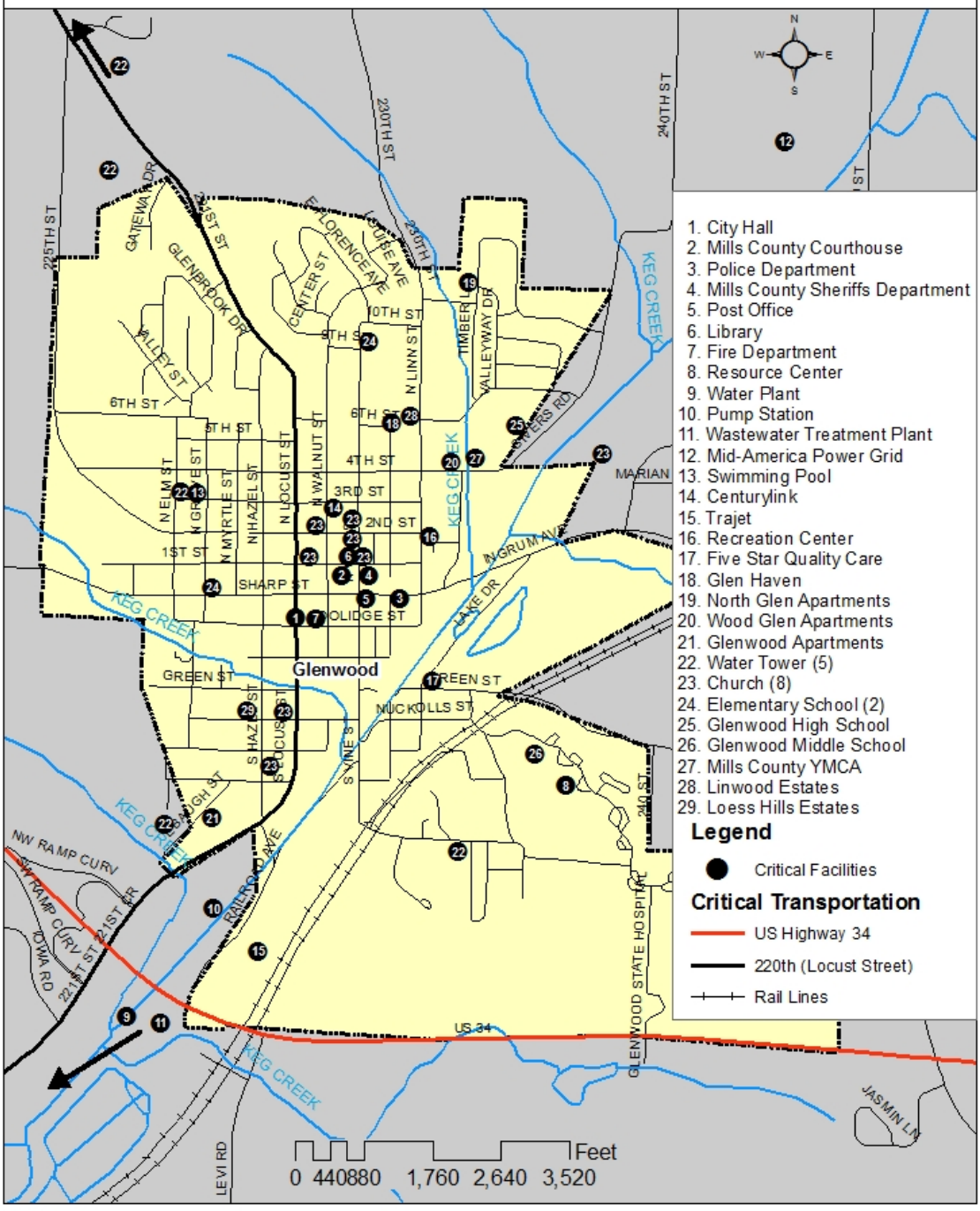

287TH ST
DOBNEY AV
N
UNKNOWN
MAIN ST
PARK ST
LYNN ST
1ST ST
MAPLE ST
E RAILROAD ST
2ND ST
Silver City
2ND ST
E RAILROAD ST
HUFFAKER ST
PEARL ST
3RD ST
MAY ST
OAK ST
STHWY 242
W RAILROAD ST
295TH ST
287TH ST

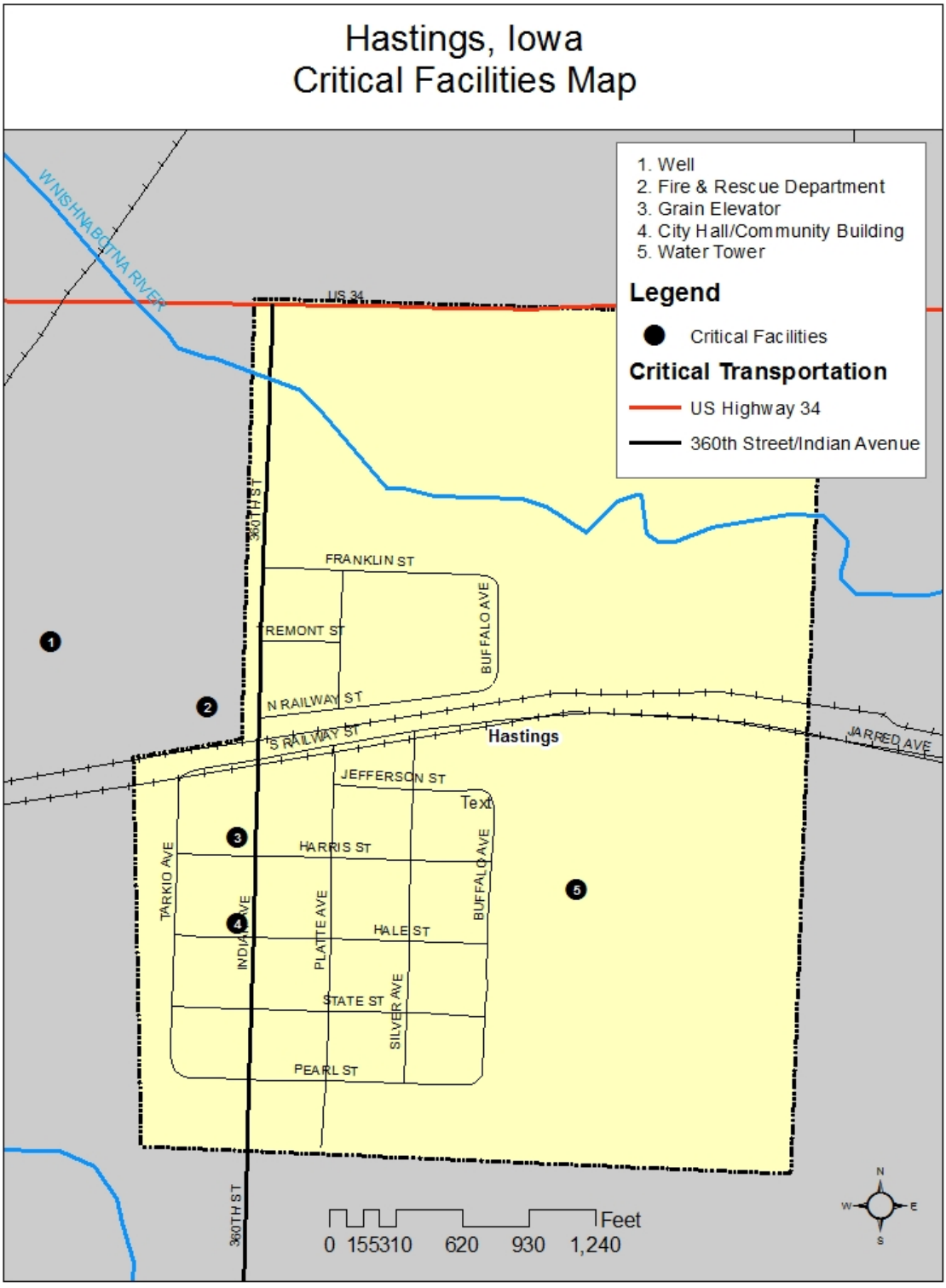
APPENDIX D
Critical Facilities Maps

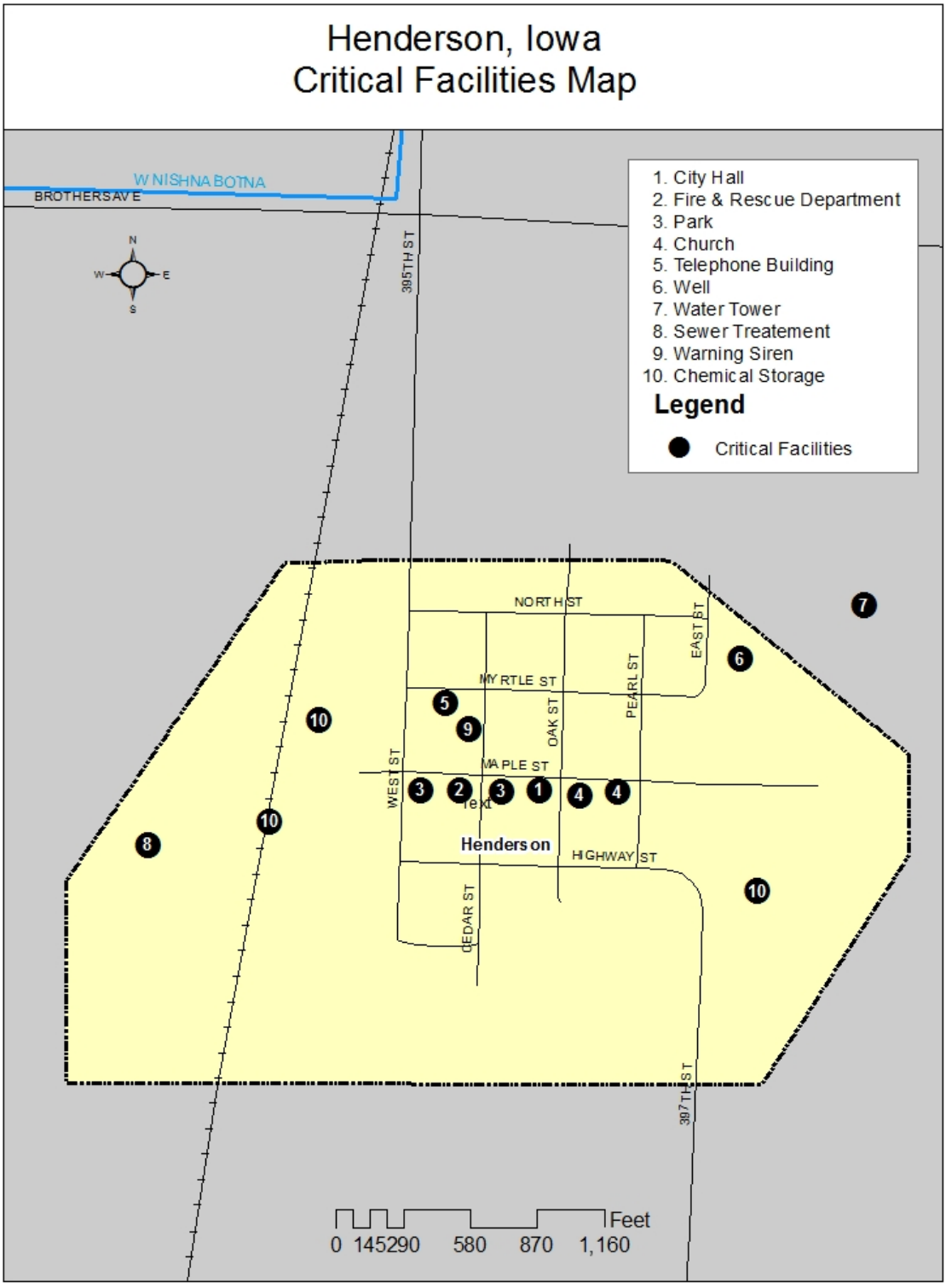



Emerson, Iowa
Critical Facilities Map
Legend
Critical Facilities
Critical Transportation
US 59
County Highway 34
King Street
INDIAN CREEK
JAMESAVE
BURLINGTONAVE
BURLINGTONAVE
EDWARDS ST
KING ST
MANCHESTER ST
HOWLAND ST
NEBRASKA AVE
US 59
LOWELLAVE
BARTLETT ST
WILSON ST
BRADFORDAVE
MORTONAVE
Emerson
Co HwyH34
MORTONAVE
Co Hwy H34
HARRIS ST
JAMESAVE
SOUTHAVE
US 59
KROON AVE
INDIAN CREEK
1. Telephone Swith Station
2. Natural Gas Station
3. Water Tower
4. Well
5. City Garage
6. City Hall/Library
7. Church 1
8. Church 2
9. Warning Siren
10. Community Building
11. Viner's Hazardous Waste (3)
12. Grain Storage
13. Fire House
14. City Park
15. Mobile Anhydrous Tanks (2)
16. Chemical Storage
17. Bass Memorial Park
Feet
0 155310 620 930 1,240

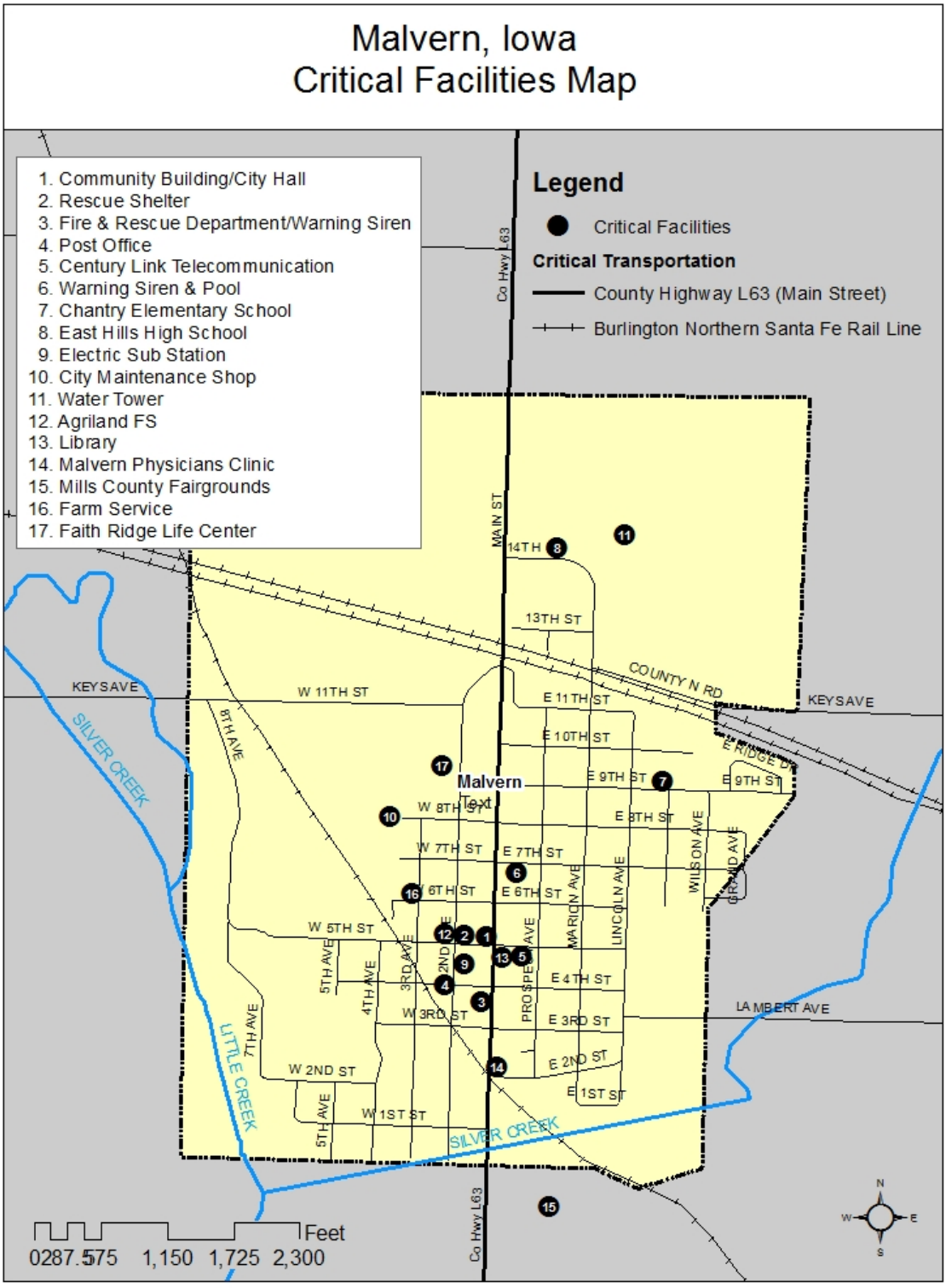
Glenwood, Iowa
Critical Facilities Map

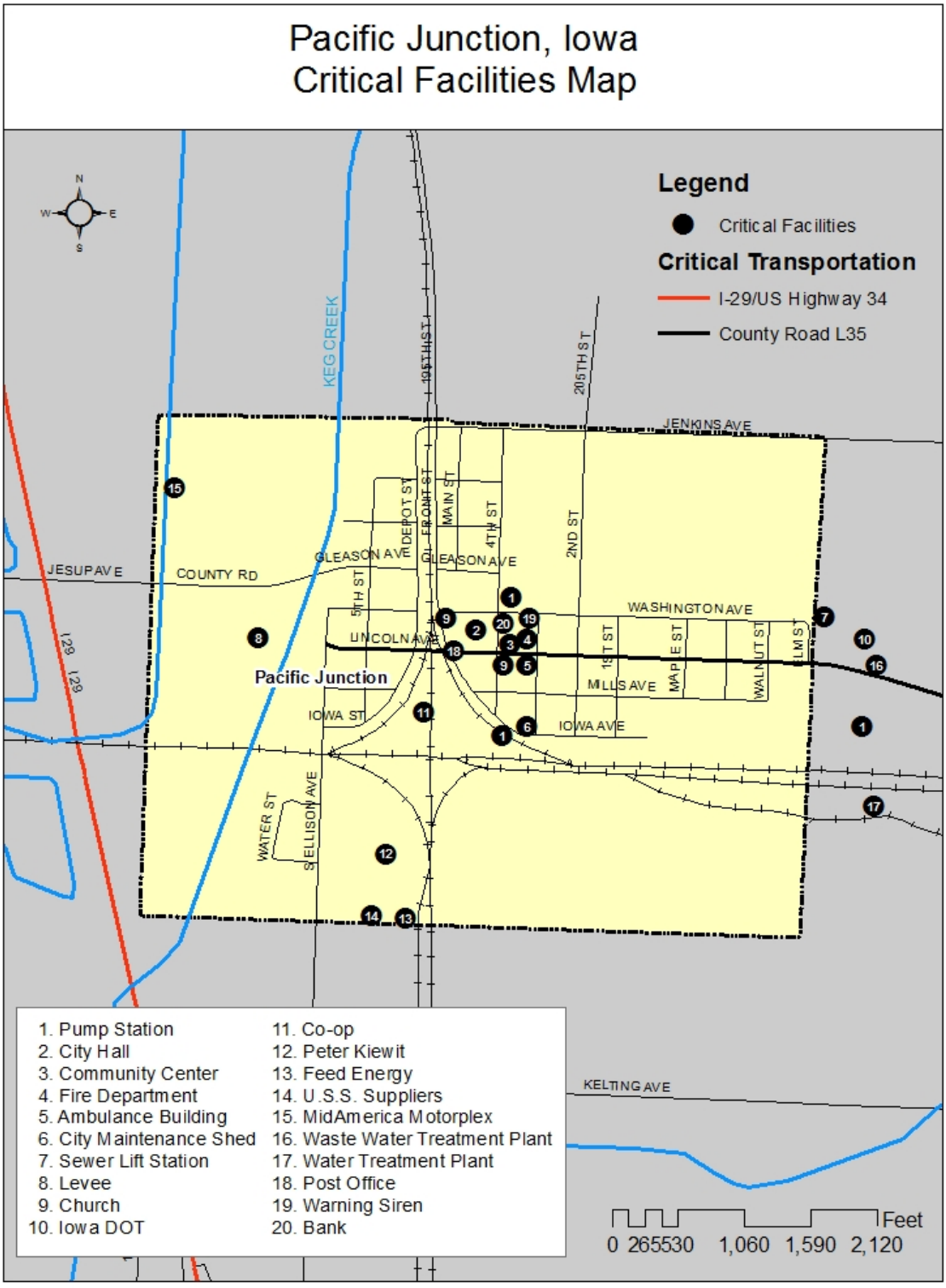



Hastings, Iowa
Critical Facilities Map
1. Well
2. Fire & Rescue Department
3. Grain Elevator
4. City Hall/Community Building
5. Water Tower
Legend
Critical Facilities
Critical Transportation
US Highway 34
360th Street/Indian Avenue
WINNISHNABOTNA RIVER
US 34
360TH ST
FRANKLIN ST
FREMONT ST
BUFFALO AVE
N RAILWAY ST
S RAILWAY ST
Hastings
JARRED AVE
JEFFERSON ST
Text
HARRIS ST
TARKIO AVE
INDIANA AVE
PLATTE AVE
BUFFALO AVE
HALE ST
STATE ST
SILVER AVE
PEARL ST
360TH ST
Feet
0 155310 620 930 1,240
N
W
E
S

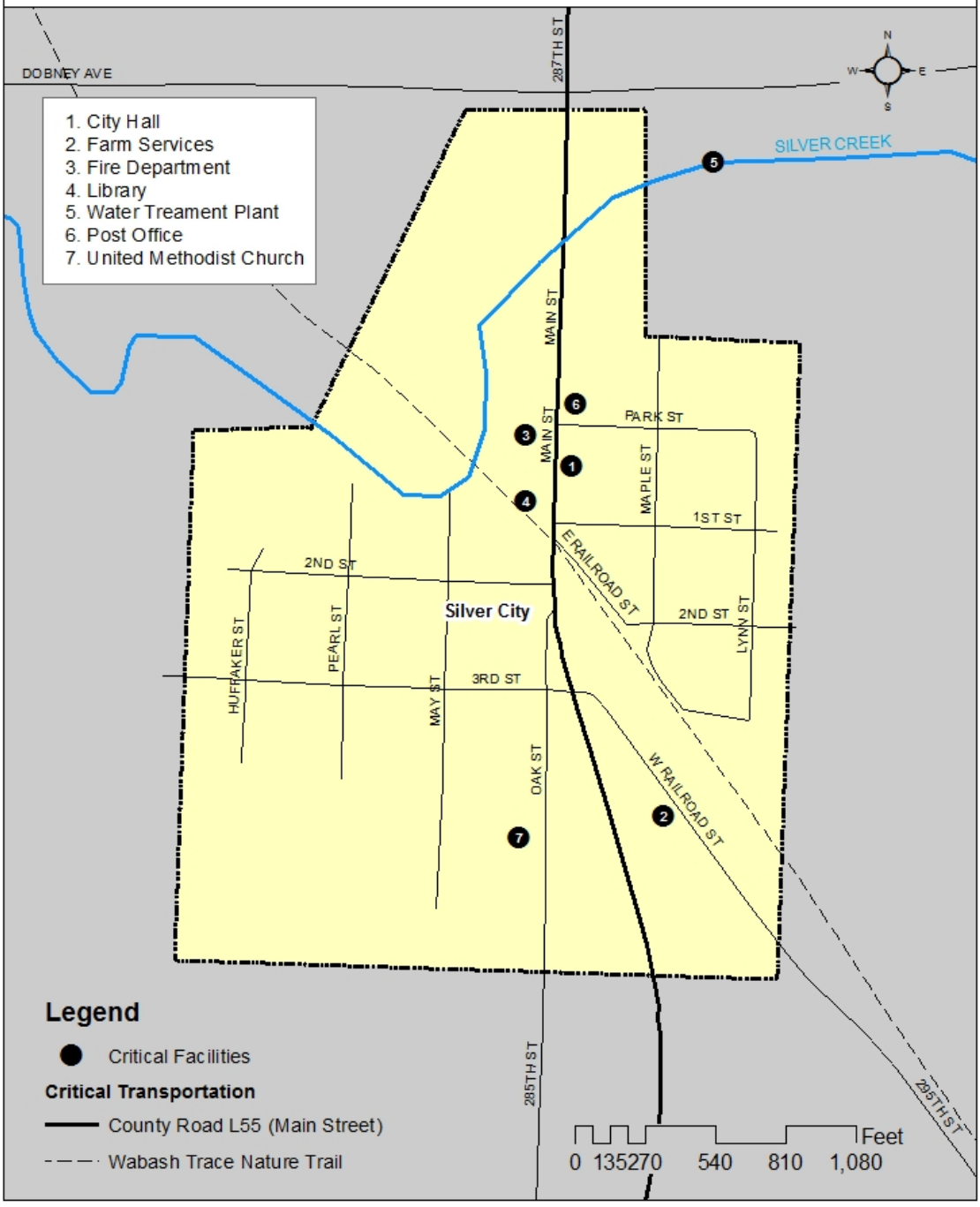

Henderson, Iowa
Critical Facilities Map
WNISHNABOTNA
BROTHERSAVE
395TH ST
N
W
E
S
1. City Hall
2. Fire & Rescue Department
3. Park
4. Church
5. Telephone Building
6. Well
7. Water Tower
8. Sewer Treatement
9. Warning Siren
10. Chemical Storage
Legend
Critical Facilities
NORTH ST
EAST ST
MYRTLE ST
PEARL ST
OAK ST
WEST ST
MAPLE ST
Text
Henderson
HIGHWAY ST
CEDAR ST
397TH ST
Feet
0 145290 580 870 1,160

Malvern, Iowa
Critical Facilities Map

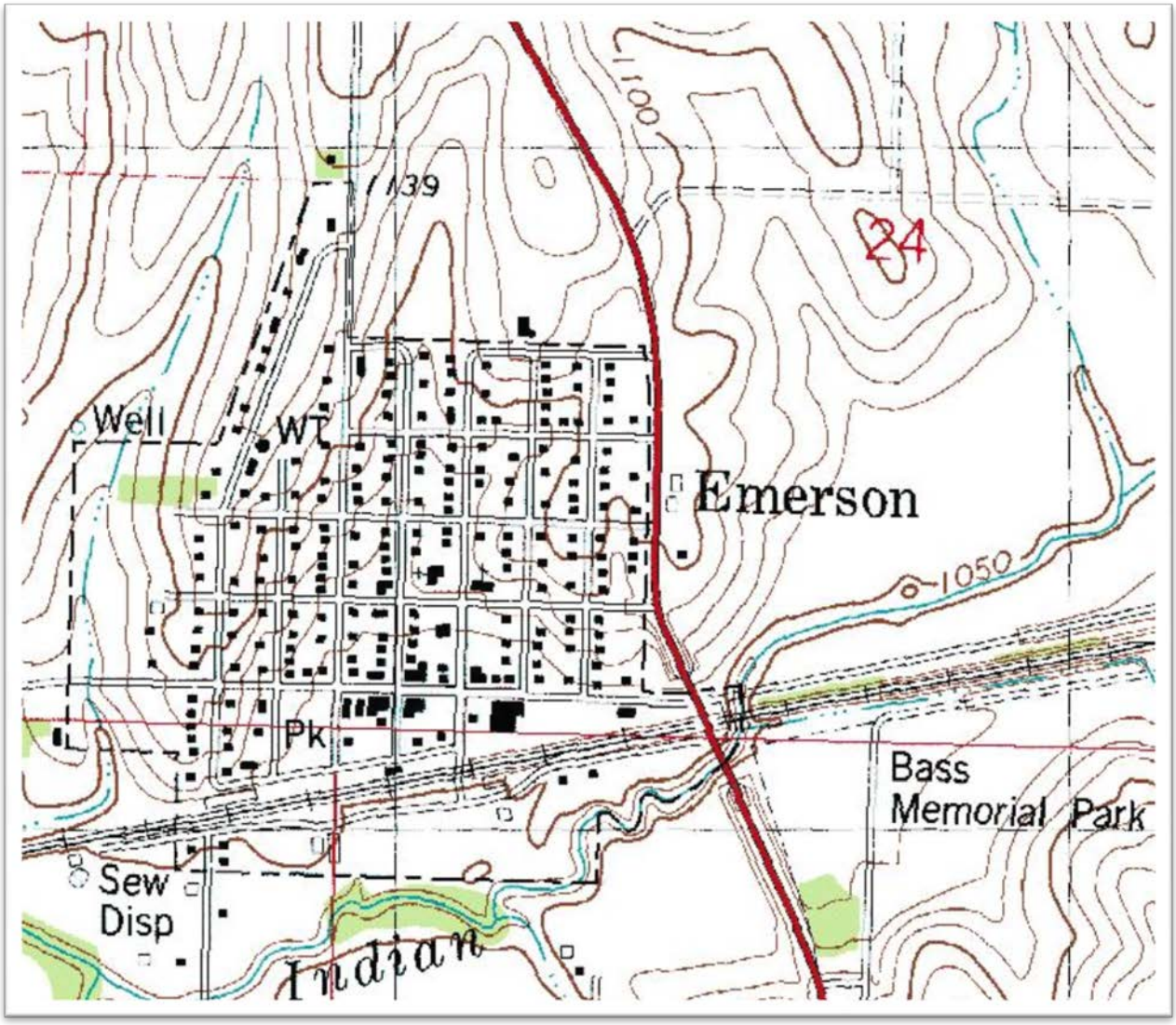


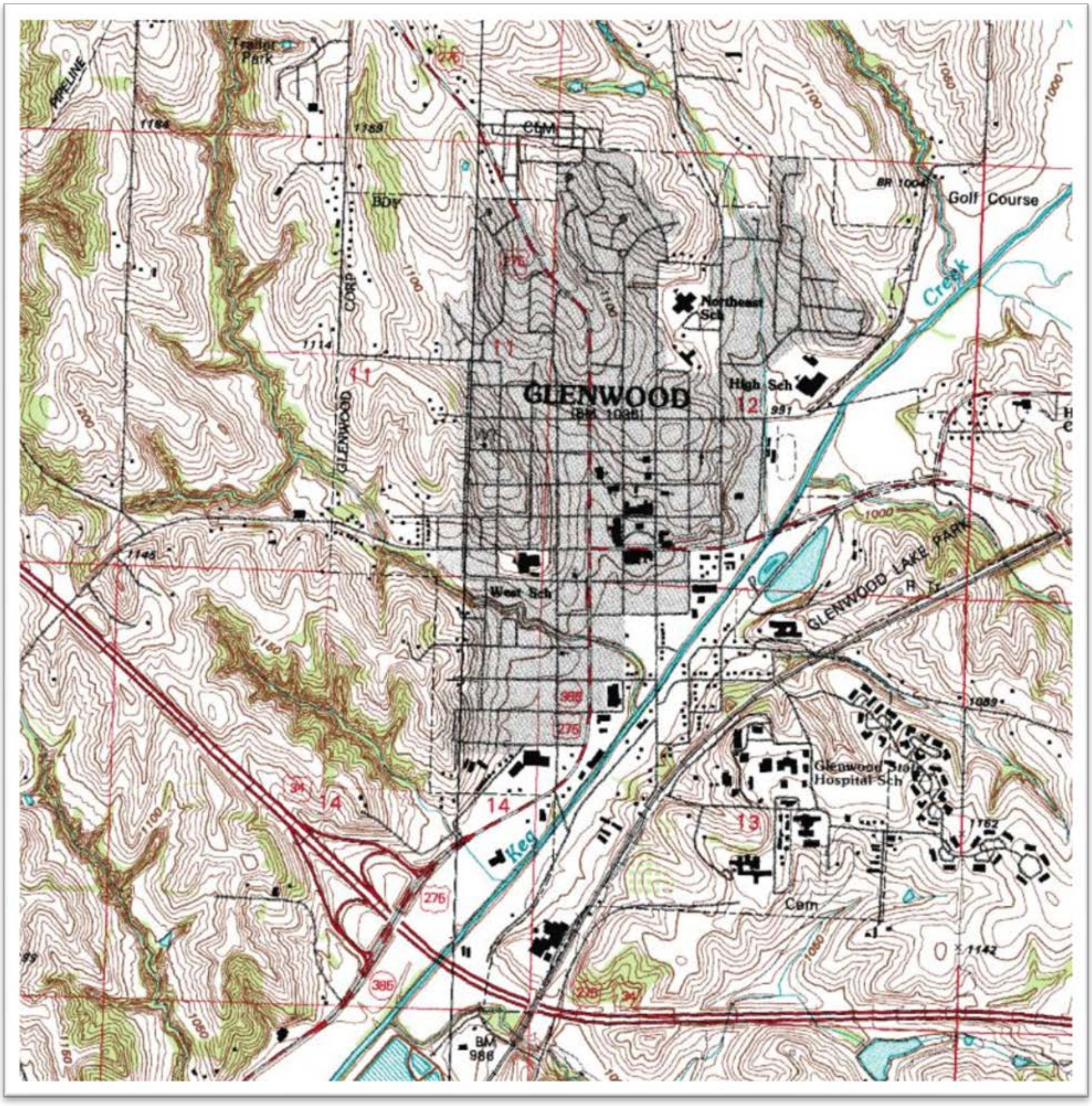

Pacific Junction, Iowa
Critical Facilities Map
Legend
Critical Facilities
Critical Transportation
I-29/US Highway 34
County Road L35
KEG CREEK
195TH ST
205TH ST
JENKINS AVE
JESUP AVE
COUNTY RD
GLEASON AVE
DEPOT ST
FRONT ST
MAIN ST
4TH ST
2ND ST
5TH ST
WASHINGTON AVE
LINCOLN AVE
1ST ST
MAPLE ST
WALNUT ST
ELM ST
Pacific Junction
MILLS AVE
IOWA ST
IOWA AVE
WATER ST
ELLISON AVE
I29
KELTING AVE
1. Pump Station
2. City Hall
3. Community Center
4. Fire Department
5. Ambulance Building
6. City Maintenance Shed
7. Sewer Lift Station
8. Levee
9. Church
10. Iowa DOT
11. Co-op
12. Peter Kiewit
13. Feed Energy
14. U.S.S. Suppliers
15. MidAmerica Motorplex
16. Waste Water Treatment Plant
17. Water Treatment Plant
18. Post Office
19. Warning Siren
20. Bank
Feet
0 265530 1,060 1,590 2,120

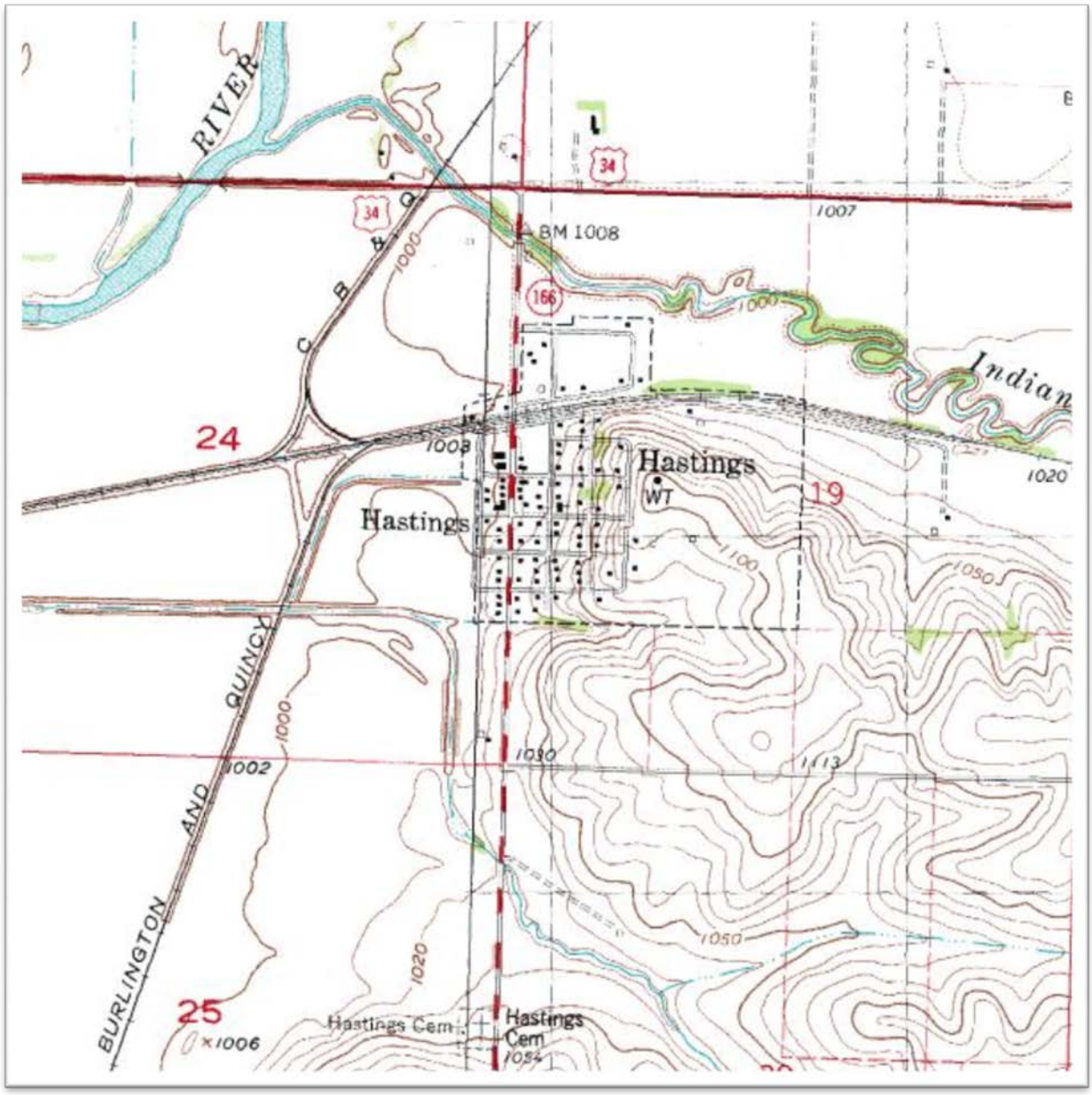
Silver City, Iowa
Critical Facilities Map

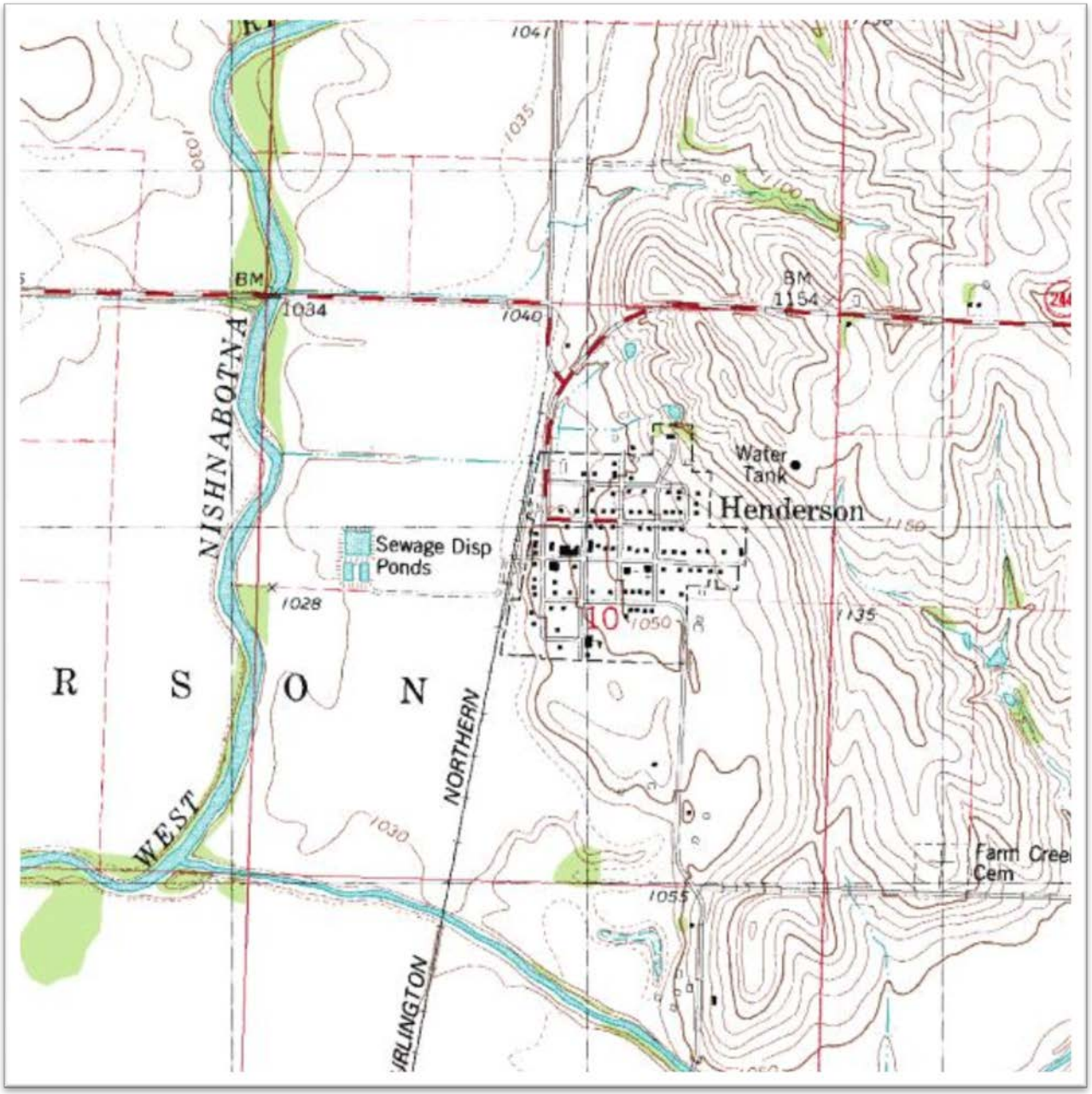


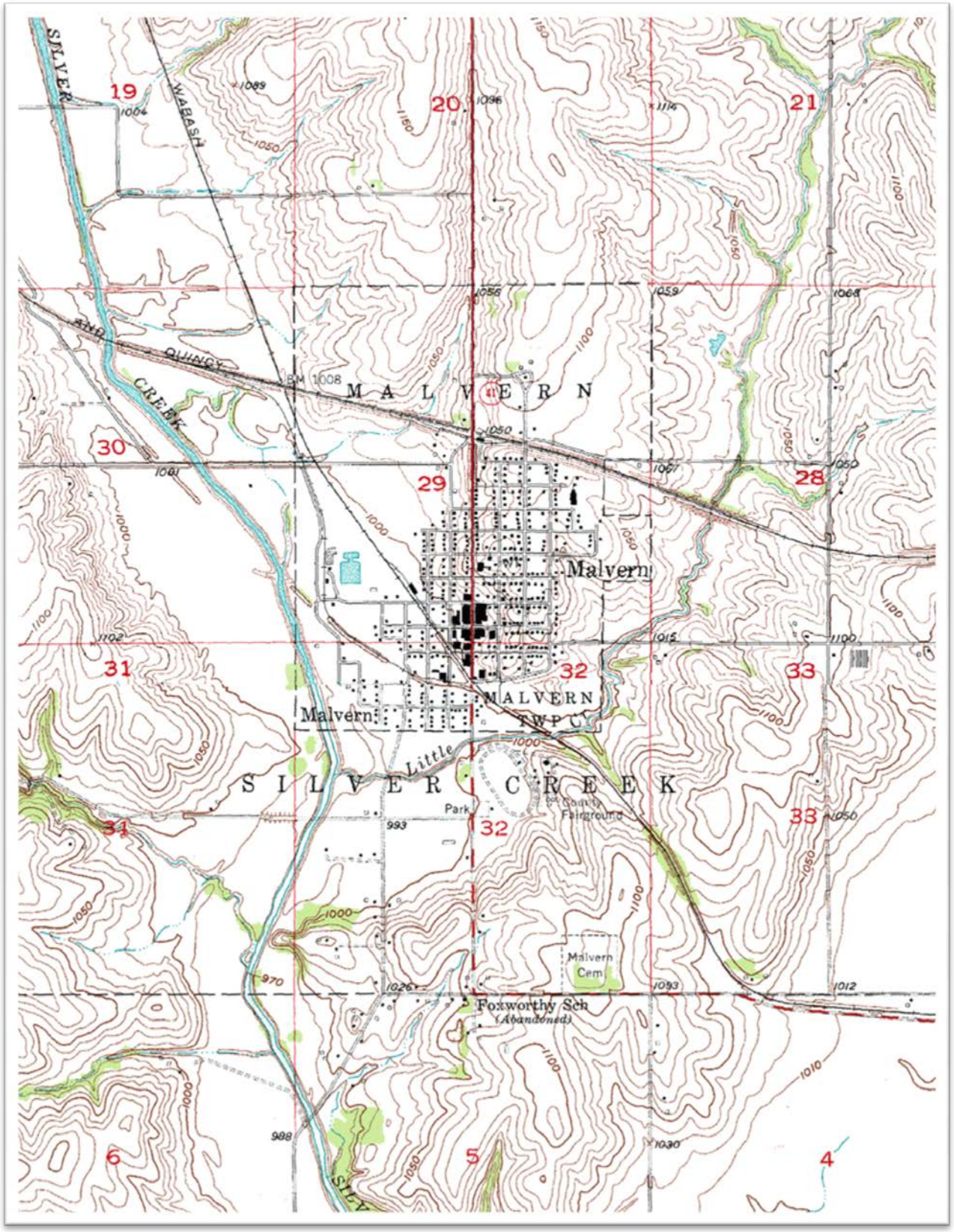
APPENDIX E
Topographic Maps

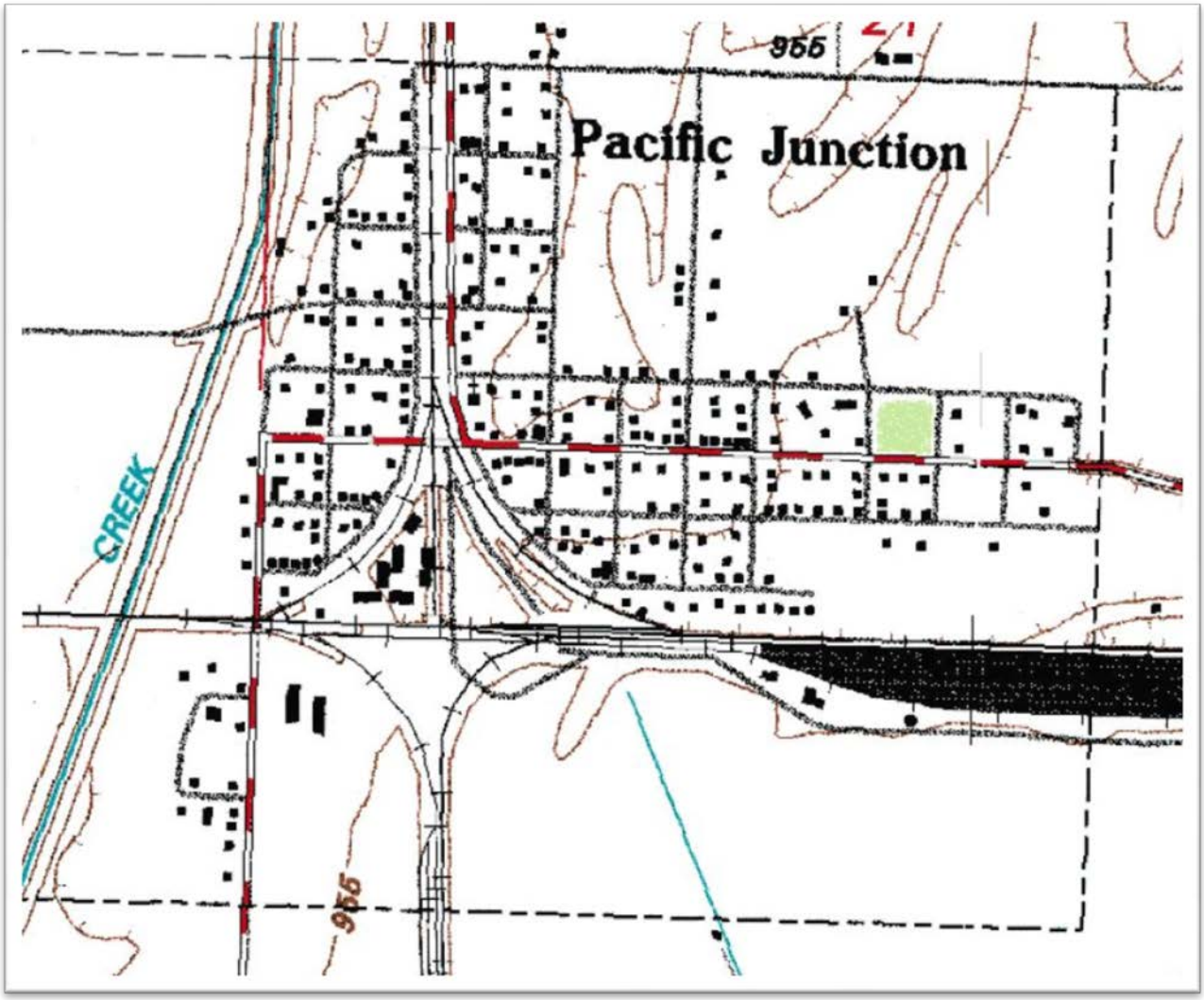


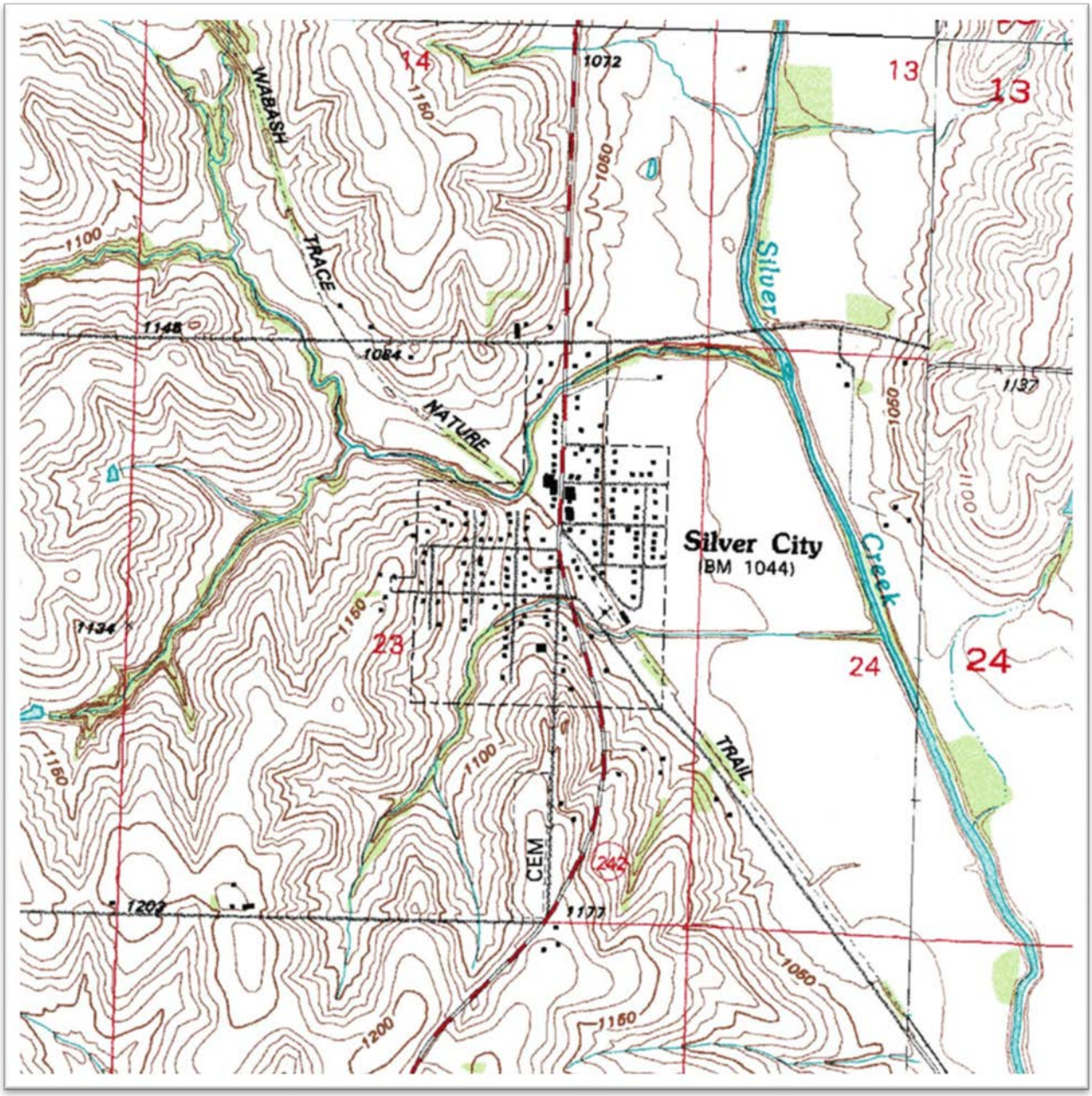

GLENWOOD
Trailer Park
PIPELINE
Cem
BDY
CORP
GLENWOOD
Northeast Sch
High Sch
West Sch
Golf Course
Creek
Keg
GLENWOOD LAKE PARK
Glenwood State Hospital Sch
Cem
BM 988


RIVER
34
34
BM 1008
166
1007
1000
1000
Indian
24
1008
Hastings
WT
19
1020
Hastings
1100
1050
QUINCY
AND
1000
1002
1090
1113
BURLINGTON
1050
1020
25
×1006
Hastings Cem
Hastings
Cem
1054

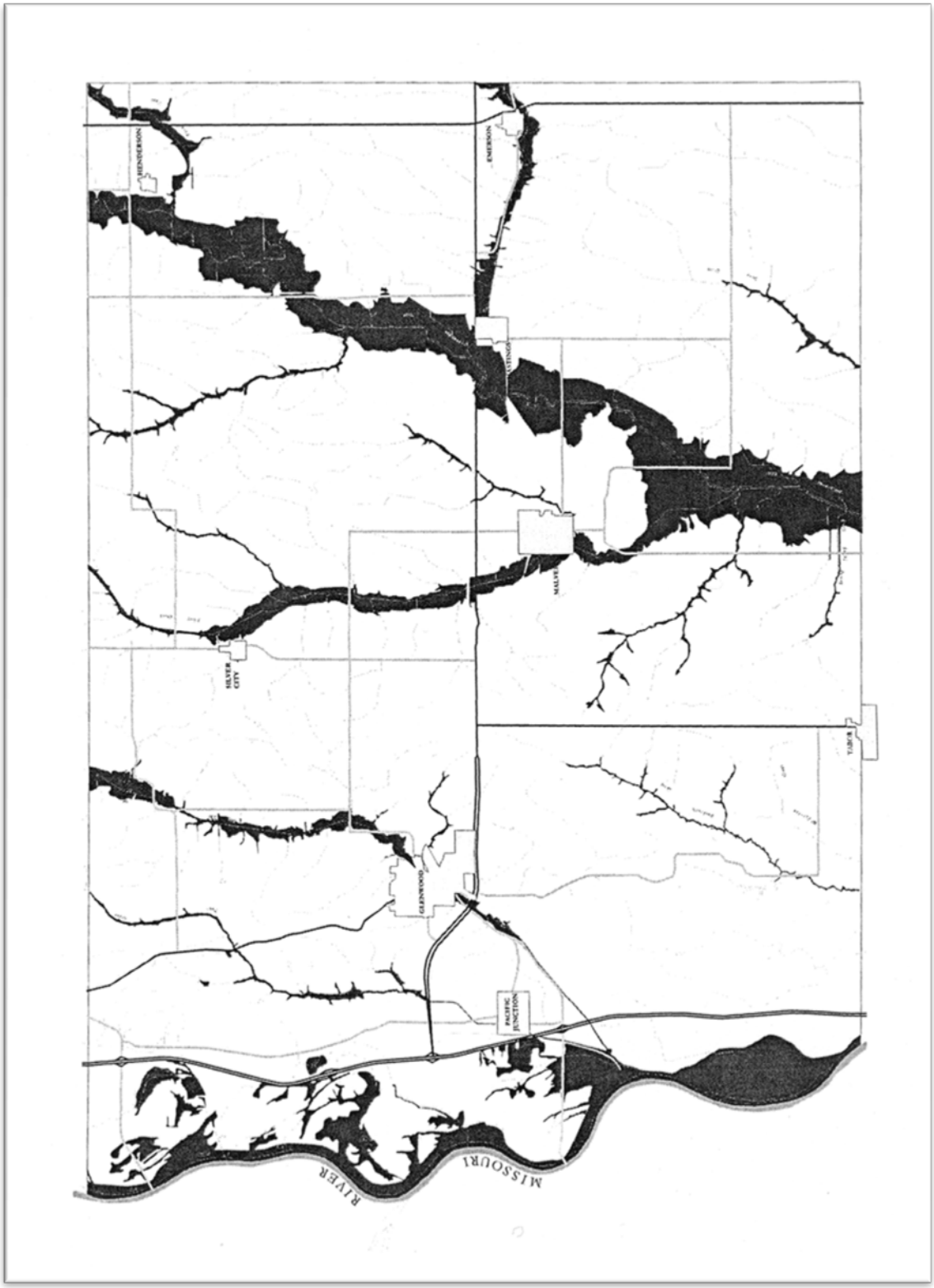

1041
1035
1030
BM
1034
1040
BM
1154
NISHNABOTNA
Water
Tank
Henderson
Sewage Disp
Ponds
1028
10
1050
1135
R S O N
WEST
NORTHERN
1030
1055
Farm Cree
Cem

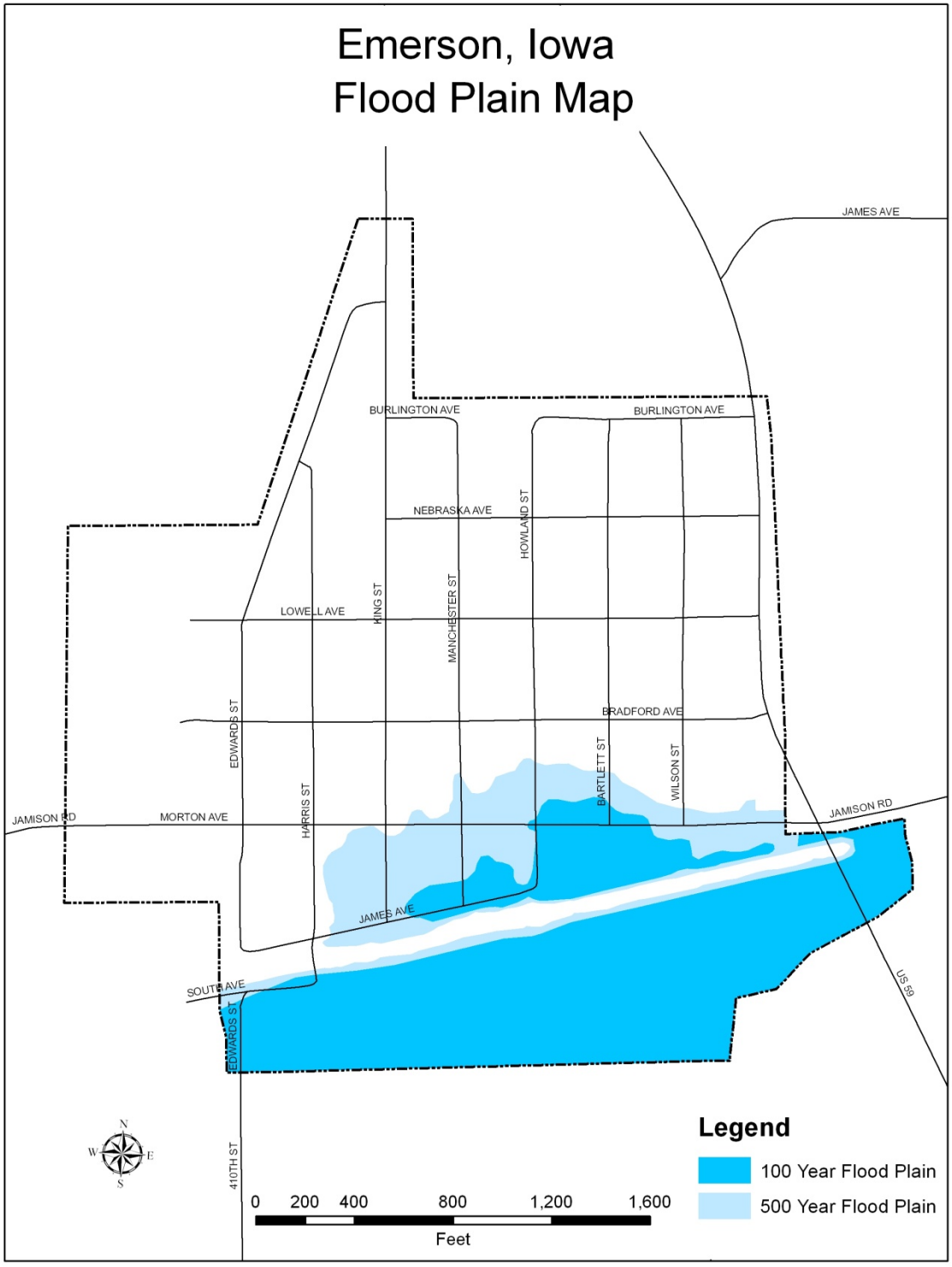

SILVER
WABASH
CREEK
ATSF
QUINCY
BM 1008
M A L V E R N
Malvern
MALVERN
TWP
Malvern
Little
S I L V E R C R E E K
Park
County
Fairground
Malvern
Cem
Foxworthy Sch
(Abandoned)
19
20
21
30
29
28
31
32
33
31
32
33
6
5
4

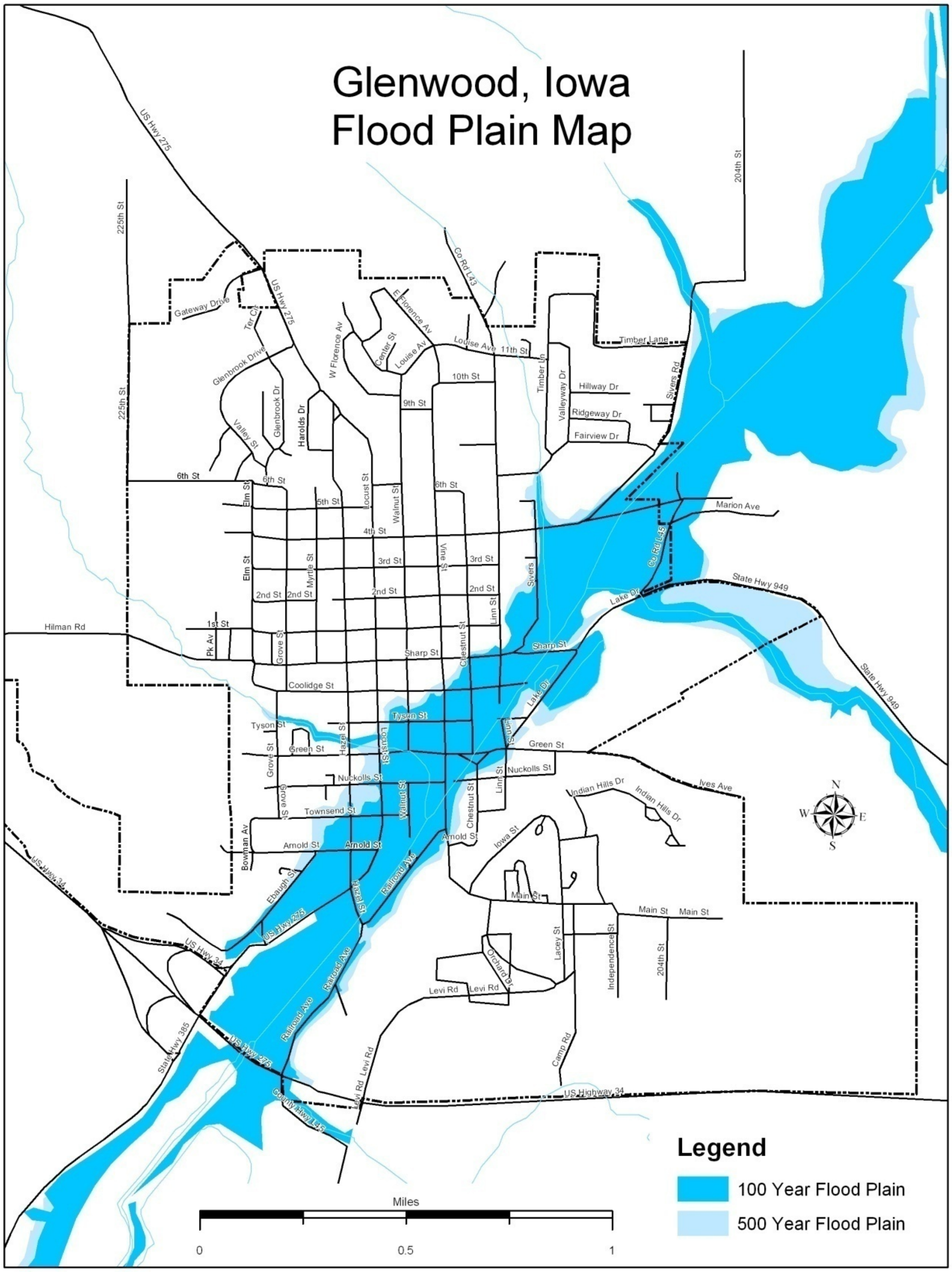

Pacific Junction
CREEK
955
956

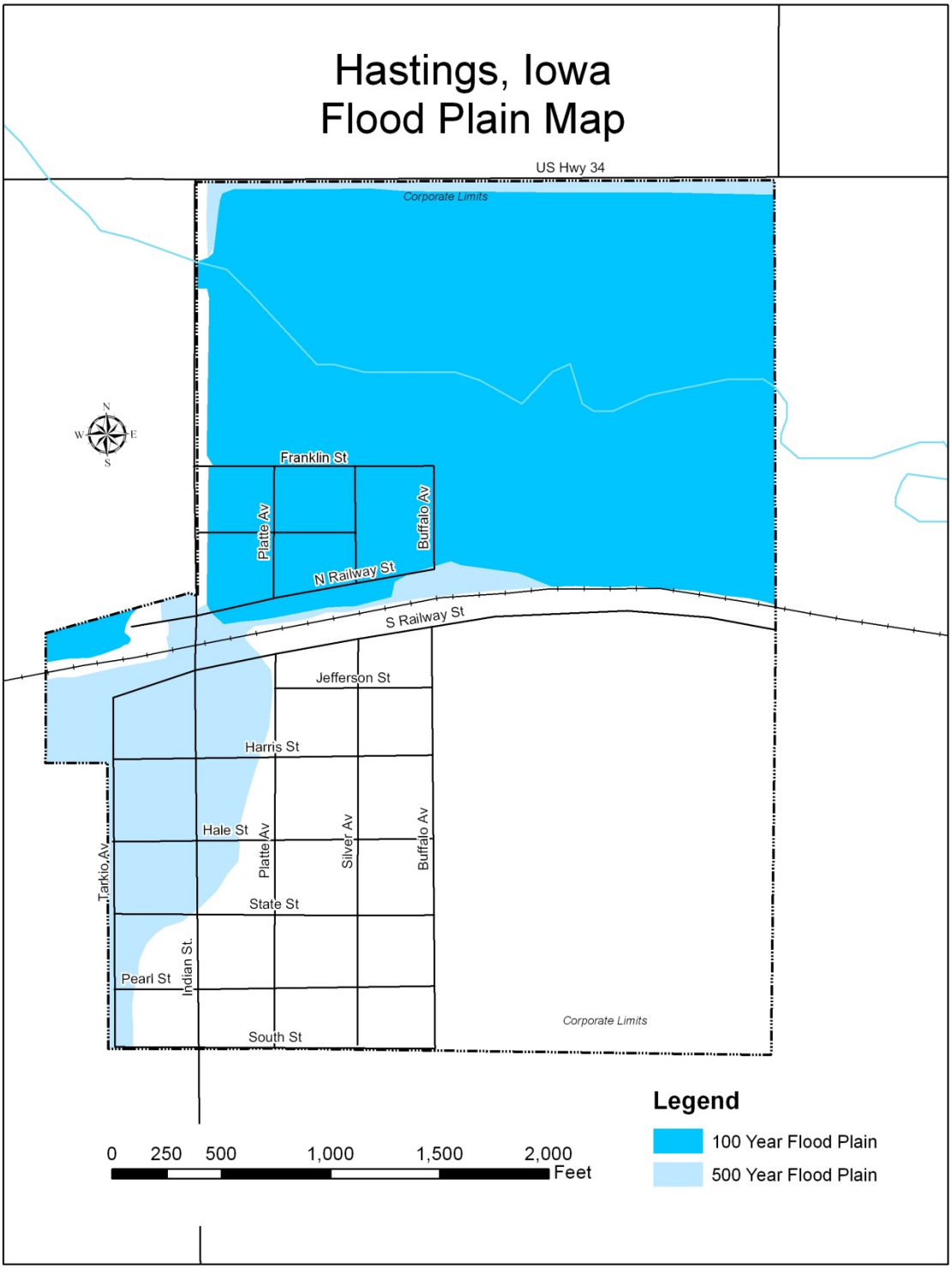

WABASH
TRACE
NATURE
TRAIL
Silver
Creek
Silver City
(BM 1044)
CEM
14
13
23
24
1072
1150
1050
1100
1148
1084
1134
1202
1177
1200
1137
242

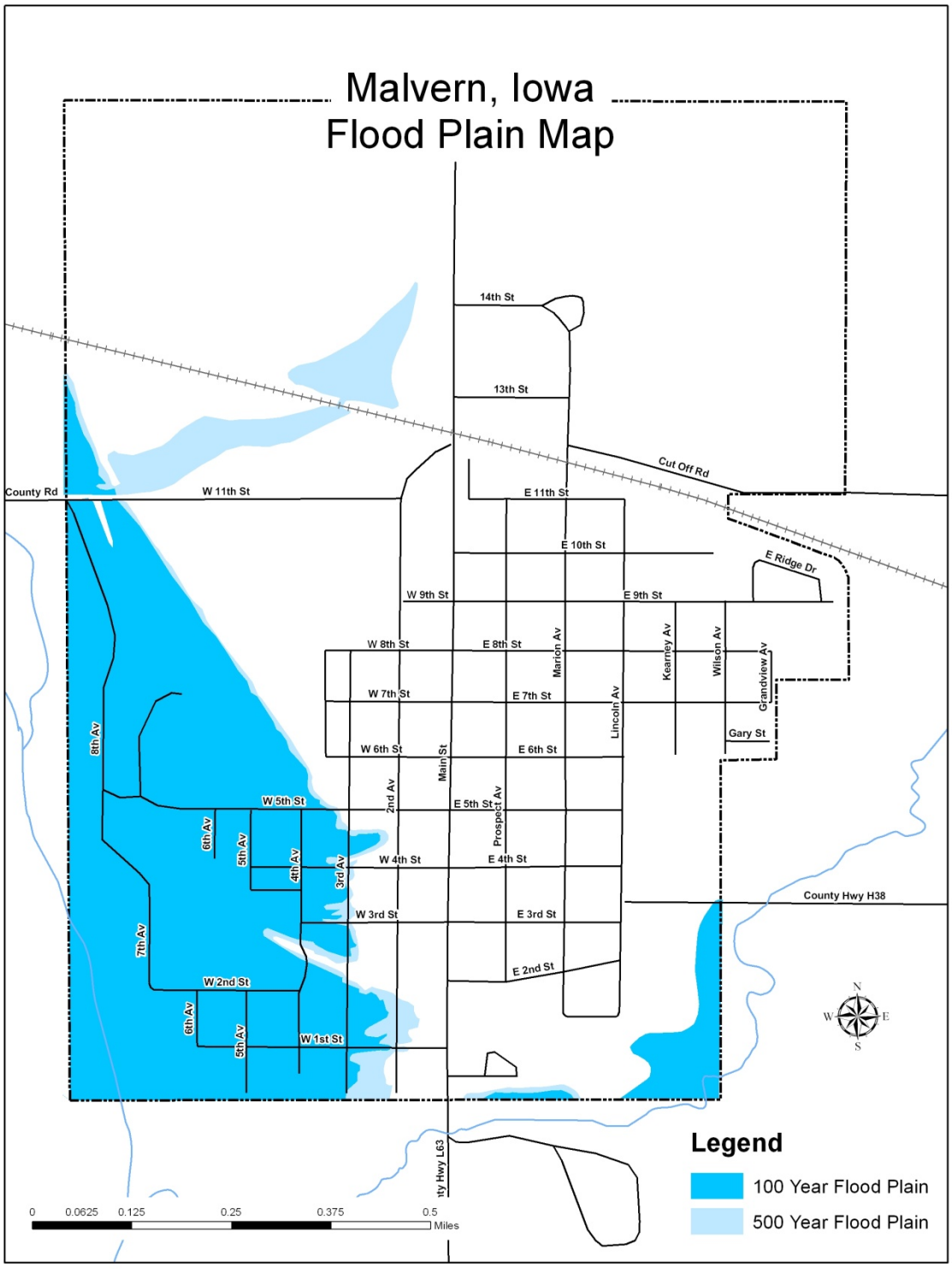
APPENDIX F
Floodplain Maps

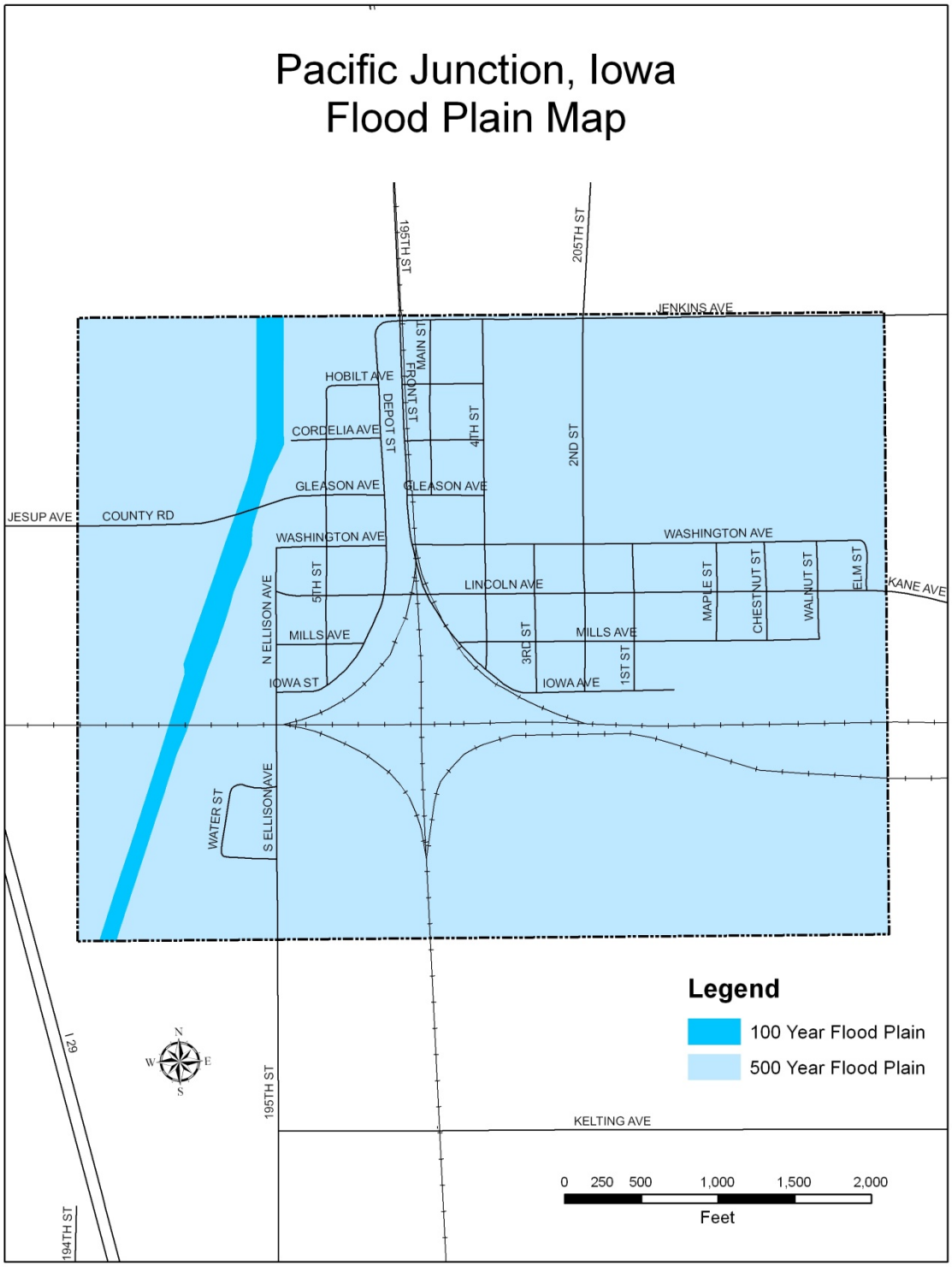



Emerson, Iowa
Flood Plain Map
JAMES AVE
BURLINGTON AVE
BURLINGTON AVE
NEBRASKA AVE
HOWLAND ST
LOWELL AVE
KING ST
MANCHESTER ST
BRADFORD AVE
EDWARDS ST
BARTLETT ST
WILSON ST
JAMISON RD
MORTON AVE
HARRIS ST
JAMISON RD
JAMES AVE
SOUTH AVE
EDWARDS ST
US 59
410TH ST
N
W
E
S
Legend
100 Year Flood Plain
500 Year Flood Plain
0 200 400 800 1,200 1,600
Feet

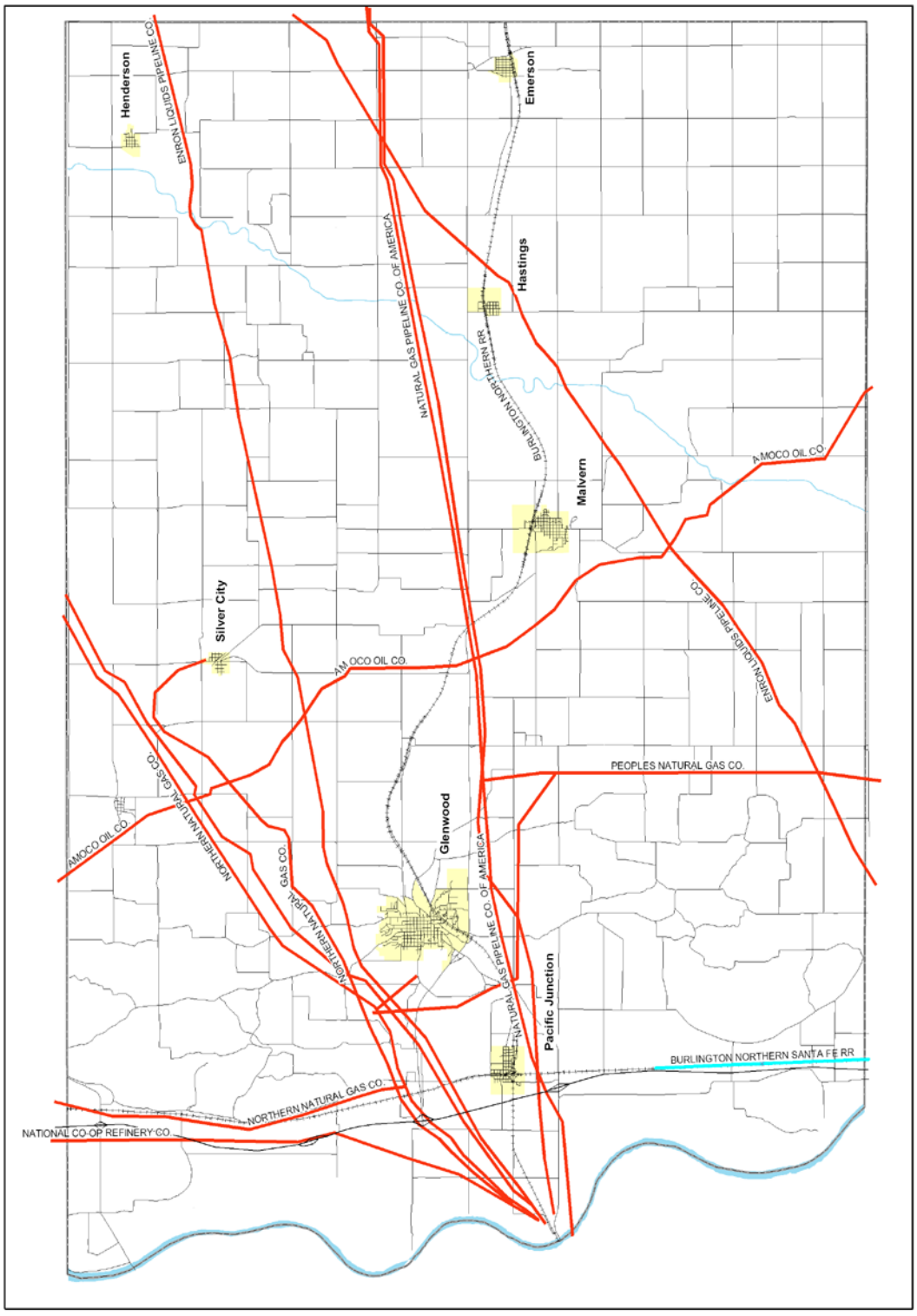

Glenwood, Iowa
Flood Plain Map
US Hwy 275
225th St
204th St
Co Rd L43
Gateway Drive
Glenbrook Drive
Glenbrook Dr
Harolds Dr
W Florence Av
E Florence Av
Center St
Louise Av
Louise Ave
11th St
10th St
9th St
Timber Lane
Timber Ln
Valleyway Dr
Hillway Dr
Ridgeway Dr
Fairview Dr
Sivers Rd
Valley St
6th St
5th St
4th St
3rd St
2nd St
1st St
Elm St
Myrtle St
Locust St
Walnut St
Vine St
Linn St
Chestnut St
Sivers
Marion Ave
Co Rd L35
State Hwy 949
Lake Dr
Hilman Rd
Pk Av
Grove St
Sharp St
Coolidge St
Tyson St
Green St
Hazel St
Nuckolls St
Townsend St
Arnold St
Bowman Av
Ebaugh St
Railroad Ave
Indian Hills Dr
Ives Ave
Iowa St
Main St
Lacey St
Independence St
Orchard Dr
Levi Rd
Camp Rd
US Hwy 34
US Highway 34
State Hwy 385
Legend
100 Year Flood Plain
500 Year Flood Plain
Miles
0
0.5
1
N
S
E
W


Hastings, Iowa
Flood Plain Map
US Hwy 34
Corporate Limits
N
W
E
S
Franklin St
Platte Av
Buffalo Av
N Railway St
S Railway St
Jefferson St
Harris St
Hale St
Platte Av
Silver Av
Buffalo Av
Tarkio Av
State St
Indian St.
Pearl St
South St
Corporate Limits
0 250 500 1,000 1,500 2,000
Feet
Legend
100 Year Flood Plain
500 Year Flood Plain

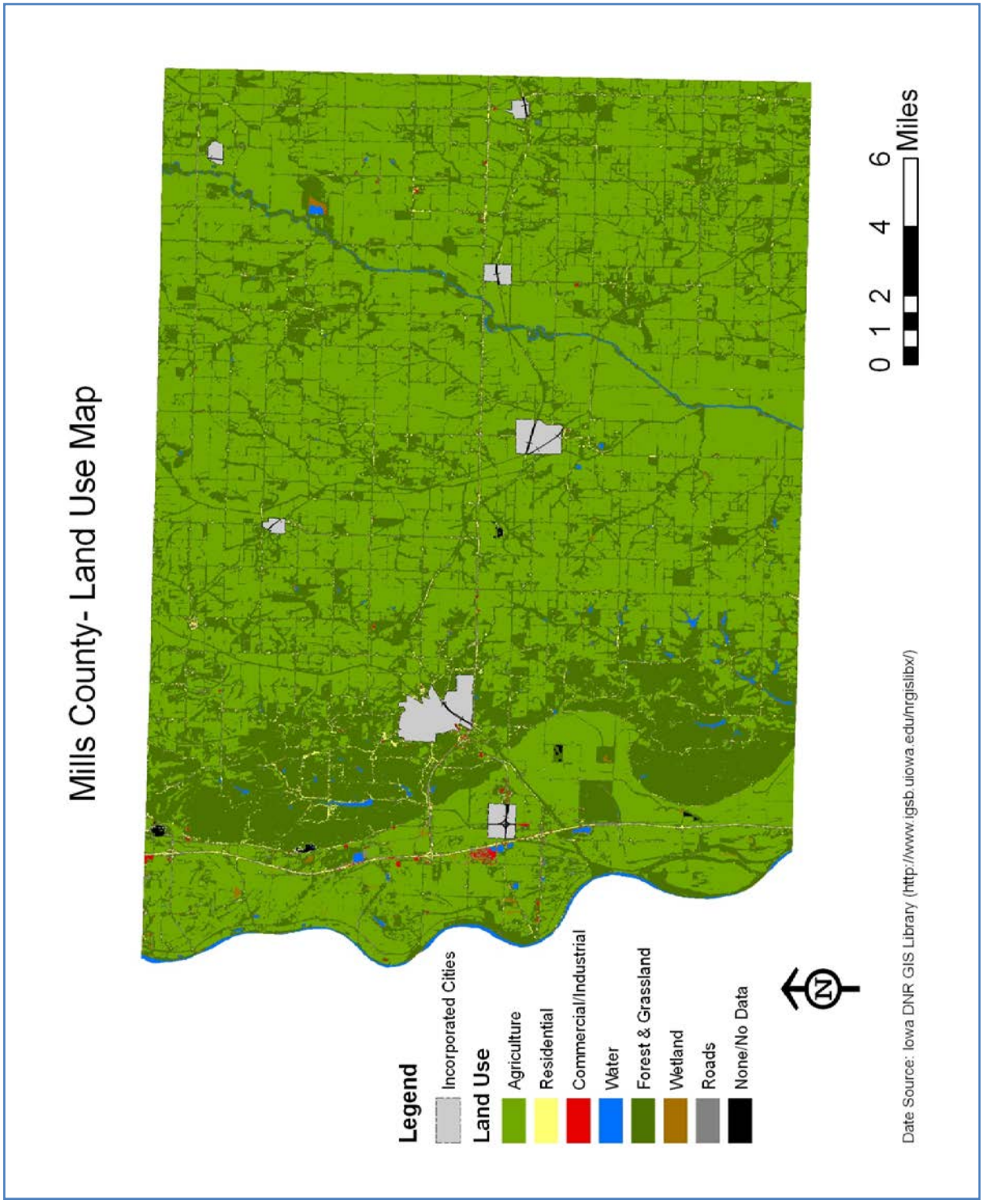

Malvern, Iowa
Flood Plain Map
14th St
13th St
Cut Off Rd
County Rd
W 11th St
E 11th St
E 10th St
E Ridge Dr
W 9th St
E 9th St
W 8th St
E 8th St
Marion Av
Kearney Av
Wilson Av
Grandview Av
W 7th St
E 7th St
Lincoln Av
Gary St
8th Av
W 6th St
E 6th St
Main St
2nd Av
W 5th St
E 5th St
Prospect Av
6th Av
5th Av
4th Av
3rd Av
W 4th St
E 4th St
County Hwy H38
W 3rd St
E 3rd St
7th Av
E 2nd St
W 2nd St
6th Av
5th Av
W 1st St
Legend
100 Year Flood Plain
500 Year Flood Plain
0 0.0625 0.125 0.25 0.375 0.5
Miles
N
W
E
S


Pacific Junction, Iowa
Flood Plain Map
195TH ST
205TH ST
JENKINS AVE
MAIN ST
FRONT ST
DEPOT ST
4TH ST
2ND ST
HOBILT AVE
CORDELIA AVE
GLEASON AVE
GLEASON AVE
JESUP AVE
COUNTY RD
WASHINGTON AVE
WASHINGTON AVE
5TH ST
N ELLISON AVE
LINCOLN AVE
MAPLE ST
CHESTNUT ST
WALNUT ST
ELM ST
KANE AVE
MILLS AVE
MILLS AVE
3RD ST
1ST ST
IOWA ST
IOWA AVE
WATER ST
S ELLISON AVE
I-29
195TH ST
KELTING AVE
194TH ST
Legend
100 Year Flood Plain
500 Year Flood Plain
0 250 500 1,000 1,500 2,000
Feet

APPENDIX G
Railroad and Pipeline Map



APPENDIX H
Countywide Land Use Map



APPENDIX I
Jurisdiction Parcel Numbers and Assessed Values

Emerson				
Class	**Number**	**%**	**Total Value**	**%**
Agriculture	12	3.75	$15,110	0.10
Commercial	61	19.06	$1,896,330	12.34
Industrial	1	0.31	$71,579	0.47
Residential	246	76.88	$13,381,361	87.09
TOTAL	320		$15,364,380	

Glenwood				
Class	**Number**	**%**	**Total Value**	**%**
Agriculture	34	1.46	$608,907	0.24
Commercial	385	16.52	$37,297,286	14.80
Industrial	8	0.34	$1,285,576	0.51
Residential	1,903	81.67	$212,736,250	84.44
TOTAL	2,330		$251,928,019	

Hastings				
Class	**Number**	**%**	**Total Value**	**%**
Agriculture	11	7.75	$286,383	6.15
Commercial	19	13.38	$318,114	6.84
Industrial	1	0.70	$18,715	0.40
Residential	111	78.17	$4,030,566	86.61
TOTAL	142		$4,653,778	

Henderson				
Class	**Number**	**%**	**Total Value**	**%**
Agriculture	3	2.05	$10,407	0.23
Commercial	32	21.92	$726,523	15.74
Industrial	1	0.68	$221,152	4.79
Residential	110	75.34	$3,658,598	79.25
TOTAL	146		$4,616,680	

Malvern				
Class	**Number**	**%**	**Total Value**	**%**
Agriculture	37	5.14	$849,955	1.88
Commercial	146	20.28	$4,818,163	10.67
Industrial	6	0.83	$668,433	1.48
Residential	531	73.75	$38,836,276	85.97
TOTAL	720		$45,172,827	

Pacific Junction				
Class	**Number**	**%**	**Total Value**	**%**
Agriculture	87	21.70	$332,620	2.11
Commercial	35	8.73	$1,113,984	7.08
Industrial	0	0.00	$0	0.00
Residential	279	69.58	$14,283,522	90.80
TOTAL	401		$15,730,126	

Silver City				
Class	**Number**	**%**	**Total Value**	**%**
Agriculture	7	3.50	$125,508	1.22
Commercial	50	25.00	$728,410	7.11
Industrial	0	0. 00	$0	0.00
Residential	143	71.50	$9,392,327	91.67
TOTAL	200		$10,246,245	

Tabor				
Class	**Number**	**%**	**Total Value**	**%**
Agriculture	2	3.28	$9,135	0.29
Commercial	3	4.92	$83,577	2.64
Industrial	0	0.00	$0	0.00
Residential	56	91.80	$3,073,112	97.07
TOTAL	61		$3,165,824	

Unincorporated				
Class	**Number**	**%**	**Total Value**	**%**
Agriculture	9,657	74.10	$387,146,714	45.18
Commercial	374	2.87	$35,210,939	4.11
Industrial	17	0.13	$37,222,766	4.34
Residential	2,984	22.90	$397,345,918	46.37
TOTAL	13,032		$856,926,337	

APPENDIX J
Hazard Identification by Municipality

Y = Has Occurred
O = May Occur
X = Will Not Occur

	Emerson	Glenwood	Hastings	Henderson	Malvern	Pacific Junction	Silver City
Dam Failure	X	X	X	X	X	X	X
Drought	Y	Y	Y	Y	Y	Y	Y
Earthquake	O	O	O	O	O	O	O
Expansive Soils	X	X	Y	X	X	X	X
Extreme Heat	Y	Y	Y	Y	Y	Y	Y
Flash Flood	Y	Y	Y	Y	Y	Y	Y
Grass or Wild Land Fire	Y	Y	O	O	O	Y	Y
Hailstorm	Y	Y	Y	Y	Y	Y	Y
Landslide/Erosion/Slope Failure	Y	Y	Y	O	O	X	O
Levee Failure	O	X	O	X	X	Y	X
River/Stream Flood	Y	Y	Y	O	Y	Y	Y
Severe Winter Storm	Y	Y	Y	Y	Y	Y	Y
Sink Holes	O	O	O	O	O	O	O
Thunderstorm and Lightning	Y	Y	Y	Y	Y	Y	Y
Tornado	Y	Y	Y	Y	Y	Y	O
Windstorm	Y	Y	Y	Y	Y	Y	Y
Air Transportation Incident	O	O	O	O	O	O	O
Communications Failure	Y	Y	Y	Y	Y	Y	Y
Energy Disruption	Y	Y	Y	Y	Y	Y	Y
Fixed Hazardous Materials Incident	Y	O	Y	Y	O	Y	Y
Fixed Radiological Incident	O	O	O	O	O	O	O
Highway Transportation Incident	Y	Y	Y	O	O	Y	O
Pipeline Incident	O	O	O	O	O	O	X
Rail Transportation Incident	Y	O	Y	X	O	Y	X
Transportation Hazardous Materials Incident	Y	O	Y	O	O	O	O
Transportation Radiological Incident	O	O	O	O	O	O	O
Waterway/Water Body Incident	X	O	X	X	X	X	X
Enemy Attack	O	O	O	O	O	O	O
Public Disorder	O	O	O	O	O	O	O
Terrorism – Biological/Agricultural	O	O	O	O	O	O	O
Terrorism – Chemical	O	O	O	O	O	O	O
Terrorism – Conventional	O	O	O	O	O	O	O
Terrorism – Cyber	O	O	O	O	O	O	O
Terrorism – Radiological	O	O	O	O	O	O	O
Animal Disease Epidemic	O	O	O	O	O	O	O
Human Disease Epidemic	O	O	O	O	O	O	O
Plant/Crop Disease Epidemic	O	O	O	O	O	O	O
Structural Failure	O	Y	O	O	Y	O	O
Structural Fire	Y	Y	Y	Y	Y	Y	Y

APPENDIX K
Municipal Hazard Scoring and Priority Grouping

Emerson

Hazard Type	Historical	Probability	Vulnerability	Maximum Threat	Severity	Speed of Onset	CPRI	Planning Significance
Drought	2	3	2	4	2	1	3.15	Moderate
Earthquake	1	1	1	4	1	4	2.4	Low
Expansive Soils	1	1	1	1	1	1	1.35	Low
Extreme Heat	4	4	3	4	2	1	4.05	High
Flash Flood	2	3	3	3	2	4	3.5	Moderate
Grass or Wild Land Fire	3	3	2	2	1	3	2.95	Moderate
Hailstorm	4	3	3	3	3	4	4.44	High
Landslide/Erosion/Slope Failure	1	1	1	1	1	1	1.35	Low
Levee Failure	1	1	2	2	2	1	2.15	Low
River Flood	1	1	2	2	2	1	2.15	Low
Severe Winter Storm	4	3	3	4	3	2	4.3	High
Sink Holes	1	1	1	1	1	1	1.35	Low
Thunderstorm and Lightning	4	4	2	4	2	4	4.2	High
Tornado	2	3	3	4	3	4	4.2	High
Windstorm	4	4	2	4	2	4	4.2	High
Air Transportation Incident	1	1	1	2	3	4	2.6	Low
Communications Failure	2	2	2	3	3	4	3.5	Moderate
Energy Disruption	2	2	2	3	2	4	3.2	Moderate
Fixed Hazardous Material Incident	1	2	2	2	2	4	2.8	Moderate
Fixed Radiological Incident	1	1	1	1	1	4	1.8	Low
Highway Transportation Incident	1	1	1	1	2	4	2.1	Low
Pipeline Incident	1	1	1	2	1	4	2	Low
Rail Transportation Incident	1	1	1	2	2	4	2.3	Low
Transportation Hazardous Materials Incident	1	1	2	3	2	4	2.8	Moderate
Transportation Radiological Incident	1	1	1	1	2	4	2.1	Low
Animal Disease Epidemic	1	3	2	2	2	2	2.7	Moderate
Human Disease Epidemic	1	1	2	2	2	2	2.3	Low
Plant/Crop Disease Epidemic	1	2	2	3	1	1	2.25	Low
Structural Failure	1	1	1	2	2	4	2.3	Low
Structural Fire	1	2	4	2	4	4	4	Moderate

Glenwood

Hazard Type	Historical	Probability	Vulnerability	Maximum Threat	Severity	Speed of Onset	CPRI	Planning Significance
Drought	2	3	2	4	2	1	3.15	Moderate
Earthquake	1	1	1	4	1	4	2.4	Low
Expansive Soils	1	1	1	1	1	1	1.35	Low
Extreme Heat	4	4	3	4	2	1	4.05	High
Flash Flood	2	2	3	3	2	4	3.5	Moderate
Grass or Wild Land Fire	3	3	2	2	1	3	2.95	Moderate
Hailstorm	4	3	3	3	3	4	4.44	High
Landslide/Erosion/Slope Failure	1	1	1	1	1	1	1.35	Low
Levee Failure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
River Flood	2	3	2	3	2	1	2.95	Moderate
Severe Winter Storm	4	3	3	4	3	2	4.3	High
Sink Holes	1	1	1	1	1	1	1.35	Low
Thunderstorm and Lightning	4	4	2	4	2	4	4.2	High
Tornado	2	3	3	4	3	4	4.2	High
Windstorm	4	4	2	4	2	4	4.2	High
Air Transportation Incident	1	1	1	2	3	4	2.6	Low
Communications Failure	2	2	2	3	3	4	3.5	Moderate
Energy Disruption	2	2	2	3	2	4	3.2	Moderate
Fixed Hazardous Material Incident	1	2	3	3	2	4	3.3	Moderate
Fixed Radiological Incident	1	1	1	1	1	4	1.8	Low
Highway Transportation Incident	3	3	1	1	3	4	3.2	Moderate
Pipeline Incident	1	1	1	2	1	4	2.4	Low
Rail Transportation Incident	1	1	2	2	3	4	2.9	Moderate
Transportation Hazardous Materials Incident	1	1	2	3	2	4	2.8	Moderate
Transportation Radiological Incident	1	1	1	1	2	4	2.1	Low
Animal Disease Epidemic	1	3	2	2	2	2	2.7	Moderate
Human Disease Epidemic	1	1	2	2	2	2	2.3	Low
Plant/Crop Disease Epidemic	1	2	2	3	1	1	2.25	Low
Structural Failure	2	2	2	2	2	4	3	Moderate
Structural Fire	2	3	3	2	4	4	4.1	High

Hastings

Hazard Type	Historical	Probability	Vulnerability	Maximum Threat	Severity	Speed of Onset	CPRI	Planning Significance
Drought	2	3	2	4	2	1	3.15	Moderate
Earthquake	1	1	1	4	1	4	2.4	Low
Expansive Soils	1	1	1	1	1	1	1.35	Low
Extreme Heat	4	4	3	4	2	1	4.05	High
Flash Flood	4	4	4	3	3	4	4.9	High
Grass or Wild Land Fire	3	3	2	2	1	3	2.95	Moderate
Hailstorm	4	3	3	3	3	4	4.44	High
Landslide/Erosion/Slope Failure	2	2	1	1	1	4	2.2	Low
Levee Failure	1	3	1	2	2	2	2.4	Low
River Flood	1	4	4	2	2	2	3.5	Moderate
Severe Winter Storm	4	3	3	4	3	2	4.3	High
Sink Holes	1	1	1	1	1	1	1.35	Low
Thunderstorm and Lightning	4	4	2	4	2	4	4.2	High
Tornado	2	3	3	3	4	4	4.3	High
Windstorm	4	4	2	4	2	4	4.2	High
Air Transportation Incident	1	1	1	2	3	4	2.6	Low
Communications Failure	2	2	2	3	3	4	3.5	Moderate
Energy Disruption	2	2	2	3	2	4	3.2	Moderate
Fixed Hazardous Material Incident	1	3	3	2	2	4	3.3	Moderate
Fixed Radiological Incident	1	1	1	1	1	4	1.8	Low
Highway Transportation Incident	3	4	3	2	2	4	3.9	Moderate
Pipeline Incident	1	1	1	1	1	4	1.8	Low
Rail Transportation Incident	1	3	3	3	3	4	3.8	Moderate
Transportation Hazardous Materials Incident	1	1	1	1	1	4	1.8	Low
Transportation Radiological Incident	1	1	1	1	1	4	1.8	Low
Animal Disease Epidemic	2	3	3	3	2	3	3.55	Moderate
Human Disease Epidemic	1	3	4	3	1	2	3.2	Moderate
Plant/Crop Disease Epidemic	1	2	2	3	1	1	2.25	Low
Structural Failure	2	3	3	1	1	1	2.55	Low
Structural Fire	4	4	2	2	3	4	4.1	High

Henderson

Hazard Type	Historical	Probability	Vulnerability	Maximum Threat	Severity	Speed of Onset	CPRI	Planning Significance
Drought	2	3	2	4	2	1	3.15	Moderate
Earthquake	1	1	1	4	1	4	2.4	Low
Expansive Soils	1	1	1	1	1	1	1.35	Low
Extreme Heat	4	4	3	4	2	1	4.05	High
Flash Flood	2	3	2	3	2	4	3.4	Moderate
Grass or Wild Land Fire	3	3	2	2	1	3	2.95	Moderate
Hailstorm	4	3	3	3	3	4	4.44	High
Landslide/Erosion/Slope Failure	1	1	1	1	1	1	1.35	Low
Levee Failure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
River Flood	1	1	1	1	2	1	1.65	Low
Severe Winter Storm	4	3	3	4	3	2	4.3	High
Sink Holes	1	1	1	1	1	1	1.35	Low
Thunderstorm and Lightning	4	4	2	4	2	4	4.2	High
Tornado	2	3	3	3	4	4	4.3	High
Windstorm	4	4	2	4	2	4	4.2	High
Air Transportation Incident	1	1	1	2	3	4	2.6	Low
Communications Failure	2	2	2	3	3	4	3.5	Moderate
Energy Disruption	2	2	2	3	2	4	3.2	Moderate
Fixed Hazardous Material Incident	1	2	2	2	2	4	2.8	Moderate
Fixed Radiological Incident	1	1	1	1	1	4	1.8	Low
Highway Transportation Incident	1	1	1	1	2	4	2.1	Low
Pipeline Incident	1	1	1	1	1	4	1.8	Low
Rail Transportation Incident	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transportation Hazardous Materials Incident	1	1	1	1	2	4	2.1	Low
Transportation Radiological Incident	1	1	1	1	2	4	2.1	Low
Animal Disease Epidemic	1	3	2	2	2	2	2.7	Moderate
Human Disease Epidemic	1	3	4	3	1	2	3.2	Moderate
Plant/Crop Disease Epidemic	1	2	2	3	1	1	2.25	Low
Structural Failure	1	1	1	2	2	4	2.3	Low
Structural Fire	1	2	2	2	2	4	2.8	Moderate

Malvern

Hazard Type	Historical	Probability	Vulnerability	Maximum Threat	Severity	Speed of Onset	CPRI	Planning Significance
Drought	2	3	2	4	2	1	3.15	Moderate
Earthquake	1	1	1	4	1	4	2.4	Low
Expansive Soils	1	1	1	1	1	1	1.35	Low
Extreme Heat	4	4	3	4	2	1	4.05	High
Flash Flood	2	2	3	3	2	4	3.5	Moderate
Grass or Wild Land Fire	3	3	2	2	1	3	2.95	Moderate
Hailstorm	4	3	3	3	3	4	4.44	High
Landslide/Erosion/Slope Failure	1	1	1	1	1	1	1.35	Low
Levee Failure	N/A	N/A	N/A	N/A	N/A	N/A	NA	N/A
River Flood	2	2	2	3	3	1	3.1	Moderate
Severe Winter Storm	4	3	3	4	3	2	4.3	High
Sink Holes	1	1	1	1	1	1	1.35	Low
Thunderstorm and Lightning	4	4	2	4	2	4	4.2	High
Tornado	2	3	3	3	4	4	4.2	High
Windstorm	4	4	2	4	2	4	4.2	High
Air Transportation Incident	1	1	1	2	3	4	2.6	Low
Communications Failure	2	2	2	3	3	4	3.5	Moderate
Energy Disruption	2	2	2	3	2	4	3.2	Moderate
Fixed Hazardous Material Incident	1	3	3	2	2	4	3.3	Moderate
Fixed Radiological Incident	1	1	1	1	1	4	1.8	Low
Highway Transportation Incident	1	1	1	1	2	4	2.1	Moderate
Pipeline Incident	1	1	1	2	1	4	2	Low
Rail Transportation Incident	1	3	3	3	3	4	2.8	Moderate
Transportation Hazardous Materials Incident	1	1	1	1	2	4	2.8	Moderate
Transportation Radiological Incident	1	1	1	1	1	4	1.8	Low
Animal Disease Epidemic	1	3	2	3	2	2	2.9	Moderate
Human Disease Epidemic	1	2	3	3	2	2	3	Moderate
Plant/Crop Disease Epidemic	1	2	2	3	1	1	2.25	Low
Structural Failure	1	1	1	2	2	4	2.3	Low
Structural Fire	1	2	2	2	2	4	2.8	Moderate

Pacific Junction

Hazard Type	Historical	Probability	Vulnerability	Maximum Threat	Severity	Speed of Onset	CPRI	Planning Significance
Drought	2	3	2	4	2	1	3.15	Moderate
Earthquake	1	1	1	4	1	4	2.4	Low
Expansive Soils	1	1	1	1	1	1	1.35	Low
Extreme Heat	4	4	3	4	2	1	4.05	High
Flash Flood	2	2	3	3	2	4	3.5	Moderate
Grass or Wild Land Fire	3	3	2	2	1	3	2.95	Moderate
Hailstorm	4	3	3	3	3	4	4.44	High
Landslide/Erosion/Slope Failure	1	1	1	1	1	1	1.35	Low
Levee Failure	1	2	2	3	3	1	2.85	Moderate
River Flood	2	2	3	3	3	1	3.35	Moderate
Severe Winter Storm	4	3	3	4	3	2	4.3	High
Sink Holes	1	1	1	1	1	1	1.35	Low
Thunderstorm and Lightning	4	4	2	4	2	4	4.2	High
Tornado	2	3	3	3	4	4	4.3	High
Windstorm	4	4	2	4	2	4	4.2	High
Air Transportation Incident	1	1	1	2	3	4	2.6	Low
Communications Failure	2	2	2	3	3	4	3.5	Moderate
Energy Disruption	2	2	2	3	2	4	3.2	Moderate
Fixed Hazardous Material Incident	1	2	4	3	4	4	4.2	High
Fixed Radiological Incident	1	1	1	1	1	4	1.8	Low
Highway Transportation Incident	1	1	1	1	2	4	2.1	Low
Pipeline Incident	1	2	2	2	2	4	2.8	Moderate
Rail Transportation Incident	2	2	3	2	3	4	4.4	High
Transportation Hazardous Materials Incident	1	2	3	1	2	4	2.7	Moderate
Transportation Radiological Incident	1	1	1	1	2	4	2.1	Low
Animal Disease Epidemic	1	3	2	2	2	2	2.7	Moderate
Human Disease Epidemic	1	1	2	2	2	2	2.3	Low
Plant/Crop Disease Epidemic	1	2	2	3	1	1	2.25	Low
Structural Failure	1	1	1	2	2	4	2.3	Low
Structural Fire	3	2	2	2	2	4	3.2	Moderate

Silver City

Hazard Type	Historical	Probability	Vulnerability	Maximum Threat	Severity	Speed of Onset	CPRI	Planning Significance
Drought	2	3	2	4	2	1	3.15	Moderate
Earthquake	1	1	1	4	1	4	2.4	Low
Expansive Soils	1	1	1	1	1	1	1.35	Low
Extreme Heat	4	4	3	4	2	1	4.05	High
Flash Flood	2	2	3	3	2	4	3.5	Moderate
Grass or Wild Land Fire	3	3	2	2	1	3	2.95	Moderate
Hailstorm	4	3	3	3	3	4	4.44	High
Landslide/Erosion/Slope Failure	1	1	1	1	1	1	1.35	Low
Levee Failure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
River Flood	1	1	1	1	2	1	1.65	Low
Severe Winter Storm	4	3	3	4	3	2	4.3	High
Sink Holes	1	1	1	1	1	1	1.35	Low
Thunderstorm and Lightning	4	4	2	4	2	4	4.2	High
Tornado	2	3	3	3	3	4	4.3	High
Windstorm	4	4	2	4	2	4	4.2	High
Air Transportation Incident	1	1	1	2	3	4	2.6	Low
Communications Failure	2	2	2	3	3	4	3.5	Moderate
Energy Disruption	2	2	2	3	2	4	3.2	Moderate
Fixed Hazardous Material Incident	1	2	2	2	2	4	2.8	Moderate
Fixed Radiological Incident	1	1	1	1	1	4	1.8	Low
Highway Transportation Incident	1	1	1	1	2	4	2.1	Low
Pipeline Incident	1	1	1	1	1	4	1.8	Low
Rail Transportation Incident	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Transportation Hazardous Materials Incident	1	1	1	1	2	4	2.1	Low
Transportation Radiological Incident	1	1	1	1	2	4	2.1	Low
Animal Disease Epidemic	1	3	2	2	2	2	2.7	Moderate
Human Disease Epidemic	1	1	2	2	2	2	2.3	Low
Plant/Crop Disease Epidemic	1	2	2	3	1	1	2.25	Low
Structural Failure	1	1	1	2	2	4	2.3	Low
Structural Fire	1	2	2	2	2	4	2.8	Moderate

Emerson

Priority 1 (High) Hazards	Priority 2 (Moderate) Hazards	Priority 3 (Low) Hazards
Extreme Heat	Drought	Earthquake
Flash Flood	Air Transportation Incident	Fixed Radiological Incident
Hailstorm	Levee Failure	Enemy Attack
River/Stream Flood	Animal Disease Epidemic	Public Disorder
Severe Winter Storm	Grass or Wild Land Fire	Biological/Agricultural Terrorism
Thunderstorm and Lightning	Pipeline Incident	Chemical Terrorism
Tornado	Rail Transportation Incident	Conventional Terrorism
Windstorm	Human Disease Epidemic	Cyber Terrorism
Transportation Hazmat Incident	Landslide/Erosion/Slope Failure	Radiological Terrorism
Energy Disruption	Structural Failure	Sink Holes
Fixed Hazmat Incident	Structural Fire	Transportation Radiological Incident
Highway Transportation Incident		Plant/Crop Disease Epidemic
Communications Failure		

Glenwood

Priority 1 (High) Hazards	Priority 2 (Moderate) Hazards	Priority 3 (Low) Hazards
Extreme Heat	River/Stream Flood	Drought
Hailstorm	Air Transportation Incident	Earthquake
Severe Winter Storm	Structural Failure	Landslide/Erosion/Slope Failure
Thunderstorm and Lightning	Flash Flood	Fixed Radiological Incident
Tornado	Fixed Hazmat Incident	Pipeline Incident
Windstorm	Conventional Terrorism	Enemy Attack
Energy Disruption	Rail Transportation Incident	Public Disorder
Highway Transportation Incident	Waterway/Water Body Incident	Biological/Agricultural Terrorism
Communications Failure		Chemical Terrorism
Transportation Hazmat Incident		Cyber Terrorism
		Radiological Terrorism
		Animal Disease Epidemic
		Grass or Wild Land Fire
		Human Disease Epidemic
		Structural Fire
		Plant/Crop Disease Epidemic
		Sink Holes
		Transportation Radiological Incident

Hastings

Priority 1 (High) Hazards	Priority 2 (Moderate) Hazards	Priority 3 (Low) Hazards
Energy Disruption	Earthquake	Public Disorder
Communications Failure	Highway Transportation Incident	Levee Failure
Tornado	Extreme Heat	Transportation Hazmat Incident
Thunderstorm and Lightning	Structural Fire	Transportation Radiological Incident
Rail Transportation Incident	River/Stream Flood	Animal Disease Epidemic
Air Transportation Incident	Fixed Hazmat Incident	Plant/Crop Disease Epidemic
Severe Winter Storm	Enemy Attack	Biological/Agricultural Terrorism
Hailstorm	Grass or Wild Land Fire	Radiological Terrorism
Flash Flood	Fixed Radiological Incident	Human Disease Epidemic
Windstorm	Conventional Terrorism	Cyber Terrorism
		Chemical Terrorism
		Drought
		Structural Failure
		Pipeline Incident
		Landslide/Erosion/Slope Failure
		Expansive Soils
		Sink Holes

Henderson

Priority 1 (High) Hazards	Priority 2 (Moderate) Hazards	Priority 3 (Low) Hazards
Thunderstorm and Lightning	Structural Fire	Earthquake
Energy Disruption	Animal Disease Epidemic	River/Stream Flood
Communications Failure	Grass or Wild Land Fire	Air Transportation Incident
Windstorm	Human Disease Epidemic	Fixed Radiological Incident
Severe Winter Storm	Structural Failure	Enemy Attack
Tornado	Pipeline Incident	Public Disorder
Flash Flood	Transportation Hazmat Incident	Highway Transportation Incident
Extreme Heat		Conventional Terrorism
Hailstorm		Cyber Terrorism
Drought		Radiological Terrorism
Fixed Hazmat Incident		Biological/Agricultural Terrorism
		Landslide/Erosion/Slope Failure
		Chemical Terrorism
		Plant/Crop Disease Epidemic
		Sink Holes
		Transportation Radiological Incident

Malvern

Priority 1 (High) Hazards	Priority 2 (Moderate) Hazards	Priority 3 (Low) Hazards
Thunderstorm and Lightning	Transportation Radiological Incident	Fixed Radiological Incident
Energy Disruption	Highway Transportation Incident	Radiological Terrorism
Communications Failure	Rail Transportation Incident	Conventional Terrorism
Tornado	Transportation Hazmat Incident	Enemy Attack
Windstorm	Human Disease Epidemic	Public Disorder
Severe Winter Storm	Animal Disease Epidemic	Earthquake
Structural Fire	Air Transportation Incident	Biological/Agricultural Terrorism
Flash Flood	Grass or Wild Land Fire	Chemical Terrorism
Structural Failure	Drought	Cyber Terrorism
Extreme Heat	Pipeline Incident	Landslide/Erosion/Slope Failure
Fixed Hazmat Incident		Plant/Crop Disease Epidemic
Hailstorm		Sink Holes
River/Stream Flood		

Pacific Junction

Priority 1 (High) Hazards	Priority 2 (Moderate) Hazards	Priority 3 (Low) Hazards
Extreme Heat	Air Transportation Incident	Earthquake
Flash Flood	Communications Failure	Fixed Radiological Incident
Hailstorm	Pipeline Incident	Enemy Attack
River/Stream Flood	Animal Disease Epidemic	Public Disorder
Tornado	Grass or Wild Land Fire	Biological/Agricultural Terrorism
Levee Failure	Human Disease Epidemic	Chemical Terrorism
Energy Disruption	Structural Failure	Conventional Terrorism
Windstorm	Drought	Cyber Terrorism
Fixed Hazmat Incident	Transportation Hazmat Incident	Transportation Radiological Incident
Thunderstorm and Lightning	Highway Transportation Incident	Radiological Terrorism
Rail Transportation Incident		Plant/Crop Disease Epidemic
Severe Winter Storm		Sink Holes
Structural Fire		

Silver City

Priority 1 (High) Hazards	Priority 2 (Moderate) Hazards	Priority 3 (Low) Hazards
Extreme Heat	Drought	Earthquake
Severe Winter Storm	Flash Flood	Landslide/Erosion/Slope Failure
Thunderstorm and Lightning	Hailstorm	Air Transportation Incident
Tornado	River/Stream Flood	Fixed Radiological Incident
Windstorm	Structural Failure	Enemy Attack
Communications Failure	Structural Fire	Public Disorder
Energy Disruption	Animal Disease Epidemic	Biological/Agricultural Terrorism
Grass or Wild Land Fire	Human Disease Epidemic	Chemical Terrorism
	Transportation Hazmat Incident	Highway Transportation Incident
	Fixed Hazmat Incident	Conventional Terrorism
		Plant/Crop Disease Epidemic
		Radiological Terrorism
		Cyber Terrorism
		Transportation Radiological Incident
		Sink Holes

APPENDIX L
Historical Occurrences

(Source: National Climatic Data Center, http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms)

Flooding

Location or County	Date	Time	Type	Magnitudes	Deaths	Injuries	Property Damage	Crop Damage
Regional	3/2/1993	1200	Flooding	N/A	0	0	50K	0
Regional	3/22/1993	600	Major Flood	N/A	0	0	50.0M	0
Regional	4/1/1993	0	Major Flood	N/A	0	0	50.0M	0
Southern Iowa	9/6/1993	600	Flood	N/A	0	0	500K	500K
Mills	9/21/1993	2300	Flash Flood	N/A	0	0	500K	50K
Southwest Iowa	10/15/1993	300	Flooding	N/A	0	0	5K	5K
Much of Iowa	3/3/1994	1200	Flooding	N/A	0	0	500K	0
Regional	6/11/1994	2200	Flooding	N/A	0	0	5K	5K
Regional	6/13/1994	400	Flooding	N/A	0	0	500K	500K
Regional	6/22/1994	2330	Flooding	N/A	0	0	500K	500K
Regional	2/18/1997	6:00 PM	Flood	N/A	0	0	0	0
Regional	4/2/1997	12:00 PM	Flood	N/A	0	0	0	0
Regional	5/1/1997	12:00 AM	Flood	N/A	0	0	0	0
Regional	6/1/1997	12:00 AM	Flood	N/A	0	0	0	0
Mills	9/2/1997	2:00 AM	Flash Flood	N/A	0	0	0	0
Regional	6/9/1998	7:46 AM	Flood	N/A	0	0	0	35.0M
Emerson	8/7/1999	5:00 AM	Flash Flood	N/A	0	0	0	0
Western Mills	8/23/2002	1:30 AM	Flash Flood	N/A	0	0	0	0
Regional	5/24/2004	9:15 PM	Flood	N/A	0	0	0	0
Glenwood	5/6/2007	2:00 AM	Flash Flood	N/A	0	0	2.5M	0K
Henderson	5/6/2007	5:00 AM	Flood	N/A	0	0	20K	0K
Mills	5/30/2008	14:15 PM	Flood	N/A	0	0	0K	0K
Mills	6/1/2008	12:00 AM	Flood	N/A	0	0	0K	0K
Mills	6/5/2008	13:45 PM	Flood	N/A	0	0	0K	0K
Western Mills	6/11/2010	11:30 AM	Flood	N/A	0	0	50K	0K

Western Mills	7/1/2010	12:00 AM	Flood	N/A	0	0	10K	0K
Western Mills	8/1/2010	12:00 AM	Flood	N/A	0	0	3K	0K
Regional	5/1/2011	0	Flood	N/A	0	0	5K	0K
Regional	6/1/2011	0	Flood	N/A	0	0	10K	0K
Regional	7/1/2011	0	Flood	N/A	0	0	25K	0K
Pacific Junction	8/1/2011	0	Flood	N/A	0	0	5.0M	0K
				TOTALS:	0	0	110.183 M	36.560 M

Hail

Location or County	Date	Time	Type	Magnitudes	Deaths	Injuries	Property Damage	Crop Damage
Mills	3/13/1957	1853	Hail	1.50 in.	0	0	0	0
Mills	5/6/1971	920	Hail	2.00 in.	0	0	0	0
Mills	5/17/1971	2100	Hail	1.75 in.	0	0	0	0
Mills	7/21/1976	1445	Hail	1.75 in.	0	0	0	0
Mills	4/3/1981	1810	Hail	1.50 in.	0	0	0	0
Mills	4/26/1984	1620	Hail	1.75 in.	0	0	0	0
Mills	4/26/1984	1650	Hail	2.75 in.	0	0	0	0
Mills	4/19/1985	2018	Hail	1.00 in.	0	0	0	0
Mills	5/12/1986	1700	Hail	2.00 in.	0	0	0	0
Mills	5/12/1986	1715	Hail	1.75 in.	0	0	0	0
Mills	7/24/1986	1755	Hail	1.00 in.	0	0	0	0
Mills	5/30/1987	2030	Hail	1.75 in.	0	0	0	0
Mills	6/24/1987	1908	Hail	1.75 in.	0	0	0	0
Mills	5/9/1990	316	Hail	2.00 in.	0	0	0	0
Mills	6/18/1990	1906	Hail	0.75 in.	0	0	0	0
Mills	6/18/1990	1906	Hail	0.75 in.	0	0	0	0
Mills	6/1/1991	1530	Hail	1.00 in.	0	0	0	0
Glenwood	4/14/1994	1949	Hail	1.75 in.	0	0	50K	0K
Glenwood	4/14/1994	1950	Hail	1.75 in.	0	0	50K	0K
Glenwood	5/5/1994	2005	Hail	0.75 in.	0	0	5K	0K
Glenwood	6/25/1994	1755	Hail	1.00 in.	0	0	50K	50K
Pacific Junction	7/12/1994	1730	Hail	1.00 in.	0	0	5K	50K
South of Glenwood	4/7/1995	1330	Hail	1.75 in.	0	0	0	0
Regional	5/27/1995	1742	Hail	1.75 in.	0	0	0	0
Malvern	6/16/1996	4:05 PM	Hail	0.75 in.	0	0	0	0
Pacific Junction	7/28/1996	12:25 AM	Hail	1.50 in.	0	0	0	0
Malvern	7/13/1997	5:20	Hail	1.75 in.	0	0	0	0

		PM						
Silver City	4/6/1998	6:50 PM	Hail	2.00 in.	0	0	0	0
Pacific Junction	5/16/1999	1:55 PM	Hail	0.75 in.	0	0	0	0
Silver City	7/27/1999	3:35 PM	Hail	1.00 in.	0	0	0	0
Emerson	9/7/1999	4:49 PM	Hail	0.75 in.	0	0	0	0
Henderson	9/7/1999	7:40 PM	Hail	1.00 in.	0	0	0	0
Henderson	5/12/2000	12:00 AM	Hail	0.75 in.	0	0	0	0
Emerson	6/23/2000	4:40 PM	Hail	1.00 in.	0	0	0	0
Silver City	7/26/2000	6:20 PM	Hail	1.75 in.	0	0	0	0
Glenwood	7/26/2000	6:30 PM	Hail	1.75 in.	0	0	0	0
Silver City	7/26/2000	6:30 PM	Hail	1.75 in.	0	0	0	0
Pacific Junction	7/26/2000	6:49 PM	Hail	1.75 in.	0	0	0	0
Pacific Junction	4/5/2001	10:50 AM	Hail	0.75 in.	0	0	0	0
Glenwood	4/5/2001	11:00 AM	Hail	0.75 in.	0	0	0	0
Glenwood	7/3/2001	5:58 AM	Hail	0.75 in.	0	0	0	0
Henderson	9/20/2001	9:45 AM	Hail	0.88 in.	0	0	0	0
Henderson	9/20/2001	9:55 AM	Hail	1.75 in.	0	0	0	0
Henderson	9/20/2001	10:25 AM	Hail	1.00 in.	0	0	0	0
Glenwood	9/22/2001	8:40 PM	Hail	1.00 in.	0	0	0	0
Henderson	9/22/2001	9:00 PM	Hail	1.75 in.	0	0	0	0
Henderson	10/22/2001	12:15 PM	Hail	1.75 in.	0	0	0	0
Pacific Junction	6/12/2002	8:47 PM	Hail	1.25 in.	0	0	0	0
Tabor	7/25/2002	4:05 AM	Hail	1.00 in.	0	0	0	0
Glenwood	8/16/2002	10:52 AM	Hail	0.75 in.	0	0	0	0
Glenwood	4/30/2003	5:05 AM	Hail	0.75 in.	0	0	0	0
Tabor	5/4/2003	3:38 PM	Hail	0.75 in.	0	0	0	0

Glenwood	5/4/2003	3:40 PM	Hail	1.75 in.	0	0	0	0
Glenwood	5/4/2003	3:57 PM	Hail	0.75 in.	0	0	0	0
Tabor	5/4/2003	3:59 PM	Hail	1.00 in.	0	0	0	0
Silver City	6/24/2003	4:20 PM	Hail	0.75 in.	0	0	0	0
Mineola	6/24/2003	4:45 PM	Hail	0.75 in.	0	0	0	0
Pacific Junction	8/10/2003	6:13 PM	Hail	0.75 in.	0	0	0	0
Pacific Junction	8/10/2003	6:40 PM	Hail	0.75 in.	0	0	0	0
Glenwood	5/8/2004	10:50 PM	Hail	0.88 in.	0	0	0	0
Hastings	5/17/2004	3:50 PM	Hail	0.88 in.	0	0	0	0
Emerson	5/17/2004	4:15 PM	Hail	1.25 in.	0	0	0	0
Glenwood	5/22/2004	9:17 PM	Hail	1.00 in.	0	0	0	0
Malvern	7/12/2004	9:35 PM	Hail	0.88 in.	0	0	0	0
Regional	8/3/2004	6:56 PM	Hail	1.00 in.	0	0	0	0
Malvern	8/26/2004	4:52 PM	Hail	1.00 in.	0	0	0	0
Glenwood	4/11/2006	5:40 PM	Hail	0.75 in.	0	0	0	0
Glenwood	4/11/2006	6:20 PM	Hail	1.00 in.	0	0	0	0
Hastings	4/15/2006	6:15 PM	Hail	0.88 in.	0	0	0	0
Pacific Junction	5/8/2006	8:34 PM	Hail	0.75 in.	0	0	0	0
Pacific Junction	5/8/2006	8:48 PM	Hail	0.88 in.	0	0	0	0
Glenwood	6/27/2006	4:35 PM	Hail	0.75 in.	0	0	0	0
Malvern	6/27/2006	5:15 PM	Hail	0.75 in.	0	0	0	0
Silver City	7/13/2006	3:20 PM	Hail	0.75 in.	0	0	0	0
Glenwood	3/21/2007	19:15 PM	Hail	0.75 in.	0	0	0K	0K
Glenwood	3/31/2007	13:05 PM	Hail	0.75 in.	0	0	0K	0K
Mills	4/21/2008	23:50 PM	Hail	0.75 in.	0	0	0K	0K
Pacific Junction	4/22/2008	12:00 AM	Hail	0.75 in.	0	0	0K	0K

Pacific Junction	6/4/2008	16:40 PM	Hail	1.00 in.	0	0	0K	0K
Glenwood	6/4/2008	17:20 PM	Hail	1.75 in.	0	0	0K	0K
Emerson	6/4/2008	17:52 PM	Hail	0.88 in.	0	0	0K	0K
Glenwood	6/4/2008	20:10 PM	Hail	0.75 in.	0	0	0K	0K
Silver City	6/19/2008	15:00 PM	Hail	0.75 in.	0	0	0K	0K
Mills	6/20/2008	18:30 PM	Hail	0.75 in.	0	0	0K	0K
Tabor	9/23/2008	19:55 PM	Hail	0.75 in.	0	0	0K	0K
Malvern	9/23/2008	20:20 PM	Hail	0.75 in.	0	0	0K	0K
Emerson	9/23/2008	21:10 PM	Hail	0.75 in.	0	0	0K	0K
Hastings	9/23/2008	22:00 PM	Hail	0.75 in.	0	0	0K	0K
Emerson	4/29/2010	19:13 PM	Hail	0.88 in.	0	0	0K	0K
Emerson	3/22/2011	15:40 PM	Hail	0.88 in.	0	0	0K	0K
Regional	5/21/2011	18:16 PM	Hail	1.50 in.	0	0	0K	0K
Regional	6/9/2011	22:40 PM	Hail	1.00 in.	0	0	0K	0K
Regional	6/14/2011	21:48 PM	Hail	0.75 in.	0	0	0K	0K
Regional	6/20/2011	00:54 AM	Hail	0.75 in.	0	0	0K	0K
Glenwood	6/26/2011	19:41 PM	Hail	1.75 in.	0	0	0K	0K
Mineola	8/18/2011	16:40 PM	Hail	3.00 in.	0	5	0K	0K
Glenwood	8/18/2011	18:48 PM	Hail	0.88 in.	0	0	0K	0K
Glenwood	8/18/2011	18:53 PM	Hail	1.00 in.	0	0	0K	0K
Glenwood	8/22/2011	01:45 AM	Hail	1.75 in.	0	0	0K	0K
Regional	8/22/2011	03:15 AM	Hail	1.75 in.	0	0	0K	0K
				TOTALS:	0	5	160K	100K

High Winds

Location or County	Date	Time	Type	Magnitudes	Deaths	Injuries	Property Damage	Crop Damage
Regional	12/5/1993	1500	High Winds	0 kts.	0	0	500K	0
All of Iowa	4/14/1994	2200	High Winds	0 kts.	0	0	500K	0

Southwest Iowa	4/25/1994	1830	High Winds	0 kts.	0	0	500K	0
Most of Iowa	4/26/1994	900	High Winds	0 kts.	0	3	5.0M	0
All of Iowa	2/10/1995	0	High Winds	0 kts.	0	0	100K	0
Regional	2/10/1996	6:00 AM	High Wind	56 kts.	0	0	0	0
Regional	2/15/1996	8:00 AM	High Wind	48 kts.	0	0	0	0
Regional	4/25/1996	3:00 AM	High Wind	43 kts.	0	0	0	0
Regional	10/26/1996	3:00 PM	High Wind	59 kts.	0	0	0	0
Regional	10/29/1996	2:00 PM	High Wind	55 kts.	0	0	0	0
Regional	4/6/1997	8:00 AM	High Wind	52 kts.	0	0	0	0
Regional	10/13/1997	3:20 PM	High Wind	52 kts.	0	0	0	0
Regional	11/10/1998	1:00 AM	High Wind	51 kts.	0	0	0	0
Regional	3/30/1999	11:00 AM	High Wind	55 kts.	0	0	0	0
Regional	4/6/2001	11:00 PM	High Wind	50 kts.	0	0	0	0
Regional	6/23/2003	12:00 AM	High Wind	35 kts.	0	0	0	0
Regional	5/24/2008	4:40 AM	High Wind	50 kts.	0	0	0K	0K
				TOTALS:	0	3	6.600M	0

Thunderstorm Winds

Location or County	Date	Time	Type	Magnitudes	Deaths	Injuries	Property Damage	Crop Damage
Mills	8/2/1970	2130	Tstm Wind	0 kts.	0	0	0	0
Mills	9/26/1973	15	Tstm Wind	0 kts.	0	0	0	0
Mills	12/14/1975	10	Tstm Wind	0 kts.	0	0	0	0
Mills	6/19/1979	1733	Tstm Wind	78 kts.	0	0	0	0
Mills	6/12/1980	1620	Tstm Wind	0 kts.	0	0	0	0
Mills	7/15/1980	2255	Tstm Wind	0 kts.	0	0	0	0
Mills	7/14/1981	1630	Tstm Wind	0 kts.	0	0	0	0
Mills	7/14/1981	1800	Tstm Wind	0 kts.	0	0	0	0
Mills	6/14/1982	2115	Tstm Wind	0 kts.	0	0	0	0
Mills	6/14/1982	2115	Tstm Wind	0 kts.	0	0	0	0
Mills	5/6/1983	1645	Tstm Wind	0 kts.	0	0	0	0
Mills	4/11/1984	2000	Tstm Wind	0 kts.	0	0	0	0
Mills	5/11/1985	1705	Tstm Wind	52 kts.	0	0	0	0
Mills	6/23/1985	1730	Tstm Wind	0 kts.	0	0	0	0

Mills	6/23/1985	1850	Tstm Wind	0 kts.	0	0	0	0
Mills	5/12/1986	1758	Tstm Wind	52 kts.	0	0	0	0
Mills	9/22/1986	1350	Tstm Wind	50 kts.	0	0	0	0
Mills	6/24/1987	1908	Tstm Wind	52 kts.	0	0	0	0
Mills	8/4/1989	2050	Tstm Wind	50 kts.	0	0	0	0
Mills	6/14/1991	1950	Tstm Wind	57 kts.	0	0	0	0
Malvern	7/1/1994	2008	Tstm Wind	52 kts.	0	0	5K	0K
West of Hastings	7/15/1995	2020	Tstm Wind	52 kts.	0	0	0	0
Malvern	6/23/1996	3:40 PM	Tstm Wind	52 kts.	0	0	0	0
Glenwood	7/22/1996	11:40 AM	Tstm Wind	52 kts.	0	0	0	0
Malvern	6/21/1997	12:30 AM	Tstm Wind	52 kts.	0	0	0	0
Malvern	5/15/1998	1:54 PM	Tstm Wind	62 kts.	0	0	0	0
Glenwood	5/29/1998	1:15 AM	Tstm Wind	52 kts.	0	0	0	0
Glenwood	6/27/1998	9:25 PM	Tstm Wind	56 kts.	0	0	0	0
Hastings	8/6/1999	10:15 PM	Tstm Wind	55 kts.	0	0	8K	0
Mills	8/7/1999	12:40 AM	Tstm Wind	52 kts.	0	0	0	0
Glenwood	5/29/2000	11:48 PM	Tstm Wind	52 kts.	0	0	0	0
Glenwood	4/11/2001	11:40 AM	Tstm Wind	60 kts.	0	0	10K	0
Pacific Junction	4/20/2001	9:10 PM	Tstm Wind	50 kts.	0	0	0	0
Mills	6/17/2001	10:57 PM	Tstm Wind	56 kts.	0	0	0	0
Glenwood	6/18/2001	12:10 AM	Tstm Wind	55 kts.	0	0	0	0
Glenwood	5/5/2002	7:00 PM	Tstm Wind	50 kts.	0	0	0	0
Pacific Junction	6/12/2002	8:50 PM	Tstm Wind	50 kts.	0	0	0	0
Glenwood	10/1/2002	5:44 PM	Tstm Wind	50 kts.	0	0	0	0
Silver City	6/24/2003	4:20 PM	Tstm Wind	55 kts.	0	0	0	0
Silver City	7/5/2003	11:35 PM	Tstm Wind	55 kts.	0	0	0	0
Glenwood	7/5/2003	11:55 PM	Tstm Wind	50 kts.	0	0	0	0
Glenwood	5/30/2004	12:05 AM	Tstm Wind	50 kts.	0	0	0	0
Glenwood	8/3/2004	6:45	Tstm Wind	55 kts.	0	0	0	0

		PM						
Pacific Junction	4/20/2005	5:10 AM	Tstm Wind	55 kts.	0	0	0	0
Pacific Junction	6/28/2005	12:07 AM	Tstm Wind	60 kts.	0	0	0	0
Glenwood	7/25/2005	6:45 PM	Tstm Wind	50 kts.	0	0	0	0
Henderson	7/25/2005	7:05 PM	Tstm Wind	50 kts.	0	0	0	0
Glenwood	7/13/2006	2:55 PM	Tstm Wind	55 kts.	0	0	0	0
Malvern	7/13/2006	3:15 PM	Tstm Wind	50 kts.	0	0	0	0
Glenwood	8/6/2007	10:50 AM	Tstm Wind	60 kts.	0	0	0K	0K
Pacific Junction	8/12/2007	16:48 PM	Tstm Wind	52 kts.	0	0	0K	0K
Glenwood	8/12/2007	16:53 PM	Tstm Wind	55 kts.	0	0	0K	0K
Glenwood	8/12/2007	17:02 PM	Tstm Wind	55 kts.	0	0	0K	0K
Glenwood	8/20/2007	19:00 PM	Tstm Wind	52 kts.	0	0	0K	0K
Glenwood	8/20/2007	19:00 PM	Tstm Wind	55 kts.	0	0	0K	0K
Mineola	8/20/2007	19:05 PM	Tstm Wind	52 kts.	0	0	0K	0K
Mills	5/25/2008	19:00 PM	Tstm Wind	52 kts.	0	0	0K	0K
Hastings	6/4/2008	19:43 PM	Tstm Wind	55 kts.	0	0	0K	0K
Emerson	6/5/2008	18:38 PM	Tstm Wind	50 kts.	0	0	0K	0K
Malvern	6/8/2008	2:10 AM	Tstm Wind	55 kts.	0	0	0K	0K
Glenwood	6/27/2008	16:30 PM	Tstm Wind	55 kts.	0	0	0K	0K
Mills	7/15/2008	21:38 PM	Tstm Wind	52 kts.	0	0	0K	0K
Hastings	6/24/2009	14:22 PM	Tstm Wind	52 kts.	0	0	0K	0K
Glenwood	4/29/2010	22:00 PM	Tstm Wind	50 kts.	0	0	0K	0K
Regional	4/29/2010	22:00 PM	Tstm Wind	50 kts.	0	0	0K	0K
Malvern	4/29/2010	22:15 PM	Tstm Wind	50 kts.	0	0	0K	0K
Henderson	4/29/2010	22:20 PM	Tstm Wind	50 kts.	0	0	0K	0K
Pacific Junction	7/14/2010	19:40 PM	Tstm Wind	50 kts.	0	0	0K	0K

Hastings	8/3/2010	21:44 PM	Tstm Wind	52 kts.	0	0	0K	0K
Emerson	3/22/2011	15:40 PM	Tstm Wind	52 kts.	0	0	0K	0K
Western Iowa	6/9/2011	21:33 PM	Tstm Wind	56 kts.	0	0	0K	0K
Hastings	6/9/2011	22:00 PM	Tstm Wind	50 kts.	0	0	0K	0K
Hastings	6/26/2011	20:20 PM	Tstm Wind	52 kts.	0	0	0K	0K
Western Iowa	8/6/2011	19:31 PM	Tstm Wind	60 kts.	0	0	0K	0K
Hastings	8/6/2011	19:50 PM	Tstm Wind	56 kts.	0	0	0K	0K
Mineola	8/18/2011	16:40 PM	Tstm Wind	55 kts.	0	0	0K	0K
Glenwood	8/18/2011	18:53 PM	Tstm Wind	55 kts.	0	0	0K	0K
				TOTALS:	0	0	23K	50

Tornados

Location or County	Date	Time	Type	Magnitudes	Deaths	Injuries	Property Damage	Crop Damage
Mills	5/4/1950	2100	Tornado	F1	0	0	0K	0
Mills	5/6/1971	930	Tornado	F1	0	0	0K	0
Mills	8/28/1979	1725	Tornado	F3	0	0	3K	0
Mills	5/1/1983	1415	Tornado	F1	0	3	3K	0
Mills	8/22/1988	300	Tornado	F0	0	0	250K	0
Mills	9/4/1989	135	Tornado	F0	0	0	250K	0
Mills	6/16/1992	2314	Tornado	F2	0	0	25K	0
Mills	7/4/1992	1957	Tornado	F0	0	0	0K	0
Pacific Junction	5/16/1999	2:05 PM	Tornado	F0	0	0	5K	0
Glenwood	10/31/2000	8:08 PM	Tornado	F1	0	0	40K	0
Emerson	4/11/2001	11:37 AM	Tornado	F0	0	0	20K	0
Mineola	4/11/2001	11:45 AM	Tornado	F1	0	0	50K	0
Glenwood	4/27/2002	3:58 PM	Tornado	F0	0	0	0	0
Glenwood	5/5/2007	18:09 PM	Tornado	F0	0	0	0K	0K
Mills	5/5/2007	19:09 PM	Tornado	F0	0	0	0K	0K
Pacific Junction	6/4/2008	17:04 PM	Tornado	F1	0	0	0K	0K
Emerson	6/4/2008	17:50 PM	Tornado	F1	0	0	0K	0K

Mills	4/29/2010	21:57 PM	Tornado	F0	0	0	0K	0K
				TOTALS:	0	3	646K	0

Snow and Ice

Location or County	Date	Time	Type	Magnitudes	Deaths	Injuries	Property Damage	Crop Damage
Regional	11/24/1993	900	Freezing Rain	N/A	0	0	5K	0
Regional	12/1/1993	500	Freezing Rain	N/A	0	0	5K	0
Regional	1/2/1994	600	Snow/Heavy Snow	N/A	0	0	500K	0
Regional	1/26/1994	1300	Freezing Rain	N/A	0	0	500K	0
Regional	2/22/1994	1000	Heavy Snow	N/A	0	0	500K	0
Regional	1/5/1995	1800	Heavy Snow	N/A	0	0	40K	0
Regional	1/26/1995	2300	Freezing Rain	N/A	0	0	100K	0
Regional	11/14/1996	2:00 PM	Winter Storm	N/A	0	0	0	0
Regional	2/26/1997	3:00 PM	Winter Storm	N/A	0	0	0	0
Regional	4/11/1997	6:00 AM	Winter Storm	N/A	0	0	0	0
Regional	10/25/1997	8:00 PM	Heavy Snow	N/A	0	0	7.9M	900K
Regional	3/7/1998	4:00 PM	Winter Storm	N/A	0	0	0	0
Regional	2/22/1999	5:00 AM	Winter Storm	N/A	0	0	0	0
Regional	3/8/1999	12:00 AM	Winter Storm	N/A	0	0	0	0
Regional	12/10/2000	7:00 PM	Winter Storm	N/A	0	0	0	0
Regional	12/16/2000	2:00 AM	Winter Storm	N/A	0	0	0	0
Regional	12/17/2000	10:00 PM	Winter Storm	N/A	0	0	0	0
Regional	2/8/2001	2:00 PM	Winter Storm	N/A	0	0	0	0
Regional	2/23/2001	1:00 PM	Winter Storm	N/A	0	0	0	0
Regional	1/30/2002	12:00 PM	Winter Storm	N/A	0	0	0	0
Regional	1/15/2003	4:00 PM	Winter Storm	N/A	0	0	0	0
Regional	2/14/2003	5:30 PM	Winter Storm	N/A	0	0	0	0
Regional	12/9/2003	10:00 AM	Winter Storm	N/A	0	0	0	0
Regional	1/3/2004	11:00 PM	Winter Storm	N/A	0	0	0	0

Regional	1/25/2004	5:00 AM	Winter Storm	N/A	0	0	0	0
Regional	2/1/2004	12:00 AM	Winter Storm	N/A	0	0	0	0
Regional	2/5/2004	12:00 AM	Winter Storm	N/A	0	0	0	0
Regional	1/4/2005	2:00 PM	Winter Storm	N/A	0	0	0	0
Regional	1/20/2007	17:00 PM	Heavy Snow	N/A	0	0	0K	0K
Regional	3/2/2007	10:00 AM	Winter Weather	N/A	0	0	0K	0K
Regional	12/1/2007	4:00 AM	Ice Storm	N/A	0	0	0K	0K
Regional	12/10/2007	21:00 PM	Ice Storm	N/A	0	0	0K	0K
Regional	12/18/2008	18:00 PM	Ice Storm	N/A	0	0	0K	0K
Regional	12/18/2008	18:00 PM	Winter Storm	N/A	0	0	0K	0K
Regional	12/7/2009	23:00 PM	Winter Storm	N/A	0	0	0K	0K
Regional	12/24/2009	2:00 AM	Winter Storm	N/A	0	0	0K	0K
Regional	1/6/2010	7:30 AM	Winter Storm	N/A	0	0	0K	0K
Regional	1/6/2010	21:00 PM	Winter Weather	N/A	0	0	0K	0K
Regional	1/24/2010	17:00 PM	Winter Weather	N/A	0	0	0K	0K
Regional	1/9/2011	6:00 AM	Winter Weather	N/A	0	0	0K	0K
Regional	1/22/2011	16:00 PM	Winter Storm	N/A	0	0	0K	0K
Regional	1/31/2011	8:00 AM	Winter Storm	N/A	0	0	0K	0K
Regional	2/1/2011	12:00 AM	Winter Storm	N/A	0	0	0K	0K
Regional	2/24/2011	14:00 PM	Winter Weather	N/A	0	0	0K	0K
				TOTALS:	0	0	9.550M	900K

Extreme Temperatures

Location or County	Date	Time	Type	Magnitudes	Deaths	Injuries	Property Damage	Crop Damage
All of Iowa	1/14/1994	300	Extreme Cold	N/A	1	0	500K	0
All of Iowa	1/17/1994	600	Extreme Cold	N/A	0	0	500K	0
All of Iowa	2/10/1995	2200	Extreme Wind Chill	N/A	0	0	50K	0
Regional	7/10/1995	1000	Heat Wave	N/A	0	0	2.4M	0

Regional	1/17/1996	7:00 PM	Extreme Windchill	N/A	0	0	0	0
Regional	2/1/1996	10:00 PM	Extreme Cold	N/A	0	0	0	0
Regional	12/18/1996	4:00 PM	Extreme Windchill	N/A	0	0	0	0
Regional	12/23/1996	7:00 AM	Extreme Windchill	N/A	0	0	0	0
Regional	1/9/1997	10:00 PM	Extreme Windchill	N/A	0	0	0	0
Regional	1/16/1997	3:00 AM	Extreme Windchill	N/A	0	0	0	0
Regional	1/24/1997	10:00 PM	Extreme Windchill	N/A	0	0	0	0
Regional	1/27/1997	12:00 PM	Extreme Windchill	N/A	0	0	0	0
Regional	5/13/1997	1:00 AM	Extreme Cold	N/A	0	0	0	0
Regional	1/2/1999	6:00 PM	Extreme Windchill	N/A	0	0	0	0
Regional	7/19/1999	12:01 AM	Excessive Heat	N/A	0	0	0	0
Regional	12/16/2000	6:00 PM	Extreme Windchill	N/A	0	0	0	0
Regional	12/18/2000	10:00 PM	Extreme Windchill	N/A	0	0	0	0
Regional	7/28/2001	6:00 PM	Excessive Heat	N/A	0	0	0	0
Regional	8/1/2001	12:00 AM	Excessive Heat	N/A	0	0	0	0
Regional	1/22/2003	6:00 PM	Extreme Windchill	N/A	0	0	0	0
Regional	1/5/2004	7:00 PM	Extreme Cold/wind Chill	N/A	0	0	0	0
Regional	1/27/2004	12:00 AM	Extreme Cold/wind Chill	N/A	0	0	0	0
Regional	1/28/2004	12:00 AM	Extreme Cold/wind Chill	N/A	0	0	0	0
Regional	7/22/2005	11:00 AM	Excessive Heat	N/A	0	0	0	0
Regional	2/14/2007	4:00 AM	Cold/wind Chill	N/A	0	0	0K	0K
Regional	2/20/2008	5:00 AM	Cold/wind Chill	N/A	0	0	0K	0K
Regional	12/15/2008	2:00 AM	Cold/wind Chill	N/A	0	0	0K	0K
Regional	1/14/2009	23:00 PM	Cold/wind Chill	N/A	0	0	0K	0K

Regional	6/22/2009	13:00 PM	Excessive Heat	N/A	0	0	0K	0K
Regional	1/7/2010	19:00 PM	Cold/wind Chill	N/A	0	0	0K	0K
Regional	1/7/2010	19:00 PM	Extreme Cold/wind Chill	N/A	0	0	0K	0K
Regional	6/26/2010	14:00 PM	Heat	N/A	0	0	0K	0K
Regional	7/14/2010	11:00 AM	Heat	N/A	0	0	0K	0K
Regional	7/17/2010	12:00 PM	Heat	N/A	0	0	0K	0K
Regional	7/22/2010	13:00 PM	Heat	N/A	0	0	0K	0K
Regional	8/2/2010	13:00 PM	Heat	N/A	0	0	0K	0K
Regional	8/8/2010	12:00 PM	Excessive Heat	N/A	0	0	0K	0K
Regional	2/8/2011	1:00 AM	Cold/wind Chill	N/A	0	0	0K	0K
Regional	6/30/2011	14:00 PM	Heat	N/A	0	0	0K	0K
Regional	7/10/2011	13:00 PM	Heat	N/A	0	0	0K	0K
Regional	7/15/2011	12:00 PM	Excessive Heat	N/A	0	0	0K	0K
Regional	7/27/2011	16:00 PM	Heat	N/A	0	0	0K	0K
				TOTALS:	1	0	3.450M	0

APPENDIX M
Area Media Providers

AM Radio
- KSXP 590 AM, Omaha
- KCRO 660 AM, Omaha
- KMMQ 1020 AM, Plattsmouth/Omaha
- KFAB 1110 AM, Omaha
- KOIL 1180 AM, Bellevue/Omaha
- KKAR 1290 AM, Omaha
- KOTK 1420 AM, Omaha
- KOMJ 1490 AM, Omaha
- KLNG 1560 AM, Council Bluffs
- KOZN 1620 AM, Bellevue/Omaha

FM Radio
- KMLV 88.1 FM, Ralston/Omaha
- KYFG 88.9 FM, Omaha
- KIWR 89.7 FM, Council Bluffs
- KVNO 90.7 FM, Omaha
- KIOS 91.5 FM, Omaha
- KEZO 92.3 FM, Omaha
- KFFF 93.3 FM, Bennington/Omaha
- KBUL 93.7 FM, Omaha
- KQCH 94.1 FM, Omaha
- KQBW 96.1 FM, Omaha
- KQKQ 98.5 FM, Omaha
- KGOR 99.9 FM, Omaha
- KGBI 100.7 FM, Omaha
- KVSS 102.7 FM, Omaha
- KXKT 103.7 FM, Glenwood/Omaha
- KSRZ 104.5 FM, Omaha
- KKCD 105.9 FM, Omaha
- KOPW 106.9 FM, Plattsmouth/Omaha

Television
- KMTV 3, CBS affiliate
- WOWT 6, NBC affiliate
- KETV 7, ABC affiliate
- KXVO 15, CW affiliate
- KYNE 26, PBS member station, part of NET Television
- KBIN 32, PBS member station, part of Iowa Public Television (licensed to Council Bluffs)
- KHIN 36, PBS member station, part of Iowa Public Television (licensed to Red Oak)
- KPTM 42, Fox affiliate

Print
- Omaha-World Herald, daily
- Council Bluffs Daily Nonpareil, daily
- Glenwood Opinion-Tribune, weekly
- Malvern Leader, weekly

APPENDIX N
Notice of Public Hearing

NOTICE OF PUBLIC HEARING
MILLS COUNTY – ADOPTION OF MULTI-JURISDICTIONAL MITIGATION PLAN

The Mills County Board of Supervisors will hold a public hearing for the purpose of receiving input and suggestions from the general public concerning the adoption of the Mills County Multi-Jurisdictional Pre-Disaster Mitigation Plan. The public hearing will be at the Mills County Courthouse, 418 Sharp Street, Glenwood, at 10:00 a.m. on May 8, 2012.

Citizen participation is strongly encouraged.

A copy of the plan is available at the Mills County Auditor's Office for public review.

Written comments will be received at the Auditor's office until 10:00 a.m. on May 8, 2012.

APPENDIX O
Local Mitigation Plan Review Tool

APPENDIX A:
LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction:	**Title of Plan:**	**Date of Plan:**
Mills County, IA	Unincorporated Mills County, City of Emerson, City of Glenwood, City of Hastings, City of Henderson, City of Malvern, City of Pacific Junction, City of Silver City, Glenwood Community School District Multi-Jurisdictional Pre-Disaster Mitigation Plan	May 8, 2012

Local Point of Contact: Larry Hurst	**Address:** 418 Sharp Street Glenwood, IA 51534
Title: County Emergency Manager	
Agency: Mills County Emergency Management Agency	
Phone Number: 712-527-3643	**E-Mail:** lhurst@millscountyema.org

State Reviewer:	**Title:**	**Date:**

FEMA Reviewer:	**Title:**	**Date:**
Date Received in FEMA Region *(insert #)*		
Plan Not Approved		
Plan Approvable Pending Adoption		
Plan Approved		

SECTION 1:
REGULATION CHECKLIST

INSTRUCTIONS: The Regulation Checklist must be completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been 'Met' or 'Not Met.' The 'Required Revisions' summary at the bottom of each Element must be completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions must be explained for each plan sub-element that is 'Not Met.' Sub-elements should be referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable. Requirements for each Element and sub-element are described in detail in this *Plan Review Guide* in Section 4, Regulation Checklist.

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Pages i-ii; Section II, Pages 2-3	✓	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Section II, Page 2	✓	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Section II, Page 2	✓	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Section II, Page 2	✓	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Section VIII, Page 96	✓	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Section VIII, Page 96	✓	
ELEMENT A: REQUIRED REVISIONS			

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Section IV, Pages 26-69	✓	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	Section IV, Pages 26-69	✓	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Section IV, Pages 26-69	✓	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	Section IV, Pages 17-18	✓	
ELEMENT B: REQUIRED REVISIONS			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	Section III, Page 13; Section V, Pages 72-76	✓	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	Section III, Page 13	✓	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Section VI, Pages 77-81	✓	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	Section V, Pages 72-76	✓	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	Section VIII, Pages 93-95	✓	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Section VIII, Page 93	✓	
ELEMENT C: REQUIRED REVISIONS			

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))			
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))			
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))			
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	County Board Resolution No. 12-12; 3rd page of plan	✓	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	Appendix R	✓	
ELEMENT E: REQUIRED REVISIONS			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS d			

APPENDIX P

Meeting Sign-In Sheets

MILLS COUNTY

Hazard Mitigation Planning Meeting (County/City/School/Levee/Stakeholder Plan Review/Project Identification)

[illegible]

Glenwood, IA 51534

(PLEASE PRINT CLEARLY)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
John R. Poore	M+P Missouri River Levee District	402 306 6895	johnpoore@[illegible]

MILLS COUNTY

Hazard Mitigation Planning Meeting (County/City/School/Stakeholder Plan Review/Project Identification)

April 10, 2012 @ 8:30 A.M. – 9:30 A.M.

Glenwood Community Schools - Glenwood, IA 51534

(PLEASE PRINT CLEARLY)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
[illegible]	Mills Co. EMA	712-527-3643 / - 4967	lhurst@millscoema.org
[illegible]	Glenwood Schools	527-9034	embray@glenwoodschools.org

Began @ 11:00 a.m.
Adjourned @ 12:45 p.m.

MILLS COUNTY

Hazard Mitigation Planning Meeting (County/City/Stakeholder Plan Review/Project Identification)

October 27, 2011 @ 11:00 A.M. – 1:00 P.M.

Mills County Engineer's Complex – Training Room 403 Railroad Avenue Glenwood, IA 51534

(PLEASE PRINT CLEARLY)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
Jake Hansen	MAPA	(402)444-6166	jhansen@mapacog.org
Janet Yezek	New St Mary's DD	712-527-4026	djzeke@mchsi.com
Jim Goos	Mills Co. Vet Affairs & General Relief	712 527 5621	jgoos@millscoia.gov
Carol Robertson	Mills Co Auditor	527-3146	crobertson@millscoia.us
[illegible]	Sheriff		sheriff@millscoia.us
[illegible]	County Attorney	527-5233	ehansen@millscoia.us
Ron Kohn	Supervisor	527-4032	r.kohn@millscoia.us
Mike Sulentic	MCPH Env.	527-9699	mikes@mcph.us

MILLS COUNTY

Hazard Mitigation Planning Meeting (County/City/Stakeholder Plan Review/Project Identification)

October 27, 2011 @ 11:00 A.M. – 1:00 P.M.

Mills County Engineer's Complex – Training Room 403 Railroad Avenue Glenwood, IA 51534

(PLEASE PRINT CLEARLY)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
Jerad Getter	Conservation	7125279685	millsccbia@hotmail.com
Kevin Mayberry	Secondary Roads	712 527 4873	kmayberry@millsco.ia.us
ERIC JOHANSEN	GLENWOOD PD.	7125279820	GBLUEMEN@QWEST OFFICE NET
Mike Baumfalk	Henderson Fire Henderson Town Council	712-825-3129	mikebaumfalk@gmail
Adam Wainwright	Mills EMA	712 621 1592	medc312@gmail.com
Tamy Hurst	Mills Co. EMA	712-527-3643 527-5962	thurste millscityema.org
Grant Anderson	MAPA	402 444-6866 x220	ganderson1@mapacog.org

Emerson PDM Meeting
May 17, 2011
Start: 6 P.M. End: 6:30 P.M.

NAME	AFFILIATION	CONTACT INFO
Charles Myers	City Council/Mayor Pro tem	clmoyers@netins.net
Jackie Porter	City Clerk	ctyclerk@netins.net
Ron Williams	A.C. Emerson Fire	Efaberse netins.net
Don Lee	City Council Member	708-824-7528

Mills County
Pre-Disaster Mitigation Committee Meeting
Silver City

Date: April 21, 2011
Meeting Start Time: 5:45 P.M.
Meeting End Time: 6:55 P.M.

	Name	Representing	Telephone No.	E-Mail
1	Deb Belt	Council Member	( )	
2	Rose Mary Schoeney	Mayor	( )	
3	JEFF CARTER	FIRE DEPARTMENT	( )	
4	Jo Casper	City Clerk	( )	
5			( )	
6			( )	
7			( )	
8			( )	
9			( )	
10			( )	
11			( )	
12			( )	
13			( )	
14			( )	
15			( )	
16			( )	
17			( )	
18			( )	
19			( )	
20			( )	
21			( )	
22			( )	
23			( )	

Mills County PDM Planning Meeting
Henderson, IA
Community Center - 8 p.m.
February 14, 2011

NAME	WITH (Position / Department)
Bonnie Frank	City Clerk
Claudia Hoover	mayor
Mark Knop	Fire Chief & Farm Service Co
Mike Baumfalk	Council Member - Fire dept.
Garret Hogdel	Council Member
Wanda Williams	council
Helmut Hoover	"
Terry Byers	Council

Start: 8 p.m.
End: 9 p.m.

(37)

Mills Countywide PDM – Hastings Meeting
Hastings Community Building
January 20, 2011
10 a.m. – 12 p.m.

Name	Position	Phone #
Troy Hatcher	Mayor	712-624-8749
Lana Moyers	City Clerk	712-624-9021
Larry Hurst	Mills Co. EMA	712-527-3643
Lisa Hall	City Clerk	712-527-0279
Mike Marino	Council City Hastings	712-520-0052
Douglas M. Volz	Fire Fighter	712-520-3330

Start: 10 a.m.
End: 12 p.m.
(GA)

Mills County
Pre-Disaster Mitigation Committee Meeting
Glenwood

Date: November 17, 2010
Meeting Start Time: 2:30 P.M.
Meeting End Time: 3:30 P.M.

	Name	Representing	Telephone No.	E-Mail
1	ERIC JOHANSEN	GLENWOOD P.D.	( )	
2	Barry Cook	Glenwood P.W.D	( )	
3	ROBERT "Butch" FIDLER	GLENWOOD FIRE	( )	
4	Mary Smith	Glenwood City Hall	( )	
5	Matt Gray	Glenwood Fire	( )	
6			( )	
7			( )	
8			( )	
9			( )	
10			( )	
11			( )	
12			( )	
13			( )	
14			( )	
15			( )	
16			( )	
17			( )	
18			( )	
19			( )	
20			( )	
21			( )	
22			( )	
23			( )	

MILLS COUNTY

Hazard Mitigation Planning Meeting (County Strategy)

August 12, 2010 @ 11:30 A.M. – 1:00 P.M.

Mills County Engineer's Complex – Training Room 403 Railroad Avenue Glenwood, IA 51534

(*PLEASE PRINT CLEARLY*)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
Mark Schoening	Oak Township	712-520-2088	MISCHOENING@gmail.com
Mike Sukup	Mills Co. Public Health Env	712-527-9699	mikes@mcph.us
Tom Lins	Mills Co 911	712-520-3363	tlins@millscoia.us
Chris Govig	Mills County Assor	527-4883	Cgovig@millscoia.us
Gene Goos	Sheriff / Fairboard	527-4337 4600	
Kevin Mayberry	Engineer	712 527 4873 712 527 5124	kmayberry@millscoia.us
Richard Crouch	BOS		
Jerad Getter	Conservation	7125279685	millsccbia@hotmail.com

MILLS COUNTY

Hazard Mitigation Planning Meeting (County Strategy)

August 12, 2010 @ 11:30 A.M. – 1:00 P.M.

Mills County Engineer's Complex – Training Room 403 Railroad Avenue Glenwood, IA 51534

(PLEASE PRINT CLEARLY)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
David Carter	USDA NRCS Malvern	(712) 624-8606	david.carter@ia.usda.gov
Larry Hurst	Mills Co Emerg. Mgt. Dept.	712 527-3613 712-527-4962	lhurst@millscfema.org

Began @ 6pm
Adjourned @ 7pm
GA

MILLS COUNTY

Hazard Mitigation Planning Meeting (Cities/County) #4

June 10, 2010 @ 6:00 P.M.

Mills County Engineer's Complex – Training Room 403 Railroad Avenue Glenwood, IA 51534

(PLEASE PRINT CLEARLY)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
Marci L. McClellan	Mills County Attorney	527-5233	mlmcclellan@millscoia.us
Richard L Parks	Mills Co Eng office	527-4873	RPARKS@MILLSCOIA.US
Eugene Goos	Sheriff Mills Co Fairboard	527-4337	
Sheri Bower	Public Health	527-9699	sherib@mcph.us
	City of Malvern	527-0173	dshere5@msn.com
	City of Glenwood	712-527-4598	
	Mills Cty. EMA	712-527-3643	
Grant Anderson	MAPA	402-444-6866 x222	ganderson@mapacog.org

Mills County
Pre-Disaster Mitigation Committee Meeting

Date: May 13, 2010
Meeting Start Time: 6:06 PM
Meeting End Time: 7:00 PM

	Name	Representing	Telephone No.	E-Mail
1	Tom Ling	Mills Co 911	(712) 520-3363	tlingjoco911@yahoo.com
2	Eva Fall	Hastings	(712) 527-0279	
3	Richard Crouch	BOS.	( ) 624 8983	
4	Kevin Mayberry	Engineer	(712) 527 4873	
5	Eugene Goos	Sheriff/Mills Co Fairboard	(712) 527-4337	
6	Lori R Mitchell	City of Malvern	(402) 6609-5492	
7	Mary Smyth	City of Glenwood	(712) 527-4717	city.hall@mchsi.com
8	Carol Robertson	Mills Co Auditor	(712) 527-3146	crobertson@millscoia.us
9			( )	
10			( )	
11			( )	
12			( )	
13			( )	
14			( )	
15			( )	
16			( )	
17			( )	
18			( )	
19			( )	
20			( )	
21			( )	
22			( )	
23			( )	

MILLS COUNTY

Hazard Mitigation Planning Meeting (Cities/County) #2

April 29, 2010 @ 6:00 P.M.

Mills County Engineer's Complex – Training Room 403 Railroad Avenue Glenwood, IA 51534

(PLEASE PRINT CLEARLY)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
Lucas Lechtenberg	Glenwood Fire Dept	(402) 689-6016	lechtenberg1@hotmail.com
Toni Michel	City of Malvern	409-6669-5492	
Tom Ling	Mills Co 911	712-520-3363	
Kevin Mayberry	Mills County Engineer	712.527.4877	kmayberry@millscoia.us
Mary Smith	City of Glenwood	712-527-4717	city.hall@mdsi.com
Troy Hatcher	City of Hastings	712-624-8740	hatcherfamily@dishmail.net
Eugene Goos	Mills County Sheriff Mills County Fairboard	712-527-4337	sheriff@millscoia.us
Shen Boom	Mills Co PH	712-527-9699	Shenk@mgph.us

MILLS COUNTY

Hazard Mitigation Planning Meeting (Cities/County) #2

April 29, 2010 @ 6:00 P.M.

Mills County Engineer's Complex – Training Room 403 Railroad Avenue Glenwood, IA 51534

(PLEASE PRINT CLEARLY)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
[illegible]	City of Glenwood	527-4598 712-520-0845	
Butch Fisler	Glenwood Fire	527-1911 527-4709	
Larry Hurst	Mills Cty [illegible] [illegible]	527-3643	[illegible]

Meeting adjourned at 7:00 pm GA

MILLS COUNTY

Hazard Mitigation Planning Meeting (Cities/County) (#1)

April 1, 2010 @ 6:30 P.M.

Mills County Engineer's Complex – Training Room 403 Railroad Ave. Glenwood, IA

(PLEASE PRINT CLEARLY)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
Tom Ling	Mills Co 911	712-520-3363	Hinsjoco911@yahoo.com
Marci L. McClellan	Mills County Attorney	712.527.5233	mlmcclellan@millscoia.us
Richard Crouch	Mills Co Sup	712-624-8783	b
Mary Smith	City of Glenwood	712-527-4717(p) 712-527-3448(f)	city.hall@mchsi.com
Ryan Cahill	City of Hastings	712-624-9021	
Doug Shea	City of Malvern	712-624-8097 712-527-0173	dshea5@msn.com
Toni Michel	City of Malvern	712-624-8088 402-669-5492	tonifcuijo@gmail.com
Merrie L. Sargent	Pony Creek Drainage Watershed 4601 Middlewest Drainage		

MILLS COUNTY

Hazard Mitigation Planning Meeting (Cities/County) (#1)

April 1, 2010 @ 6:30 P.M.

Mills County Engineer's Complex – Training Room 403 Railroad Ave. Glenwood, IA

(PLEASE PRINT CLEARLY)

NAME	AGENCY/DEPARTMENT	PHONE/FAX	E-MAIL
Jerad Getter	Mills Co Conservation	527-9695	millsceb in@ hotmail.com
Penny Cook	City of Glenwood	520-0845	
Mike Sulzle	MCPH	527-9699	mikes@mcph.us
Larry Hurst	Mills County Homeland Sec. & Emergency Mgt. Agency	527-3643 527-4962	lhurst@millscityema.org
Kevin Mayberry	Mills County Engineer	527-4873 fax 5274	kmayberry@millscoia.us
Sheri Bowen	MCPH	527-9699	Sheri.b@mcph.us.

Meeting adjourned at 7:45pm GA

APPENDIX Q
Incorporated Jurisdiction Resolutions

CITY OF EMERSON

RESOLUTION # 2012-10

RESOLUTION APPROVING HAZARD MITIGATION PLAN

Purpose: A Resolution to approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan.

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was presented to the Emerson City Council on June 4th, 2012; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan identifies the City's potential hazards in the community; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City Council of the City of Emerson does hereby approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan this 4th day of June, 2012.

AYES: Bob DeLisi, Paul Faxon, Dave Galley, Judy Magers, Carl Newsome
NAYS: no
ABSENT: no

Mayor — Date: June 4, 2012

Attest: City Clerk (Jackie Porter) — Date: June 4, 2012

RESOLUTION # 3322

Purpose: A Resolution to approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan.

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was presented to the Glenwood City Council July 10, 2012; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan identifies the City's potential hazards in the community; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City Council of the City of Glenwood does hereby approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan this 10th day of July, 2012.

Mayor — Date: 07-10-12

CITY SEAL OF GLENWOOD Seal MILLS COUNTY, IOWA

Attest: City Clerk — Date: 07-10-12

RESOLUTION # 2012-25

Purpose: A Resolution to approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan.

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was presented to the Hastings City Council June 11, 2012; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan identifies the City's potential hazards in the community; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City Council of the City of Hastings does hereby approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan this 11th day of June, 2012.

Mayor — Date: 6/11/12

Attest: City Clerk — Date: 6-11-12

Roll Call	yea	nay	absent
Chris	X		
Mike C	X		
Mike M	X		
Kindra			X
Dustin			X

RESOLUTION # 2012-05

Purpose: A Resolution to approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan.

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was presented to the Henderson City Council June 13, 2012; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan identifies the City's potential hazards in the community; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City Council of the City of Henderson does hereby approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan this 13th day of June, 2012.

Mike Baumfalk
Mayor

6-13-2012
Date

Bonnie Trunk
Attest: City Clerk

6-13-2012
Date

RESOLUTION # 2012-07

Purpose: A Resolution to approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan.

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was presented to the Malvern City Council, June 11, 2012; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan identifies the City's potential hazards in the community; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City Council of the City of Malvern does hereby approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan this 11th day of June, 2012.

Mayor — Date: 6-11-12

Attest: City Clerk — Date: 6-11-12

RESOLUTION # 2012-08

Purpose: A Resolution to approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan.

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was presented to the Pacific Junction City Council June 18th, 2012; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan identifies the City's potential hazards in the community; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City Council of the City of Pacific Junction does hereby approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan this 18th day of June, 2012.

Mayor — Date: 6-18-12

Attest: City Clerk — Date: 6-18-12

ORIGINAL

RESOLUTION # 06-12-01

Purpose: A Resolution to approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan.

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was presented to the Silver City, City Council , June 6, 2012; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan was prepared in compliance with the Hazard Mitigation Planning Requirements of the Disaster Mitigation Act of 2000 provided by the Iowa Homeland Security and Emergency Management Division; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan identifies the City's potential hazards in the community; and

WHEREAS, the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan includes a profile of hazard events, a vulnerability assessment, evaluation of mitigation goals and a plan maintenance process.

NOW THEREFORE BE IT RESOLVED that the City Council of the City of Silver City does hereby approve and adopt the Mills Countywide Multi-Jurisdictional Hazard Mitigation Plan this 12th day of June, 2012.

Mayor — Date: 6-13-12

Attest: City Clerk — Date: 6/12/12

ELSA J. CARPER
Notarial Seal - IOWA
Commission No. 765261
My Commission Expires October 25, 2013