

EMERGENCY MANAGEMENT COMMISSION

POTTAWATTAMIE COUNTY

COMPREHENSIVE EMERGENCY PLAN

PART B – MITIGATION

2018

Pottawattamie County
Emergency Management Agency
227 S. 6th Street, Suite 23B
Council Bluffs, Iowa 51501

POTTAWATTAMIE COUNTY
MULTI-JURISDICTION HAZARD MITIGATION PLAN

Pottawattamie County, Iowa

2018



Prepared by:

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FOREWORD

The Pottawattamie County Emergency Management Agency, in coordination with jurisdictional and organizational stakeholders, prepared the Multi-Jurisdiction Hazard Mitigation Plan for the jurisdictions of Pottawattamie County, Iowa.

The planning committee was representative of all jurisdictions covered in the plan and coordinated planning support at the local level in development of this plan.

Listed below are the planning committee primary points of contact, significant local plan contributors and the jurisdictions represented in the planning process.

Multi-Jurisdiction Hazard Mitigation Planning Committee		
Name	**Title**	**Jurisdiction**
Doug Reed, Chair	EM Director	Pottawattamie Co EMA
Michael Bertacini, Secretary	EM Specialist	Pottawattamie Co EMA
Supervisor Tim Wichman	Supervisor	County of Pottawattamie
Hon. Aaron Long	Mayor	City of Avoca
Hon. Tim Todd	Mayor	City of Carson
Hon. Ron Cumberledge	Mayor	City of Carter Lake
Hon. Matt Walsh	Mayor	City of Council Bluffs
Hon. Brian Shea	Mayor	City of Crescent
Hon. Harold Hoffman	Mayor	City of Hancock
Hon. Mitchell Kay	Mayor	City of McClelland
Hon. Gary Wax	Mayor	City of Macedonia
Hon. Kevin Zimmerman	Mayor	City of Minden
Hon. Dawn Goodsell	Mayor	City of Neola
Hon. Brant Miller	Mayor	City of Oakland
Hon. Tom Lewis	Mayor	City of Treynor
Hon. Dennis Bardsley	Mayor	City of Underwood
Hon. Gene Larsen	Mayor	City of Walnut
Jesse Ulrich	Superintendent	AHSTW Community Schools
Dr. Vickie Murillo	Superintendent	Council Bluffs Community Schools
Larry Gray	Superintendent	Heartland Christian Schools
Mark Schweer	Superintendent	Lewis Central Community Schools
Dr. Timothy Mitchell	Superintendent	Riverside Community Schools
David Schweitzer	President	St. Albert Catholic Schools
Lou Howell	Superintendent	Treynor Community Schools
Angela Huseman	Superintendent	Tri-Center Community Schools
Ed Hawks	Superintendent	Underwood Community Schools
Kevin Bollinger	Security Supervisor	Iowa Western Community College

Multi-Jurisdiction Hazard Mitigation Plan Local Contributors		
Name	Title	Jurisdiction
Matt Wyant	Director	Pottawattamie Co Planning Dept.
Maria Sieck	Public Health Admin.	Pottawattamie Co Planning Dept.
Lt. Andy Brown	Court Security	Pottawattamie Co Sheriff
David Bayer	Chief Information Officer	Pottawattamie Co IT
Mark Shoemaker	Director	Pottawattamie Co Conservation
John Rassmussen	County Engineer	Pottawattamie Co Eng./Roads
Lt. Sam Arkfeld	Civil/Records	Pottawattamie Co Sheriff
Clint Fichter	City Manager	City of Avoca
Drew Becker	Fire Chief/Public Works	City of Avoca
Brianne Duede	City Clerk	City of Carson
Dan Easton	Fire Chief	City of Carson
Chad Gordon	Maintenance Supervisor	City of Carson
Phillip Newton	Fire-EMS Coordinator	City of Carter Lake
Stan Olson	Interim Supervisor	City of Carter Lake Public Works
Justin James	Fire Chief	City of Council Bluffs
Tim Carmody	Police Chief	City of Council Bluffs
Matt Cox	City Engineer	Council Bluffs Public Works
Pat Miller	Operations Director	Council Bluffs Public Works
Brandon Garrett	Director	Council Bluffs Community Dev.
Doug Drummey	CEO/GM	Council Bluffs Water Works
Galen Barrett	Fire Chief	City of Crescent
Craig Peterson	Maintenance Supervisor	City of Crescent
Jim Kock	Fire Chief	City of Hancock
Rob Eckes	Fire Chief	Macedonia Fire Dept.
Ron Ransom	Maintenance Supervisor	City of Macedonia
Curtis Letner	Fire Chief	City of McClelland
Denise Magnuson	City Clerk	City of McClelland
Tom Schneckloth	Fire Chief	City of Minden
Teresa Tenner	City Clerk	City of Minden
Phil Bintz	Maintenance Supervisor	City of Minden
Paul Ward	Fire Chief	City of Neola
Clint Fichter	City Manager	City of Neola
Jeremy VanArsdol	Maintenance Supervisor	City of Neola
Mike Baragary	Public Works Director	City of Oakland
Marissa Lockwood	City Clerk	City of Oakland
Russ Maguire	Fire Chief	Treynor Fire Dept.
Kelly Groskurth	City Clerk	City of Treynor
Justin Mayabb	Public Works Director	City of Underwood
Cindy Sorlein	City Clerk	City of Underwood
Jim Pingel	Fire Chief	City of Underwood
Terri Abel	City Clerk	City of Walnut
Jim Blum	Superintendent	City of Walnut
Justen Tooley	Fire Chief	City of Walnut

The Multi-Jurisdiction Hazard Mitigation Plan was funded completely through local budget appropriations. Historically, this plan was funded through a grant from Iowa Homeland Security and Emergency Management and the Federal Emergency Management Agency which allowed for the contracting of the development of the plan.

Due to decreased mitigation planning grant funds this plan has been developed by local agency staff and local budget dollars with a priority objective of maintaining a multi-jurisdictional hazard mitigation plan that meets the standards set forth in the Disaster Mitigation Act of 2000 [Public Law 106-390—Oct. 30, 2000] to keep jurisdictions eligible for available mitigation grants that may become available during the lifecycle of this five-year plan.

The predecessor to this plan was approved by the State of Iowa Homeland Security and Emergency Management Department and the Federal Emergency Management Agency in 2013 as a partial multi-jurisdiction plan. It was amended in May of 2014 to include the City of Council Bluffs, creating a true countywide multi-jurisdictional plan.

It should be noted that this iteration of the mitigation plan has been completely redrafted to exclude ancillary or irrelevant information from historic single jurisdiction plans that carried over into the process in 2013 and 2014. Hazards have been amended to align more closely with the identified hazards in the Iowa Statewide Mitigation Plan and legacy mitigation projects or strategies that have not been addressed were removed.

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CHAPTER I
EXECUTIVE SUMMARY

The Pottawattamie County Multi-Jurisdiction Hazard Mitigation Plan was developed for and applicable to (1) county government, (14) incorporated municipal governments, (9) community school districts, and (1) community college.

The entities included in this plan are:

- County of Pottawattamie, Iowa
- City of Avoca
- City of Carson
- City of Carter Lake
- City of Council Bluffs
- City of Crescent
- City of Hancock
- City of McClelland
- City of Macedonia
- City of Minden
- City of Neola
- City of Oakland
- City of Treynor
- City of Underwood
- City of Walnut
- Avoca-Hancock-Shelby-Tenant (AHSTW) Community School District
- Council Bluffs Community School District
- Heartland Christian Schools
- Lewis Central Community School District
- Riverside Community School District
- St. Albert Catholic Schools
- Treynor Community School District
- Tri-Center Community School District
- Underwood Community School District
- Iowa Western Community College

The previously adopted mitigation plan (2013) was a culmination of the adopted single jurisdiction plans that existed previous to that year. All governments were combined into a multi-jurisdictional plan except for the City of Council Bluffs. Council Bluffs was added to plan, by amendment, in 2014 upon expiration of their single jurisdiction plan.

The emergency management agency initiated this update by coordinating the formation of a planning committee and beginning the process of updating countywide data and information contained in the plan.

Planning contributors identified sixteen (16) hazards that were possible or likely to occur throughout Pottawattamie County. This is a significant reduction in previously identified hazards. Although the DMA2000 standards require only addressing natural hazards, planners included certain man-made and/or technological hazards in this plan to capture the entirety of risk and mitigation strategies to address that risk. The reduced number of identified hazards was primarily due to combining like-hazards. The table below identifies the cross-walk from the 2013 to the 2018 hazard identification and also provides justification on the removal of non-applicable hazards.

The study of these hazards led the planners and contributors to examine current mitigation activities and assessed gaps in the mitigation and preparedness of these hazards. Planners and contributors also addressed what were called “legacy” goals, objectives, and activities to see if they were still valid based on applicability and/or possibility, considering funding and other factors. This was done in order to streamline the goals, objectives and activities to ensure they focused on the updated identified hazards, and, if accomplished, would contribute to actual impact reduction of hazards on citizens, businesses, and governments countywide.

The adoption of this plan by all governing bodies represented in the plan demonstrates a countywide commitment to fulfill the identified mitigation goals and objectives. Adoption further legitimizes the plan and authorizes responsible entities to execute their mitigation responsibilities identified herein.

CHAPTER II
PURPOSE AND PROCESS

2.1 Purpose

There are three (3) primary purposes for the development of the Multi-jurisdictional Mitigation Plan:

- To protect the health, safety, and economic interests of residents and businesses by reducing the impacts of natural and manmade catastrophic or disaster events through planning, awareness, and implementation. 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.

- Ensure compliance with the requirements set forth in Iowa Administrative Code 605—7.3 (29C), 7.3(4)(d) *Planning* and the Disaster Mitigation Act of 2000 [Public Law 106-390—Oct. 30, 2000] as established by the Federal Emergency Management Agency.

- Identify short- and long-term strategies to eliminate hazards or reduce the impact of hazards that cannot be eliminated.

2.2 Process

Work on this plan began with assembling background information, using the State of Iowa Hazard Mitigation Plan and previously approved Pottawattamie County Hazard Mitigation Plan materials. Additional sources of information included: U.S. Census Bureau, the USCB American Community Survey, Iowa Department of Management, Western Iowa Development Association, National Flood Insurance Program, Pottawattamie County Conservation, Iowa Department of Revenue, Pottawattamie County Assessor, Pottawattamie County Geographic Information Services, Federal Emergency Management Agency, National Weather Service, Council Bluffs Chamber of Commerce, Iowa State University, University of Iowa, Pottawattamie County Auditor, and staff from local jurisdictions. Information from these plans and sources were used to develop this plan's background information, vulnerabilities, critical facilities, historic events, valuations, and other pertinent details.

The planning process was facilitated by the Emergency Management Agency in consultation and coordination with each of the political subdivisions included in this plan. Local and/or regional agencies with hazard mitigation responsibilities/activities or development regulatory authority are represented on the planning team and contributors list found at pages i and ii. For the purposes of this plan "stakeholders" consists of neighboring emergency managers, who in turn, represent any of their jurisdictional interested parties in relation to this mitigation plan, updates, and activities. No contiguous partners elected to attend any formal meetings and after invitation to review the draft plan, no additional comments or input was provided.

Planning participants and stakeholders were notified of this planning process through various means, including: in-person notification at briefings/meetings/regional coordination meetings, email, and phone calls. Participation in the process was conducted in a similar manner with participants being inclusive in the project through various means, such as: meeting attendance, email, telephone, and in-person collaboration. Committee members and contributors completed required tasks between meetings to gather, validate, and collate planning materials and data needed for the project.

PLANNING TIMELINE

12-21-16	Initial project briefing and process orientation. (public meeting)
01-2017	Data collection and plans review.
03-2017	HVA draft completed.
12-11-2017	HVA review and approval. (participant meeting)
01-2018	Validate data and updates provided by participants.
01-25-2018	Review of draft and discuss goals/objectives. (public meeting)
02-2018	Update mitigation activities, projects, goals /objectives.
04-2018	Validate final goals/objectives, projects,
activities	with participants.
05-2018	Final review period.
05-21-2018	Submitted to Iowa for certification.

The planning process officially began in December 2016 by engaging public officials and local stakeholders in the development of a planning team. Committee members were initially briefed on the timeline for the planning process and milestones to be accomplished. All meetings requiring deliberation and/or discussion on the plan were conducted in accordance with Iowa's open meetings laws [Chapter 21, Code of Iowa] to ensure that the basis and rationale of governmental decisions, as well as those decisions themselves, are easily accessible to the people. Advertisement of these public meetings, where citizens could participate in discussion, review materials, and provide input was conducted by publically posting meeting notices and providing copies of the notices to all city clerks for posting in their individual communities. No citizens elected to attend any of the open public meetings.

Upon completion of a final draft, the plan was made available for review and comment by all jurisdictions covered in the plan, contiguous county emergency managers, and the public. Upon receipt of review notes or comment, a final "clean" draft was finalized for submission to Iowa Homeland Security and Emergency Management Department and the Federal Emergency Management Agency for approval and certification.

Approval and adoption by each legal jurisdiction will be documented by Resolution and filed with the FEMA approved mitigation plan upon execution of each. Prior to adoption by the legal jurisdictions, announcement of plan approval is announced on a legally advertised agenda in order to provide information or answer public questions regarding the plan, prior to adoption, at a legally conducted open public meeting that complies with the Iowa Open Meetings law.

PLANNING PROCESS / PARTICIPATION																										
		Participating Jurisdiction																								
Date	Activity	County	Avoca	Carson	Carter Lake	Council Bluffs	Crescent	Hancock	McClelland	Macedonia	Minden	Neola	Oakland	Treynor	Underwood	Walnut	A-H-S-T-W	CBCSD	HCS	Lewis Central	Riverside	St. Alberts	Treynor	Tri-Center	Underwood	IWCC
12-21-16	Project brief, process orientation.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X										
01-2017	Data collection and plan review.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
03-2017	HVA review and update.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
12-11-2017	HVA final draft presented, critical facilities confirmed, HVA approval.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X										
01-25-2018	Goals, objectives review.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X										
02-2018	Data collection /updates to goals, objectives, mitigation activities.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
04-2018	Goals, objectives, activities for plan inclusion finalized.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5-2018	Final draft review period.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Ongoing	Resolutions adopted.																									

CHAPTER III
COUNTY-WIDE PROFILE

This chapter of the plan describes a variety of characteristics of Pottawattamie County. It includes demographic, climactic, geographic, and community specific information. Some datasets are not available for unincorporated areas of the county.





Pottawattamie County is a county located in the southwest corner of Iowa. The county was established on February 24, 1847 and organized on September 21, 1848. The county seat is in the City of Council Bluffs. Other population centers in Pottawattamie County include: Avoca, Carson, Carter Lake, Crescent, Hancock, Macedonia, McClelland, Minden, Neola, Oakland, Treynor, Underwood and Walnut.

3.1 History

Pottawattamie County was a part of the Pottawattamie Purchase of 1847. The county was originally named after the Native American tribe that once existed and lived within the Iowa Territory. Pottawattamie is a traditional word meaning “Fire Keepers” or “Keepers of the Council Fires”.

The county commissioners proposed Kanesville and Pleasant Grove, about 8 miles apart, for the county seat. At an election held April 7, 1851, all but seven votes were cast for Kanesville, named for Colonel Kane of Philadelphia. Kanesville was previously known as Hart’s Bluff and then Miller’s Hollow before it was renamed Council Bluffs on January 19, 1853. The rapidly growing village had a population of about 7,000 at the time, mainly Mormons on their way from Illinois to Utah. It was also an important outfitting town for gold seekers and others on their way to California and the West. Hyde’s New Hall was used for several years for the court house.



The historic courthouse on South Pearl Street was perhaps the most famous landmark in Council Bluffs for almost ninety years. Construction of the courthouse and the Squirrel Cage Jail began in 1885 and was completed in 1888, replacing the original courthouse, which dated to 1868. The new courthouse included an 11-foot-tall statue of Lady Justice. She was placed on a platform 74 feet above the sidewalk for some 90 years. The statue is now displayed in the lobby of the current 1978 courthouse. The ground for the new modern facility was broken in February 1975 and the building was dedicated November 20, 1977.

The Squirrel Cage Jail was invented by William H. Brown and Benjamin F. Haugh of Indianapolis, Indiana. Seventeen human rotary or "squirrel cage" jails were built in the late 1800's. Only three of these remain. One resides in Council Bluffs, and the others in Missouri and Indiana. The Council Bluffs jail is the only one left having three stories. The jail was designed to achieve maximum security with minimum personal contact between the prisoner and the jailer. The jail was placed on the National Register of Historical Places in 1972 and is now operated as a small museum.



Avoca is the judicial seat of eastern Pottawattamie County. This town of 1,500 residents was founded in 1869. It was originally known as Pacific, and then Botna. It was finally named Avoca in reference to a Thomas Moore poem entitled "The Meeting of the Waters". Avoca is home to the Old Time Music Festival which is held annually the week before Labor Day. This festival last for seven days; over 600 musicians perform on ten stages.



The Loess Hills (pronounced "luss"), which span the western part of the county, were once home to many prehistoric species. Mammoths, mastodons, camels, bison, musk ox, ground sloth, three-toed horses, dire wolf, stag moose, and stilt-legged deer were among the animal fossils discovered in the Loess Hills. Today the Loess Hills are home to many different species of birds, reptiles and amphibians.



The Loess Hills of western Iowa were deposited in three stages during the last two major glaciations of the upper Midwest. When continental glaciers in the upper Midwest began melting, many rivers (including the Missouri) became conduits for vast quantities of melt-water. This melt-water contained fine grained sediment of silt, sand, and clay. Strong winds created by air pressure gradients around glaciers swept some of this sediment out of the river floodplains and deposited it downwind creating the loess hills.

General Grenville Mellen Dodge is an important historical figure in Pottawattamie County.



General Dodge organized the Fourth Iowa Volunteers and the 2nd Iowa Battery to serve in the Civil War. In 1864, the general lead a campaign to rid Missouri of guerillas who were terrorizing residents of the state. In 1866, he became Chief Engineer for the Union Pacific Railroad's westward movement. He also became a United States Congressman that same year. On May 10, 1869 the Union and Central Pacific Railroads met in Promontory Summit, Utah. General Dodge's crew had laid 1,086 miles of track. In 1869, General Dodge and his wife, Ruth Anne Dodge, started construction of their home in Council Bluffs. The house is located at 605 Third Street. The General Dodge House is a National Historic Landmark. The house is now a museum that is open to the public.

3.2 Government

The County of Pottawattamie's main unit of government, the Board of Supervisors, is comprised of five elected officials, including an administrative staff that serves numerous offices/departments. The term of office for Board members is four years. The Board meets weekly with additional meetings called by the Chairperson when necessary. Additional elected officers of the county include the County Auditor, County Treasurer, County Recorder, County Attorney, and the County Sheriff.

Each incorporated city elects a Mayor and five (5) council members to serve a term of two (2) to four (4) years, as selected in each City Charter. Each city determines the type of municipal services it provides and varies among the fourteen (14) communities.

3.3 Climate

The climate of the county and region is continental with relatively warm summers and cold, dry winters. The region is situated between the humid east and dry west, therefore it experiences climactic fluctuations. The fluctuations between the two zones produce weather conditions for periods that are characteristic of either zone, or a combination of both. Low pressure systems commonly affect the weather of the area by causing periodic and rapid changes, especially during the winter months.

Most precipitation falls during the evening as sharp showers or thunderstorms, which occur mostly during the growing season of April through September. About 75 percent of the total precipitation falls during that period. Although winters are relatively cold, precipitation is light, accounting for 10 percent of total annual precipitation.

3.4 Legal Jurisdictions

The following are the legal jurisdictions within geographic Pottawattamie County with correlating 2016 U.S. Census Bureau estimates.

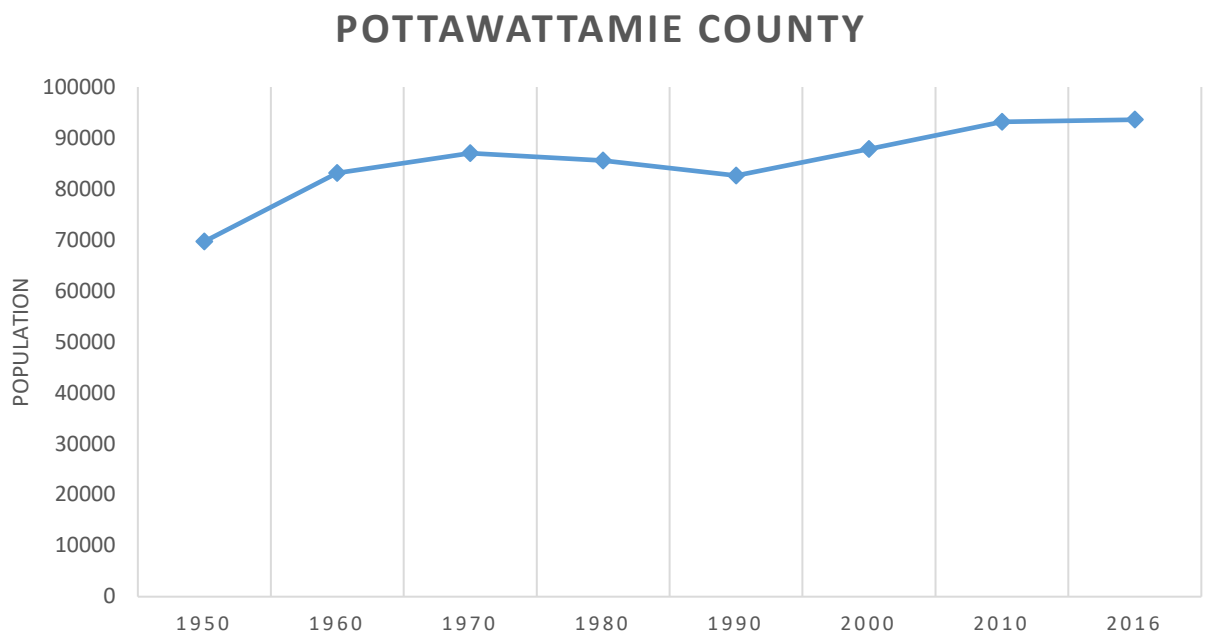
Countywide Population – 93,582			
Avoca	1,513	Minden	594
Carson	815	Neola	859
Carter Lake	3,784	Oakland	1,509
Council Bluffs	62,524	Shelby[1]	23
Crescent	617	Treynor	950
Hancock	195	Underwood	939
Macedonia	245	Walnut	779
McClelland	150	Unincorporated County	18,086

[1] The City of Shelby is in both Pottawattamie and Shelby Counties; the population figure for Shelby accounts only for those on the Pottawattamie side of the boundary. The City of Shelby is accounted for in the Shelby County Hazard Mitigation Plan but is included in all preparedness programs and considerations.

3.5 Population Trends

Pottawattamie County's total population is ranked third (3rd) out of eight (8) counties in the Omaha, NE – Council Bluffs, IA Metropolitan Statistical Area (MSA), and eighth (8th) out of ninety-nine (99) counties in the State of Iowa according to the 2010 census. Population data for Pottawattamie County and it municipalities is provided in the table below.

Jurisdiction	1950	1960	1970	1980	1990	2000	2010	2016
Pottawattamie County Totals	69,682	83,102	86,991	86,561	82,628	87,803	93,158	93,582
Avoca	1,595	1,540	1,535	1,650	1,497	1,610	1,506	1,513
Carson	596	583	756	716	705	668	812	815
Carter Lake	1,183	2,287	3,268	3,438	3,200	3,248	3,785	3,784
Council Bluffs	45,429	55,641	60,348	56,449	54,315	58,268	62,230	62,524
Crescent	N/A	296	284	547	469	537	617	617
Hancock	264	252	228	254	201	207	196	195
Macedonia	208	290	330	279	262	325	246	245
McClelland	159	150	146	177	139	129	151	150
Minden	328	355	433	483	539	564	599	594
Neola	839	870	968	839	909	845	842	859
Oakland	1,296	1,340	1,603	1,552	1,496	1,487	1,527	1,509
Treynor	247	368	472	981	897	950	919	950
Underwood	278	337	424	448	515	688	917	939
Walnut	888	777	870	897	857	877	785	779
Unincorporated County	16,282	18,016	15,320	17,793	16,560	17,336	18,026	18,086



The median age of residents is 38.5 years old based on the American Community Survey's current five (5) year estimate.

3.6 Housing

The following table illustrates when homes were built in the county and its municipalities. Approximately forty (40) percent of the homes were built prior to 1940 in seven (7) communities. More homes were built prior to 1940 than any other decade throughout much of the county.

Jurisdiction	Before 1940	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2004	After 2005
Unincorporated County	28.7	5.3	14.0	11.9	14.0	6.6	10.0	7.4	2.0
Avoca	55.2	6.7	7.2	8.6	5.7	5.5	5.8	5.1	0.2
Carson	41.2	3.3	8.7	10.7	16.7	10.4	5.4	3.6	0.0
Carter Lake	11.6	6.8	15.0	23.9	19.9	4.1	10.9	3.0	4.8
Council Bluffs	29.3	5.9	16.7	10.9	11.5	6.3	9.7	8.1	1.6
Crescent	10.7	0.0	3.6	15.2	44.2	11.2	11.2	0.0	4.1
Hancock	64.8	9.1	10.2	2.3	5.7	1.1	4.5	2.3	0.0
Macedonia	45.8	4.6	7.6	6.1	1.5	20.6	12.2	1.5	0.0
McClelland	53.9	1.5	6.0	7.5	13.4	0.0	9.0	9.0	0.0
Minden	26.4	8.3	4.9	10.2	14.7	14.0	17.4	0.0	4.2
Neola	48.8	2.1	5.5	15.8	13.0	9.1	3.9	0.8	1.0
Oakland	27.2	8.0	11.9	15.6	16.8	6.5	8.5	5.4	0.0
Treynor	15.7	0.8	9.0	19.1	33.2	5.2	15.5	1.5	0.0
Underwood	20.0	0.0	17.5	8.9	21.9	4.1	16.5	2.9	8.3
Walnut	64.5	3.2	7.8	10.5	9.1	2.7	1.3	0.8	0.0

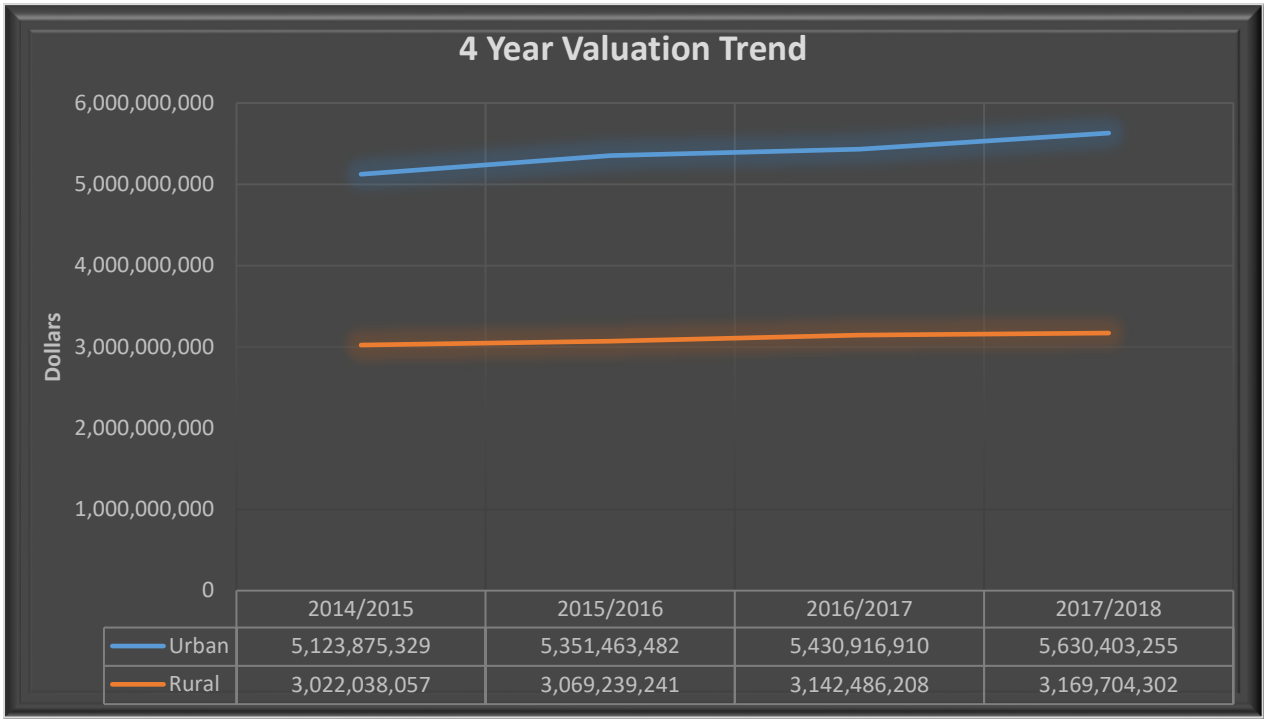
Pottawattamie County and its municipalities all experienced positive growth in median home valuation since 2000 and is shown in the table below sorted by percentage of change.

JURISDICTION	2000 MEDIAN VALUE	2016 MEDIAN VALUE	% CHANGE
Underwood	$95,900	$168,900	76.12%
Hancock	$46,500	$76,500	64.52%
McClelland	$93,000	$143,300	54.09%
Unincorporated County	$84,900	$128,500	51.35%
Avoca	$73,000	$109,800	50.41%
Treynor	$108,100	$158,700	46.81%
Council Bluffs	$78,200	$113,500	45.14%
Crescent	$102,900	$148,100	43.93%
Carter Lake	$70,400	$100,300	42.47%
Oakland	$76,800	$106,700	38.93%
Neola	$86,500	$119,100	37.69%
Carson	$82,000	$112,100	36.71%
Minden	$97,000	$120,500	24.23%
Walnut	$66,900	$82,100	22.72%
Macedonia	$62,900	$74,400	18.28%

3.7 Financial Analysis

The jurisdictions within Pottawattamie County receive their tax revenues through tax levies based on an approved rate multiplied by per $1,000 of assessed valuation of residential, agriculture, and commercial property taxes. The approved tax levy rate varies by year and authorized taxing authority and/or district. Assessed valuations by jurisdiction are shown below, sorted by valuation.

Jurisdiction	Assessed Valuation
Council Bluffs	$4,839,011,160
Unincorporated County	$3,169,704,302
Carter Lake	$217,745,256
Avoca	$95,105,627
Oakland	$80,876,322
Treynor	$61,665,568
Underwood	$59,457,373
Neola	$50,027,885
Crescent	$42,709,556
Carson	$39,777,580
Walnut	$39,593,464
Minden	$28,948,553
Hancock	$12,901,989
Macedonia	$9,966,129
McClelland	$7,822,911



3.8 Public Works

3.8.1 Roads

The road system in Pottawattamie County consists of 77 miles of interstate highway, 251 miles of paved two lane roads and 1,231 miles of unpaved two lane road miles with 346 bridges, over 1,700 culverts, and approximately 17,000 signs. These figures do not include the numerous miles of incorporated city streets and infrastructure within the fourteen (14) incorporated cities.

3.8.2 Water Supply and Distribution

County government does not provide residents with water service. Water is provided by private wells, rural water organizations or connection to a municipal water provider or adjacent community. Municipalities either provide water service directly or through a third party provider. The table below provides water supply and distribution details for each municipality.

JURISDICTION	Provider/Operator	Average Daily Capacity*	Peak Capacity*
Avoca	Large well field; 280k gallon tower	215,300	348,200
Carson	4 wells; 150k gallon tower	90,000	100,000
Carter Lake	Provided by City of Omaha	97,000,000	200,000,000
Council Bluffs	Provided by Council Bluffs Water Works	11,000,000	25,000,000
Crescent	Provided by Council Bluffs; 50k gallon tower	10,445,000	16,610,000
Hancock	Provided by Oakland; 70k gallon tower	500,000	800,000
Macedonia	Well field & 2 pumps; 30k gal tower	15,000	25,000
McClelland	Regional Water, Inc.	11,000,000	18,200,000
Minden	5 wells; 40k gallon tower	59,000	59,000
Neola	2 wells; 200k gallon tower	90,700	130,000
Oakland	9 wells; 2-300,000k gallon towers	750,000	1,100,000
Treynor	2 deep wells; 150k gallon tower	80,000	348,200
Underwood	Regional Water, Inc.; 250k gallon storage	215,300	348,200
Walnut	2 wells; 250k gallon storage	80,000	225,000

**Gallons per day*

3.8.3 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. Municipalities either provide wastewater treatment service directly or through a third party provider. The table below provides wastewater treatment details for each municipality. Most cities in the county utilize a lagoon treatment system.

JURISDICTION	Treatment System	Rated Capacity*
Avoca	3 Cell Lagoon system	255,000
Carson	Automated Trickling Filter System	70,000
Carter Lake	City of Omaha	232,000,000
Council Bluffs	Automated Trickling Filter System	12,000,000
Crescent	Lagoon System	72,000
Hancock	2 Cell Lagoon system	40,000
Macedonia	3 Cell Lagoon system	18,000
McClelland	Individual Septic Systems	N/A
Minden	Lagoon System	90,000
Neola	Mechanical Treatment Facility	135,000
Oakland	2 Cell Lagoon system	416,000
Treynor	3 Cell Lagoon system	200,000
Underwood	3 Cell Lagoon system	113,000
Walnut	2 Cell Lagoon system	300,000

**Gallons per day*

3.8.4 Storm water Drainage

Water drainage from storms is usually handled through various ditch systems throughout the county. Council Bluffs' storm sewer system includes 120 miles of sewer line and 10 storm water pump stations located along the Missouri River, Indian Creek and Mosquito Creek. Approximately 20 to 25 percent of Carter Lake has in-ground collection of storm water. Remaining communities in Pottawattamie County utilized open ditches or curb and gutter for storm water drainage.

3.9 Public Buildings and Facilities

The jurisdictions of the county are responsible for numerous public buildings. Some of the primary buildings by jurisdiction are shown in the following table.

JURISDICTION	*Facility*	*Location*
County of Pottawattamie	County Courthouse & CBPD	227 S 6th St, Council Bluffs
	Sheriff's Office & Jail	1400 Big Lake Rd, Council Bluffs
	County Annex Building	223 S 6th St, Council Bluffs
	County Services Building	515 5th Ave, Council Bluffs
	East Pottawattamie Courthouse	209 N Elm St, Avoca
	Solid Waste & Recycling Center	41911 Industrial Rd, Oakland
	Iowa Human Services Building	417 E Kanesville, Council Bluffs
	Heartland Family Services Building	600 9th Ave, Council Bluffs
	Juvenile Detention Center	629 6th Ave, Council Bluffs
	Roads Maintenance Shops	***Avoca*** 362 S Elm, ***Caldonia*** 15021 490th ***Carson*** 40790 IA 92, ***Central*** 21901 340th ***Hancock*** 217 N Main, ***Walnut*** 705 Oak St ***Honey Crk*** 27773 190th, ***Keg Crk*** 24999 IA 92 ***Lewis*** 15484 State Orchard ***Underwood*** 25103 Railroad Hwy

JURISDICTION	*Facility*	*Location*
Avoca	City Hall – Police – Fire	201 N Elm
	Public Library	213 N Elm
Carson	Fire Department	127 Broadway St
	City & Community Hall	316 S Commercial
	Maintenance Facilities	121 Park & 306 S Commercial
Carter Lake	City Hall – Police Department	950 Locust St
	Community Resource Center	1105 Redick Blvd
	Fire Dept. – Maintenance Dept.	2929 N 9th St
	Public Library	1120 Willow St
	Senior Center	626 Locust St
Council Bluffs	City Hall	209 Pearl St
	Fire Headquarters	200 S Fourth St
	Police Department	227 S 6th St
	Water Pollution Control Plant	18452 Applewood Rd
	Water Works	2000 N 25th St
	Public Library	400 Willow Ave
	Public Works	901 10th Ave
Crescent	City Hall – Fire Department	102 West Florence St
	Maintenance Facility	517 E Welch
Hancock	City Hall – Fire Department	207 N Main St
Macedonia	City Hall	322 Main St
	Fire Department	404 Potter St
McClelland	City Hall	117 Main St
	Fire Department	81 Main St
Minden	City Hall	207 Main St
	Fire Department	205 Main St
Neola	City Hall – Fire Department	401 Front St
	Maintenance Facility	501 Pearl St
	Neola Area Community Center	110 4th St
Oakland	City Hall – Fire Department Community & Senior Center	614 Dr. Van Zee Rd
	Public Library	207 S Highway
	Maintenance Facility	218 Oakland Ave
	Water Treatment Plant	206 N Main St
Treynor	City Hall	7 South Eyberg St
	Fire Dept. – Community Center	11 W Main St
Underwood	City Hall – Fire Department	218 2nd Ave
Walnut	City Hall	219 Antique City Dr
	Fire Department	500 Pearl St
	Public Library	224 Antique City Dr

3.10 Public Safety - Emergency Services

3.10.11 Fire and Emergency Medical Services

Fire and Emergency Medical Services (EMS) protection is provided by a combination of municipal, township, and independent paid and volunteer fire departments. There are fifteen (15) fire departments authorized in Pottawattamie County.

Department	Personnel	EMS Qualified	Apparatus	Type	Status
Avoca	18	7	5	M	V
Carson	16	7	7	M	V
Carter Lake	23	17	7	M	V
Council Bluffs	100	94	23	M	P
Crescent	16	17	6	M	V
Hancock	14	5	6	M	V
Lewis Twsp	23	14	10	T	V
Macedonia	20	20	5	P	V
McClelland	15	2	6	M	V
Minden	21	8	6	M	V
Neola	25	16	8	M	V
Oakland	15	9	8	M	V
Treynor	23	12	8	B	V
Underwood	22	14	7	M	V
Walnut	21	14	7	M	V
	372	256	119		

M (Municipal) T (Township) P (Private Non-Profit) B (Benefited Fire District) V (Volunteer) P (Paid)

3.10.12 Law Enforcement

Pottawattamie County – the County Sheriff manages a department of approximately 150 employees consisting of forty-five (45) law enforcement officers and ninety-seven (97) corrections officers. The Sheriff's Office patrols unincorporated areas of the county and contracts with eleven (11) of the fourteen (14) municipalities as their primary law enforcement service agency. The Sheriff's Office also provides 911 and public safety communications services for the county, bicycle patrol, a SWAT team, an Explosive Ordinance Disposal Unit, Investigations Unit, Civil Division, Court Security, and a Reserve Deputy program.

Council Bluffs – the Council Bluffs Police Department consists of approximately 113 officers and 30 civilian employees that provide patrol, investigation, SWAT, Explosive Ordinance Disposal, and school security services within the city.

Carter Lake – the Carter Lake Police Department consists of 8 full-time, 1 part-time, and 1 reserve police officers who provide patrol and general investigations services to the residents of Carter Lake.

Avoca – the City of Avoca employs 1 full-time police officer to provide general patrol and investigative services within the city. When not on duty, the city continues law enforcement services through a contractual agreement with the County Sheriff.

3.10.13 Medical Services and Facilities

Much of the county relies on Jennie Edmundson Memorial Hospital (Nebraska Methodist Health System) and Mercy Hospital (Catholic Health Initiatives), both located in Council Bluffs, for emergency and major medical services. There are over sixty (60) additional medical facilities (clinics, urgent care, family practices, mental health, rehabilitation, or other specialty services) in the Omaha—Council Bluffs area for residents. Hospital services are also available in Atlantic (Cass County), Harlan (Shelby County), Red Oak (Montgomery County), and Missouri Valley (Harrison County) for residents who live farther away from the Omaha—Council Bluffs Metro area. The communities of Avoca, Minden, Neola, Oakland, and Treynor also have an outpatient clinic or family practice within their communities.

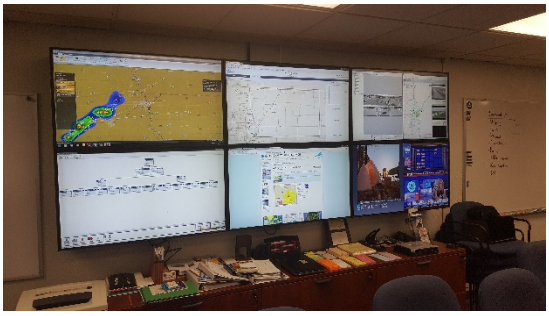
3.10.14 Public Health Services

Various public health services are provided by Council Bluffs and Pottawattamie County. The City of Council Bluffs has a public health department with nursing, vaccination, and general assistance services for residents. Pottawattamie County holds a contract with the Visiting Nurses Association to provide public health services throughout the county. Both agencies often operate cooperatively to address countywide public health needs and issues.

Currently, the City of Council Bluffs, Council Bluffs Board of Health, Pottawattamie County Board of Health, and Pottawattamie County Board of Supervisors are working on a public health initiative to consolidate public health services within the county and organize a single public health division under the Pottawattamie County Planning and Development Department.

3.10.15 Emergency Management

The Emergency Management Agency is an independent joint county-municipal public safety agency as defined in Chapter 29C, Code of Iowa with minimum duties and responsibilities detailed in Iowa Administrative Code Chapter 605. Under the direction of the County Emergency Management Commission; consisting of each mayor, a representative of the board of supervisors, and the county sheriff, the agency is responsible for coordinating agencies and jurisdictions during multi-agency and multi-jurisdictional responses. Under law, the commission must establish and maintain a capability to effectively direct, control, and coordinate emergency and disaster response and recovery operations. This is achieved through a comprehensive planning process and developing a countywide program centered on the tenets of preparedness, response, recovery, and mitigation.



Operations Display area in the Emergency Operations Center

The Pottawattamie County Emergency Management Agency has four (4) full-time employees that are supplemented with partner agency staff during major events. It maintains a countywide Emergency Operations Center and a countywide Mobile Command Post/Mobile EOC that support agencies and jurisdictions during events. EMA serves as technical advisors to incident commanders related to event and incident management and provides direct filed support as required. The agency also facilitates several organizations between the public and private sectors to enhance preparedness in a whole-community posture.



County Inter-agency Mobile Command Post

3.10.16 Warning Systems

The National Oceanic and Atmospheric (NOAA) Weather Radio Warning System serves the county. Pottawattamie County 9-1-1 Center activates outdoor warning sirens throughout the county. Each city has at least one warning siren that provides citywide coverage. The county also participates in the Alert Iowa Emergency Alert and Weather Notification System. Residents in the county may register to receive emergency notifications via telephone messages. Pottawattamie County residents can receive weather notifications via television and AM/FM radio outlets. Emergency Management can also provide local emergency alerts and is authorized to use and activate the federal Emergency Alert System (EAS) and Wireless Emergency Alert System (WEA).

PottawattamieAlert
Pottawattamie County Emergency Notification System

3.11 Utilities

Utility Provider by Incorporated City							
	Electric	Natural Gas	Telephone	Cable	Internet	Water	Solid Waste
Avoca	Mid-American Energy	Mid-American Energy	Walnut Communications, Windstream	MediaCom, Walnut Communications	Walnut Communications, Windstream	Regional Rural Water, Inc.	R&S Waste Disposal
Carson	Mid-American Energy	Mid-American Energy	Frontier Communications	Interstate Cablevision	Frontier Communications	City of Carson	City of Carson
Carter Lake	Omaha Public Power District	Black Hills Energy	CenturyLink, Cox	Cox	CenturyLink, Cox	Metropolitan Utilities District	Papillion Sanitation
Council Bluffs	Mid-American Energy	Black Hills Energy	Century Link, Cox	Cox	Century Link, Cox	Council Bluffs Water Works	Red River Waste, Inc.
Crescent	Mid-American Energy	Peoples Natural Gas	CenturyLink	Cox, Telepartners	CenturyLink	City of Council Bluffs	Individual contracts
Hancock	Mid-American Energy	Mid-American Energy	Farmers Mutual Cooperative Telephone	Farmers Mutual Cooperative Telephone	Farmers Mutual Cooperative Telephone	City of Hancock via City of Oakland	City of Hancock
Macedonia	Mid-American Energy	Mid-American Energy	Western Iowa Networks	Interstate Cablevision	Western Iowa Networks	City of Macedonia	Iowa Waste Systems
McClelland	Mid-American Energy	Mid-American Energy	CenturyLink	CenturyLink	CenturyLink	Regional Rural Water, Inc.	Rural Sanitation Services
Minden	Mid-American Energy	Mid-American Energy	Walnut Communications, Windstream	Walnut Communications	Walnut Communications, Windstream	City of Minden	R&S Waste Disposal
Neola	Neola Light and Water	Mid-American Energy	CenturyLink	Walnut Communications	CenturyLink	City of Neola	R&S Waste Disposal
Oakland	Mid-American Energy	Mid-American Energy	Frontier Communications	Teleservices	CenturyLink	City of Oakland	MTS, Inc.
Treynor	Mid-American Energy	Mid-American Energy	Frontier Communications	Cox	Frontier Communications	City of Treynor	MTS, Inc.
Underwood	Mid-American Energy	Mid-American Energy	CenturyLink, Walnut Communications	Walnut Communications	CenturyLink, Walnut Communications	Regional Rural Water, Inc.	MK Mills
Walnut	Mid-American Energy	Mid-American Energy	Walnut Communications	Walnut Communications	Walnut Communications	City of Walnut	Walnut Sanitation

3.12 Watersheds, Major Rivers and Streams

The Missouri River is the nearest major river in Pottawattamie County, making the western border with Nebraska. Council Bluffs is situated along the Missouri River. There are five watersheds in Pottawattamie County:

West Nishnabotna (10240002) – The total number of watershed acres is 725.7 acres. The primary river within the watershed is the West Nishnabotna River, which is directly west of Avoca. The watershed also includes: 64 lakes, 16 rivers and streams, 2,223.6 total river miles and 819.5 perennial river miles.

Big Papillion-Mosquito (10230006) – The total number of watershed acres is 5,412.2 acres. The primary river within the watershed is the Mosquito Creek. The watershed also includes: 112 lakes and 14 rivers and streams.

Keg-Weeping Water (10240001) – The total number of watershed acres is 1,565.4 acres. The primary river within the watershed is Nishnabotna River. The watershed also includes: 67 lakes and 7 rivers and streams.

East Nishnabotna (10240003) – The total number of watershed acres is 1,726.6 acres. The primary river within the watershed is the East Nishnabotna River. The watershed also includes: 117 lakes and 11 rivers and streams.

Boyer (10230007) – The total number of watershed acres is 908.6 acres. The primary river within the watershed is the Boyer River. The watershed also includes: 108 lakes and 8 rivers and streams.

3.13 Floodplain and Flood Control Information

The following list is jurisdictions participating in the National Flood Insurance Program (NFIP). Macedonia, McClelland, and Treynor do not participate in the NFIP.

Jurisdiction	Community Identification	Year Joined NFIP	Current Effective Floodplain Map
Pottawattamie County	190232#	08/03/1993	04/16/2013
Avoca	190233#	12/16/1980	04/16/2013
Carson	190234#	09/04/1985	04/16/2013 (M)
Carter Lake	190492#	08/08/1978	02/04/2005
Council Bluffs	190235#	06/28/1974	04/16/2013
Crescent	190723#	11/01/1999	02/04/2005
Hancock	190236#	04/21/2006	04/16/2013
Macedonia	*Sanctioned Community – Effective FIRM 04/16/2013*		
McClelland	*Does not participate in NFIP.*		
Minden	190781#	12/07/1988	04/16/2013
Neola	190493#	12/17/1990	04/16/2013
Oakland	190237#	08/03/1981	04/16/2013
Treynor	*Sanctioned Community – Effective FIRM 04/16/2013*		
Underwood	190494#	06/01/1982	04/16/2013
Walnut	190676#	12/31/2009	04/16/2013 (M)

(M) No Elevation Determined – All Zone A, C and X

Jurisdictions of the planning area will use a strategy of public awareness campaigns, implementation and enforcement of zoning ordinances, and pro-active mitigation, such as acquisition projects to continue its participation in the NFIP that will meet and promote the intent of the program's goals and objectives. Below is a list of recent property protection projects within Pottawattamie County.

Acquisition projects:	Goosehaven and Dog Bite Lane areas; and various individual sites throughout the county since the Missouri River flooding of 2011.
Elevation projects:	None
Structural Relocation projects:	None
Flood proofing projects:	None
Other property protection projects:	None

The primary flood control structure in Pottawattamie County is the Missouri River levee system. This vital structure protects Council Bluffs and parts of Pottawattamie County from Missouri River flooding for over 30 miles.

3.14 Relevant Community Plans, Ordinances and Studies

3.14.1 Pottawattamie County

- Pottawattamie County Comprehensive Strategic Plan (2004)
- Pottawattamie County Zoning Ordinances (2004)
- Pottawattamie County Subdivision Ordinance (1996)
- Pottawattamie County Community Builder Plan (1995)
- Pottawattamie County Wastewater Treatment and Disposal System Ordinance (1998)
- Pottawattamie County Private Well Ordinance (1998)
- Pottawattamie County Floodplain Management Ordinance (1993)
- Pottawattamie County Hazardous Substances Ordinance (1988 as amended)

3.14.2 Municipal Governments

- Floodplain Management Ordinance (except McClelland and Walnut)
- Zoning Ordinances (except McClelland)
- Comprehensive Strategic Plan (Avoca, Carson, Carter Lake, Council Bluffs, Neola, Oakland, Treynor, and Underwood)

3.14.3 Emergency Management Commission (applies to all jurisdictions)

- Comprehensive Emergency Management Plan (A-Response, B-Mitigation, C-Recovery)
- Hazardous Materials Commodity Flow Study
- Hazardous Materials Response Contract and Plan (ESF 10 of Part A)
- Continuity of Government (draft)

3.14.4 School Districts and Systems

- Emergency Operations Plans

NOTE: Schools fall under the auspices of their hosting jurisdiction's ordinances and regulations.

3.15 Recreation

The Pottawattamie County Conservation Board is responsible for the care and maintenance of eight parks and nature areas. The conservation staff consists of 12 fulltime employees and hires seasonal employees during the summer months.

PARK	LOCATION	AREA	AMMENITIES
Arrowhead	29357 310th St	147 acres	Camping, Showers, Cabins, Playground, Fishing, Boat Rentals, Covered Shelters.
Botna Bend	42926 Mahogany Rd	119 acres	Camping, Showers, Bison & Elk Herds, Canoe/Kayak Rentals.
Hitchcock Nature Center	27792 Ski Hill Lp	1,100 acres	Native Prairie, 10 miles of Hiking Trails, Lodge, Campground, Cabins.
Narrows River Park	2500 N 25th St	36 acres	Boat Ramp & Dock, Archery Range, Picnic Shelter, Hiking Trails.
Olde Town Park	12515 385th St	9 acres	Primitive Camping, Picnicking, River Access.
Farm Creek	45638 Chestnut Rd	320 acres	Wildlife Area, Public Hunting, Fishing.
Pheasants Forever Habitat Area	I-29/I-680 Interchange	14 acres	Grassland Habitat.
Blackbird Marsh	I-29/N 16th St	14 acres	Wetland Habitat.

Each municipality in Pottawattamie County maintains at least one public park and/or recreational facility.

CITY	PARK	INFORMATION
Avoca	Edgington Park	Walking Trails, Shelters, Soccer Field, Ball Diamonds, Playground, Pool.
Carson	Carson City Park	River Access, Soccer Field, Ball Diamond, Playground, Rodeo Arena, Shelters.
Carter Lake	Levi Carter Park Wavecrest Park Carter Lake Park	Rustic Pavilion, Lake Access, Playground, Swimming Access.
Council Bluffs	See councilbluffs-ia.gov/257/Parks-Facilities-Trails	The city maintains over 27 traditional parks, 41 miles of trails, many historic sites, 2 aquatic centers, 2 golf courses, ATV park, skate park, sports complex.
Crescent	Crescent City Park	Ball Diamond, Volleyball Court, Tennis Court, Picnic Shelter, Playground, Walking Track.
Hancock	Old Settlers Park	Playground, softball field

CITY	PARK	INFORMATION
Macedonia	Macedonia City Park	Covered Stadium, Ball Diamond, Playground, Walking Trail.
McClelland	McClelland City Park	Playground
Minden	Minden City Park	Playground, Ball Diamond.
Neola	Neola City Park	Playground, Ball Diamond, Indoor Pool, Basketball/Volleyball, Fitness Center.
Oakland	Chautauqua Park Lions Park Schueman Park Aquatic Center and Golf Course	Playground, Soccer Fields, Sand Volleyball, Shelter, Softball Field, Baseball Field, River Access, Walking Trails, Swimming, Golf. Fitness Center in City Hall Complex.
Treynor	East Park West Park	Playground, Shelter, Baseball Field, Picnic.
Underwood	Underwood City/Trailhead Park	Tennis Courts, Baseball/Softball Complex, Soccer Fields, Picnic Pavilion.
Walnut	Firemen's Park Veterans' Memorial Park	Picnic Shelter, Playground, Splash Pad, Walk of Honor Eagle Plaza, Baseball and Softball Fields.

3.16 Education

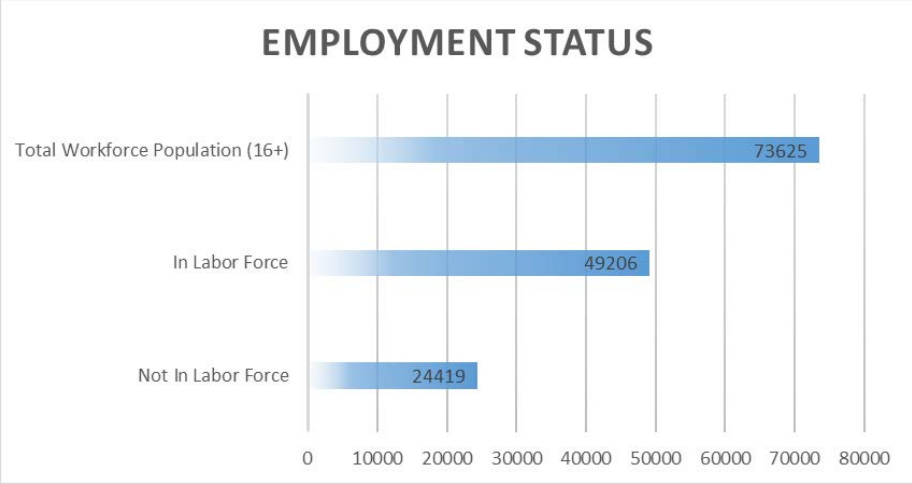
There are nine (9) recognized school districts in Pottawattamie County, one (1) recognized Community College, and one (1) recognized state managed school for the deaf. The Council Bluffs Community School District is the largest with eighteen schools and an enrollment just under 9,000 students. Schools rely on the ordinances and regulations of their host jurisdictions as it relates to mitigation authorities.

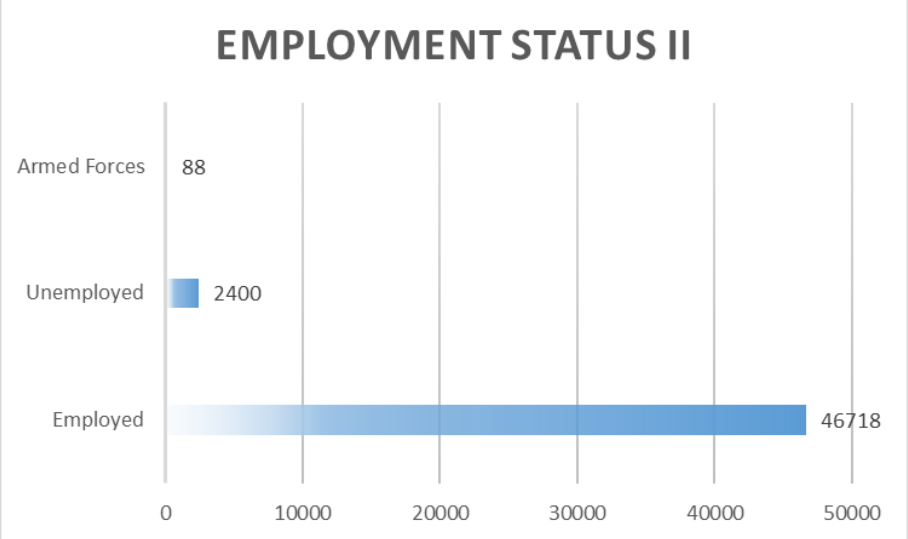
District/School	2017-2018 Enrollment
A-H-S-T-W Community School District	703
Council Bluffs Community School District	8,657
Heartland Christian Schools	110
Lewis Central Community School District	2,874
Riverside Community School District	605
St. Albert Catholic Schools	605
Treynor Community School District	814
Tri-Center Community School District	656
Underwood Community School District	784
Iowa School for the Deaf	110
Iowa Western Community College *(Fall Semester-CB Campus)*	4,152

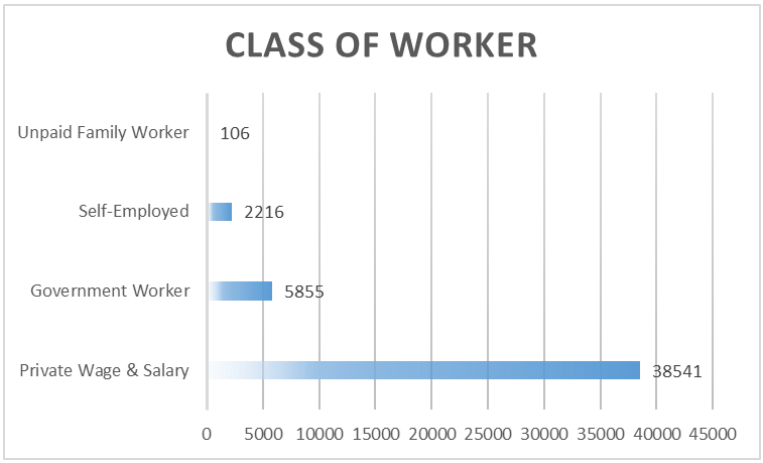
K-12	15,808	ISD	110	IWCC	4,152	Total	20,070

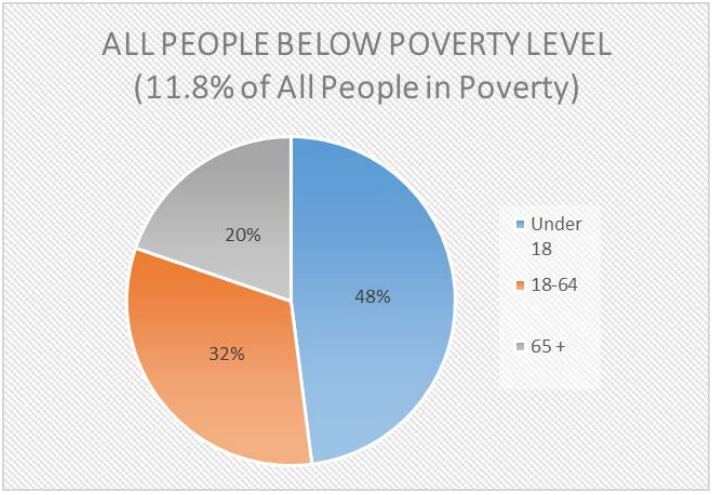
3.17 Employment

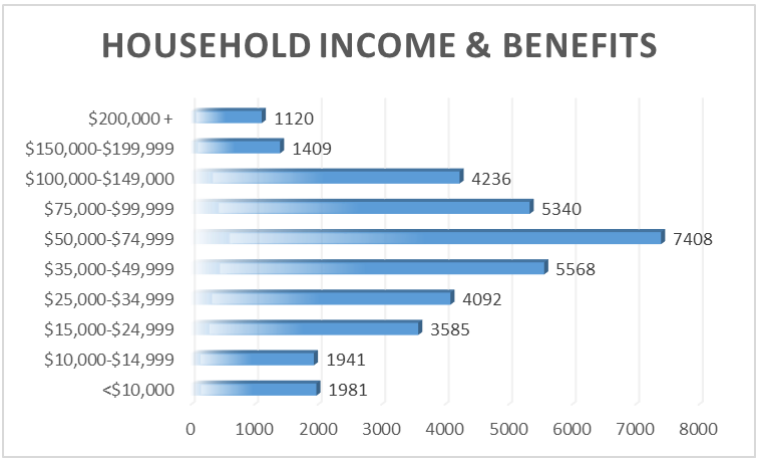
As Pottawattamie County's largest city, Council Bluffs has a significant concentration of major employers. The service and entertainment industry in Council Bluffs has become prevalent with the presence of three casinos and hotels. Health care and food processing are also notable job creating industries in Council Bluffs. Transportation, service, food processing, and agri-business are typically the largest job industries in the remainder of the county. Oakland Foods, a meat processor with approximately 500 employees, is the largest employer in the county outside of Council Bluffs.

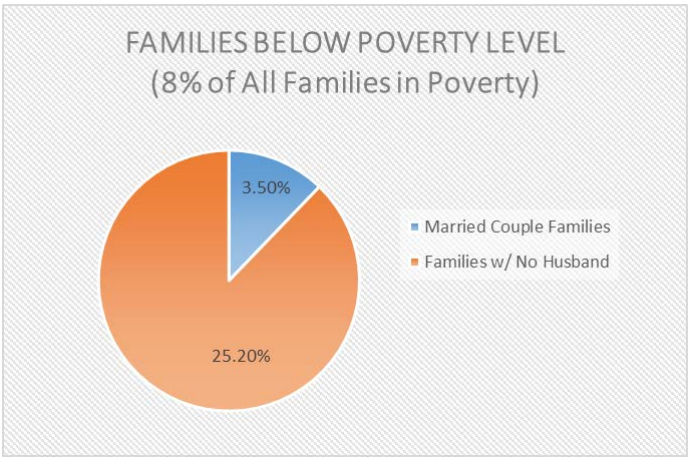


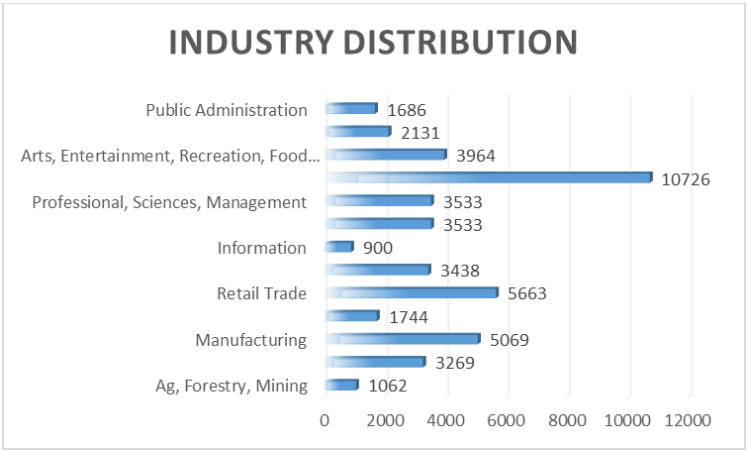



CLASS OF WORKER
Unpaid Family Worker
106
Self-Employed
2216
Government Worker
5855
Private Wage & Salary
38541
0 5000 10000 15000 20000 25000 30000 35000 40000 45000


ALL PEOPLE BELOW POVERTY LEVEL
(11.8% of All People in Poverty)
20%
48%
32%
Under 18
18-64
65 +


HOUSEHOLD INCOME & BENEFITS
$200,000 +
1120
$150,000-$199,999
1409
$100,000-$149,000
4236
$75,000-$99,999
5340
$50,000-$74,999
7408
$35,000-$49,999
5568
$25,000-$34,999
4092
$15,000-$24,999
3585
$10,000-$14,999
1941
<$10,000
1981
0 1000 2000 3000 4000 5000 6000 7000 8000


FAMILIES BELOW POVERTY LEVEL
(8% of All Families in Poverty)
3.50%
25.20%
Married Couple Families
Families w/ No Husband


INDUSTRY DISTRIBUTION
Public Administration
1686
2131
Arts, Entertainment, Recreation, Food...
3964
10726
Professional, Sciences, Management
3533
3533
Information
900
3438
Retail Trade
5663
1744
Manufacturing
5069
3269
Ag, Forestry, Mining
1062
0 2000 4000 6000 8000 10000 12000

3.18 Economic Conditions

The western side of Pottawattamie County is significantly more urbanized than the eastern half. Retail, service and entertainment industries are concentrated in the Council Bluffs area. In taxable retail sales for FY 2017, Council Bluffs accounted for 91 percent of the county's total taxable sales. Council Bluffs and its adjacent areas benefit from proximity to rail lines and two interstate corridors, thereby generating transportation, manufacturing and industrial development and employment.

Though Pottawattamie County is more urbanized than its neighboring counties in Iowa, it is still heavily rural and agriculture is central to the economy. According to the 2007 USDA Census of Agriculture there are 1,188 farms in Pottawattamie County with an average size of 449 acres. The average net cash income per farm operation is $118,791. The average market value of land and buildings per farm in Pottawattamie County is $1,523,228.

Retail Sales Tax by Jurisdiction *(Fiscal Year 2017)*

Jurisdiction	Taxable Sales	Computed Tax
Avoca	$27,605,716	$1,642,383
Carson	$2,615,419	$156,925
Carter Lake	$21,411,426	$1,203,857
Council Bluffs	$1,076,861,861	$64,235,751
Crescent	$7,234,613	$433,895
Hancock	$1,430,182	$85,811
Macedonia	$3,911,674	$234,700
Minden	$2,662,199	$159,309
Neola	$6,337,884	$380,273
Oakland	$9,397,095	$563,740
Treynor	$3,295,375	$197,723
Underwood	$5,450,666	$326,820
Walnut	$7,643,429	$451,011
Other	$9,574,155	$573,805
County Total	$1,185,431,694	$70,646,002

3.19 Development Patterns

Much of the unincorporated county is agriculture or forest/grass land. Industrial and commercial land uses are mainly concentrated in the county's larger cities and along portions of Interstates 29 and 80.

3.19.1 Agriculture and Open Land

After residential land, agriculture is the dominant land use in Pottawattamie 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.

3.19.2 Commercial

Commercial use accounts for over 6 percent of the county's property parcels. Over half of commercial properties are located within Council Bluffs city limits. The greatest concentrations of commercial property are located in Council Bluffs along the I-29/I-80 corridors and Broadway/U.S. Highway 6. Avoca, Carter Lake, Oakland, and Walnut also have sizable pockets of commercial land; Oakland Foods is the single largest commercial site in the eastern half of the county. Commercial land in the incorporated cities is generally adjacent to major streets in downtown areas.

3.19.3 Industrial

Industrial land is the least dominant land use in Pottawattamie County and does not account for one percent of property parcels in any incorporated city or the county as a whole. Council Bluffs again has the largest concentration of industrial space, mainly near the I-29/I-80 corridors. There are various farming facilities and grain storage operations located throughout the county. Some of these facilities possess hazardous materials, such as fertilizer, fuel, etc. Industrial development is expected to expand in the next five to ten years, especially on land near the Missouri River and Interstate 29.

3.19.4 Residential

Approximately 60 percent of the county's land use is residential. Of all the residential parcels in Pottawattamie County, approximately 65 percent are in Council Bluffs. Residential land accounts for no less than 71 percent of land use in all 14 incorporated cities. Residential building permits have decreased nearly every year since 2008 and it is uncertain when the trend will reverse.

Many natural hazards will be countywide in scope. New development, regardless of the use, will be similarly impacted and as vulnerable as existing buildings and infrastructure. Other natural hazards and most manmade incidents will be more localized. Future development is difficult to anticipate, however, it is expected that the current distribution of property classes will remain steady throughout the next five years.

Number and Assessed Value of Parcels				
Property Classification	Number	%	Total Value	%
Agricultural	15,071	27.9	$1,070,238,703	12.8
Commercial	3,349	6.2	$2,205,326,415	26.4
Industrial	118	0.2	$347,687,454	4.2
Residential	35,424	65.7	$4,717,747,207	56.6
TOTAL	53,962	100.0	$8,340,999,779	100.0

3.19.5 Development Changes

In the 2013 Mitigation Planning cycle, development in Pottawattamie County was cited as being slow for the previous three to five years, especially outside of the Council Bluffs area. That trend was mainly attributed to the national economic downturn, particularly in the housing market, that began in 2007/2008.

Current analysis of parcels throughout the county show an overall 1.3 percent increase in the number of parcels. The assessed valuation of total parcels has shown a significant increase in the past five years. This upward valuation trend is attributed to an increase in industrial parcels as well as the complete reassessment of commercial and industrial properties in Council Bluffs in 2017. No recent development has occurred in any known hazard areas.

Comparison to 2013 Numbers and Assessed Parcel Values				
Property Classification	Number	%	Total Value	%
Agricultural	- 2,041	- 11.9	-$100,767,394	-8.6
Commercial	-101	-2.9	+$922,495,496	+71.9
Industrial	+28	+31.1	+$226,403,062	+186
Residential	+2,801	+8.5	+$951,251,154	+25.2
TOTAL	+687		+$1,999,382,318	

The Interstate 29 corridor and I-29/I-80 junctions remain key industrial and commercial areas in the county. Land adjacent to south Highway 275 has been identified by local economic developers as having significant industrial development potential due to the availability of vacant land close to rail and interstate access.

CHAPTER IV
HAZARD ANALYSIS AND RISK ASSESSMENT

4.1 Overview

The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure within Pottawattamie County to those hazards. The goal of the risk assessment is to estimate the potential loss in the planning area, including loss of life, personal injury, property damage, and economic loss, from a hazard event. The risk assessment process allows communities in the planning area to better understand their potential risk to the identified hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

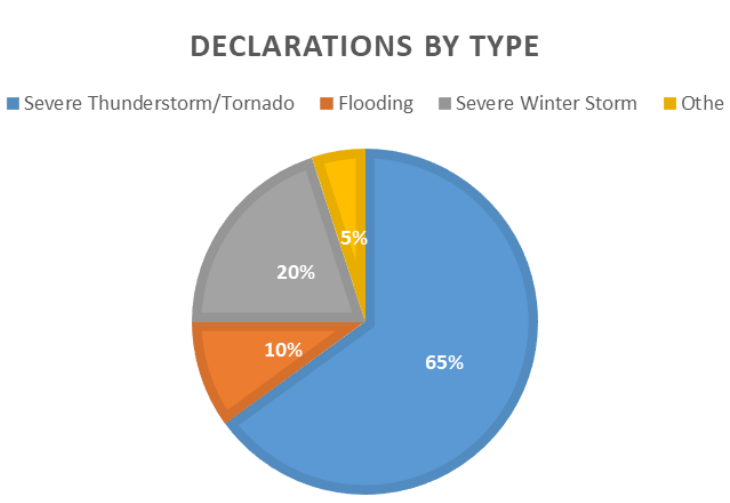
This chapter of the plan purposed to follow the methodology recommended in the FEMA publication 386-2, *Understanding Your Risks: Identifying Hazards and Estimating Losses* (2002).

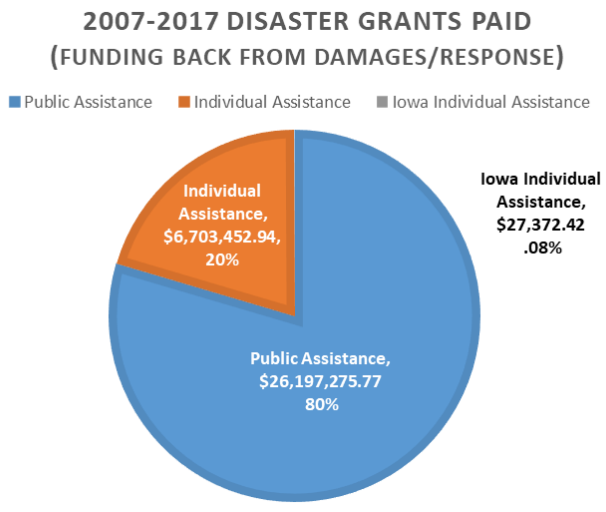
4.2 Disaster Declaration History

Examination of events that triggered federal disaster declaration was used to help identify and confirm those hazards relevant to Pottawattamie County. Federal and/or state declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. If the disaster is so severe that both the local and state governments' capacities are exceeded; a federal emergency or disaster declaration may be issued allowing for the provision of federal assistance. FEMA emergency declarations are more limited in scope and do not include long-term federal recovery programs available for major disaster declarations. Determinations for declaration type are based on scale, type of damages and institutions or industrial sectors affected.

The following table reviews a variety of potential hazards specifically impacting the Pottawattamie County area. Hazardous events have been a common occurrence throughout Pottawattamie County, affecting most of the unincorporated area as well as the majority of the county's incorporated cities. In fact, Pottawattamie County has been included in twenty (20) Presidential Disaster or Emergency Declarations since 1965. 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 Pottawattamie County.

Federal Declarations 1965 – 2017 Pottawattamie County, Iowa		
Declaration Date	Declaration Type	Disaster Number
7-7-2014	Severe Storms	FEMA DR-4181
6-27-2011	Flood	FEMA DR-1998
3-2-2010	Severe Winter Storms	FEMA DR-1880
2-25-2010	Severe Winter Storm	FEMA DR-1877
5-27-2008	Severe Storms	FEMA DR-1763
5-25-2007	Severe Storms	FEMA DR-1705
3-30-2007	Snow	FEMA EM-3275
9-10-2005	Hurricane (Evacuation Assistance)	FEMA EM-3239
5-25-2004	Severe Storms	FEMA DR-1518
5-2-2001	Severe Storms	FEMA DR-1367
7-2-1999	Severe Storms	FEMA DR-1282
7-2-1998	Flood	FEMA DR-1230
11-20-1997	Snow	FEMA DR-1191
8-21-1996	Severe Storms	FEMA DR-1133
7-9-1993	Flood	FEMA DR-996
9-6-1990	Flood	FEMA DR-879
7-28-1988	Tornado	FEMA DR-814
6-27-1984	Severe Storms	FEMA DR-715
9-26-1972	Flood	FEMA DR-354
4-22-1965	Flood	FEMA DR-193





4.3 Hazard Review and Updates

To identify hazards to include in the Risk Assessment, a comparison was performed of the hazard identification for the *2013 Iowa State Hazard Mitigation Plan*, and the *2013 Pottawattamie County Multi-Jurisdiction Hazard Mitigation Plan, as amended (2014).*

During this process there were several hazards identified that were very similar in their potential, impact, strategies of mitigation, and resources required for response and recovery that they were combined into one category. Other hazards previously identified were determined either not relevant to the county or to this plan. The table below provides a cross-walk of previously identified hazards to those identified in this iteration of the mitigation plan.

HAZARD IDENTIFICATION CROSS-WALK	
2013 Hazards	**2018 Hazards**
Fixed Hazardous Materials Incident Pipeline Incident Transportation Hazardous Materials Incident	Hazardous Materials
Tornado	Tornado
Flash Flood	Flash Flood
Levee Failure Dam Failure	Levee/Dam Failure
Thunderstorm and Lightning Hailstorm Windstorm	Severe Thunderstorm
Severe Winter Storm	Severe Winter Storm
Communications Failure Energy Disruption	Infrastructure Failure
River Flood	River Flood
Enemy Attack[1] Terrorism/Agriculture-Biological Terrorism/Chemical Terrorism/Conventional Terrorism/Cyber Terrorism/Radiological Public Disorder	Removed
Air Transportation Incident Highway Transportation Incident Rail Transportation Incident Waterway/Waterbody Incident	Mass Casualty Event
Fixed Radiological Incident Transportation Radiological Incident	Radiological Incident
Animal Disease Epidemic Plant/Crop Disease Epidemic	Animal/Plant Disease
Human Disease Epidemic	Human Disease
Grass or Wildland Fire	Grass/Wildland Fire
Drought Extreme Heat	Drought/Extreme Heat
Earthquake	Earthquake
Landslide/Erosion/Slope Failure	Landslide

[1] Terrorism and Security: Pottawattamie County utilizes other planning mechanisms to perform risk assessment for terrorism and security related hazards in the planning area. Additionally, since the Hazard Mitigation Plan emphasizes public participation, it has been determined that discussion of vulnerabilities to terrorism type hazards should not be included in this public document.

Hazard Identification Cross-walk, Continued	
2013 Hazards	2018 Hazards
Expansive Soils[2]	Removed
Structural Fire[3]	Removed
Structural Failure[4]	Removed
Sink Holes[5]	Removed

4.4 Hazard Identification

The sixteen (16) hazards identified for this plan are listed below.

- Animal/Plant Disease
- Drought/Extreme Heat
- Earthquake
- Flash Flood
- Grass/Wildland Fire
- Hazardous Materials
- Human Disease
- Infrastructure Failure
- Landslide
- Levee/Dam Failure
- Mass Casualty Event
- Radiological Incident
- River Flood
- Severe Thunderstorm
- Severe Winter Storm
- Tornado

[2] There are no incorporated or unincorporated jurisdictions containing soil that consists of clay classified as having high swelling potential. No documented historical occurrences have been noted.

[3] Jurisdictions within the county maintain (15) fire rescue departments. (1) 24/7 paid service and (14) volunteer services. All departments participate in a countywide automatic mutual aid agreement with pre-defined mutual aid responses that are automatically dispatched upon receipt of structural fire incidents. Coupled with fire prevention measures and building code enforcement, there are no major areas of conflagration that require specific mitigation strategies.

[4] Although there are older structures throughout the county, large areas or population centers in significantly old, decaying buildings are not present in numbers that warrant special mitigation strategies beyond existing building and inspection codes. Any structural failure experienced would likely be a byproduct of another hazard identified in this plan (i.e., terrorism, tornado, flood, etc.). Adequate resources exist with code enforcement and inspections through Pottawattamie County Planning and the City of Council Bluffs Buildings Division to quickly assess and mitigate severity of impacts when a structure is failing as a result of age, poor maintenance, or as a result of a causative hazard.

[5] Several of the incorporated cities have previously experienced small sinkholes due to common undermining but no indications or evidence have been reported or discovered that indicating a potential threat from presence significant sinkholes that would pose a risk to any populated area.

Hazards Identified by Jurisdiction	Animal/Plant Disease	Drought/Extreme Heat	Earthquake	Flash Flood	Grass/Wildland Fire	Hazardous Materials	Human Disease	Infrastructure Failure	Landslide	Levee/Dam Failure	Mass Casualty Event	Radiological Incident	River Flood	Severe Thunderstorm	Severe Winter Storm	Tornado
Pottawattamie County	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MUNICIPALITIES																
City of Avoca	X	X	X	X	X	X	X	X	X	---	X	X	X	X	X	X
City of Carson	X	X	X	X	X	X	X	X	X	---	X	X	X	X	X	X
City of Carter Lake	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
City of Council Bluffs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
City of Crescent	X	X	X	X	X	X	X	X	X	---	X	X	X	X	X	X
City of Hancock	X	X	X	X	X	X	X	X	X	---	X	X	X	X	X	X
City of McClelland	X	X	X	X	X	X	X	X	X	---	X	X	---	X	X	X
City of Macedonia	X	X	X	X	X	X	X	X	X	---	X	X	X	X	X	X
City of Minden	X	X	X	X	X	X	X	X	X	---	X	X	---	X	X	X
City of Neola	X	X	X	X	X	X	X	X	X	---	X	X	---	X	X	X
City of Oakland	X	X	X	X	X	X	X	X	X	---	X	X	X	X	X	X
City of Treynor	X	X	X	X	X	X	X	X	X	---	X	X	---	X	X	X
City of Underwood	X	X	X	X	X	X	X	X	X	---	X	X	---	X	X	X
City of Walnut	X	X	X	X	X	X	X	X	X	---	X	X	---	X	X	X
SCHOOL DISTRICTS / COLLEGES																
A-H-S-T-W Community School District	X	X	X	X	X	X	X	X	X	---	X	X	X	X	X	X
Council Bluffs Community School District	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Heartland Christian Schools	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lewis Central Community School District	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Riverside Community School District	X	X	X	X	X	X	X	X	X	---	X	X	X	X	X	X
St. Albert Catholic Schools	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Treynor Community School District	X	X	X	X	X	X	X	X	X	---	X	X	---	X	X	X
Tri-Center Community School District	X	X	X	X	X	X	X	X	X	---	X	X	---	X	X	X
Underwood School District	X	X	X	X	X	X	X	X	X	---	X	X	---	X	X	X
Iowa Western Community College	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

4.4 Multi-Jurisdictional Risk Assessment

For this multi-jurisdictional plan, the risks are assessed for each jurisdiction where they deviate from the risks facing the entire planning area. The planning area is fairly uniform in terms of climate and topography as well as building construction characteristics. Accordingly, the geographic areas of occurrence for weather-related hazards do not vary greatly across the planning area for most hazards. The more urbanized areas within the planning area have more assets that are vulnerable to the weather-related hazards and varied development trends impact the future vulnerability. Similarly, more rural areas have more assets (crops/livestock) that are vulnerable to animal/plant/crop disease. These differences are discussed in greater detail in the profile sections of each hazard.

4.5 Bi-county Cities

The City of Shelby, previously mentioned in Chapter III, is the only city within Pottawattamie County that crosses county lines. The majority of the city is in Shelby County, Iowa. As that area is uniform with the hazards and risks of the overall county, they detailed analysis and mitigation strategies for the City of Shelby is captured in the Shelby County Mitigation Plan, which the Pottawattamie County Emergency Management Agency is afforded the opportunity to review and provide input.

4.6 Hazard Scoring Methodology

This plan used a standardized methodology across the county to score and prioritize the hazards. This prioritization was based on a hazard scoring system that considers four elements of risk: probability, impact, warning time, and duration. Associated rating levels for each category are then applied to a *Calculated Priority Rating Index* (CPRI) formula. The CPRI value provides a risk value that is then categorized into a Low, Medium, or High planning rating.

The tables on the following page were used to guide planning assessors through the classification and rating of the identified hazards in Pottawattamie County.

4.6.1 Hazard Scoring Keys and Descriptions

ELEMENT	DESCRIPTIONS	RATING
HIGHLY LIKELY 10+ events per decade	Catastrophic • Multiple fatalities, several serious injury/illness • Damage to critical infrastructure/property over large area • Wide area of community damage • Up to 50% of community facilities damaged, destroyed, or inaccessible • Complete shutdown of community facilities/services for >2 weeks	4
LIKELY 6-9 events per decade	Critical • Results in a number of minor injuries/illness, limited serious injury/illness • Damage to critical infrastructure/property over moderate area • Up to 25% of community facilities damaged, destroyed, or inaccessible • Shutdown of community facilities/services for up to 2 weeks	3
POSSIBLE 2-5 events per decade	Limited • Results in a number of minor injuries, limited serious illness • Damage to critical infrastructure/property over a small area • Up to 25% of community facilities damaged, destroyed, or inaccessible • Shutdown of community facilities/services up to 1-2 weeks	2
UNLIKELY 0-1 events per decade	Negligible • Results in only minor injuries, no fatalities • Damage contained to a single incident scene and immediate area • Less than 10% of community facilities damaged, destroyed, or inaccessible • Shutdown of community facilities/services for 24 hours or less	1

Element	Probability	Impact	Warning Time	Duration
CPRI Factor	x 0.45	x 0.30	x 0.15	x 0.10

Element ratings are applied to the CPRI factors to come to a CPRI Total Score for each hazard. That score is applied to the planning priority scale in the table below which provides the hazard priority.

Planning and Hazard Priority Scale		
Low	Medium	High
1.00 – 2.09	2.10 – 3.09	3.10 – 4.0

4.7 Pottawattamie County Planning Area Hazard Ranking Results

Pottawattamie County	Probability			Impact			Warning Time			Duration			CPRI	PLANNING
Threats/Hazards	Wt.	Category	CPRI	Wt.	Category	CPRI	Wt.	Category	CPRI	Wt.	Category	CPRI	TOTALS	PRIORITY
Hazardous Materials	4	Highly Likely	1.8	3	Critical	0.9	4	< 6 Hours	0.6	1	< 6 Hours	0.1	3.40	HIGH
Tornado	3	Likely	1.4	4	Catastrophic	1.2	4	< 6 Hours	0.6	1	< 6 Hours	0.1	3.25	
Flash Flood	4	Likely	1.8	2	Negligible	0.6	4	< 6 Hours	0.6	2	< 1 Day	0.2	3.20	
Levee/Dam Failure	2	Possible	0.9	4	Catastrophic	1.2	4	< 6 Hours	0.6	4	> 1 Week	0.4	3.10	
Severe Thunderstorm	4	Highly Likely	1.8	2	Limited	0.6	4	< 6 Hours	0.6	1	< 6 Hours	0.1	3.10	
Severe Winter Storm	4	Highly Likely	1.8	2	Limited	0.6	2	12-24 Hours	0.3	3	< 1 Week	0.3	3.00	MEDIUM
Infrastructure Failure	3	Likely	1.4	2	Limited	0.6	4	< 6 Hours	0.6	2	< 1 Day	0.2	2.75	
River Flood	3	Likely	1.4	3	Limited	0.9	1	24+ Hours	0.2	3	< 1 Week	0.3	2.70	
Mass Casualty Event	2	Possible	0.9	3	Critical	0.9	4	< 6 Hours	0.6	2	< 1 Day	0.2	2.60	
Drought/Extreme Heat	2	Possible	0.9	3	Critical	0.9	1	24+ Hours	0.2	4	> 1 Week	0.4	2.40	
Radiological Incident	1	Unlikely	0.5	3	Critical	0.9	4	< 6 Hours	0.6	4	> 1 Week	0.4	2.35	
Animal/Plant Disease	2	Possible	0.9	2	Critical	0.6	1	24+ Hours	0.2	4	> 1 Week	0.4	2.05	LOW
Human Disease	2	Possible	0.9	2	Limited	0.6	1	24+ Hours	0.2	4	> 1 Week	0.4	2.05	
Grass/Wildland Fire	2	Likely	0.9	1	Negligible	0.3	4	< 6 Hours	0.6	2	< 1 Day	0.2	2.00	
Earthquake	1	Unlikely	0.5	2	Limited	0.6	4	< 6 Hours	0.6	1	< 6 Hours	0.1	1.75	
Landslide	1	Unlikely	0.5	1	Negligible	0.3	4	< 6 Hours	0.6	1	< 6 Hours	0.1	1.45	

4.8 Exposure of Population and Structures

This section assesses the population, structures, critical facilities and infrastructure, and other important assets in the planning area that may be at risk to hazards.

Jurisdiction	Population	Ag Bldgs	Ag Value	Com/Ind Bldgs	Com/Ind Value	Residential Bldgs	Residential Value	Content Value	Total Bldgs Count	Total Exposure Value
Avoca	1,513	79	337,600	163	22,695,600	655	63687,200	60,550,700	897	147,271,100
Carson	815	28	300,400	48	4,404,800	319	33,007,800	22,310,300	395	60,023,300
Carter Lake	3,784	7	34,200	130	65,585,400	1,189	139,059,500	151,545,700	1,326	356,224,800
Council Bluffs	62,524	245	1,029,400	2,135	1,563,795,400	19,731	2,102,916,000	3,007,231,650	22,111	6,674,972,450
Crescent	617	47	319,800	20	1,855,900	255	35,283,100	20,281,225	322	57,740,025
Hancock	195	43	325,600	36	3,570,200	94	5,720,700	7,648,700	173	17,265,200
Macedonia	245	32	423,200	19	900,500	116	9,118,300	6,107,975	167	16,549,975
McClelland	150	40	351,800	14	727,200	55	5,741,800	4,131,700	109	10,952,500
Minden	594	7	44,400	43	2,709,900	223	24,739,700	15,801,625	273	43,295,625
Neola	859	33	143,800	74	7,409,400	348	40,815,000	29,813,050	455	78,181,250
Oakland	1,509	48	291,600	112	21,583,600	590	51,566,300	53,054,250	750	126,495,750
Shelby	23	11	73,400	29	29,052,200	2	158,800	36,468,050	42	65,752,450
Treynor	950	14	106,800	45	7,235,100	369	52,074,500	35,187,925	428	94,604,325
Underwood	939	20	112,100	57	10,870,800	297	42,126,400	34,763,800	374	87,873,100
Walnut	779	59	219,700	95	7,520,600	325	24,484,900	21,862,900	479	54,088,100
County *(unincorp.)*	18,086	18,427	52,563,200	332	87,146,200	7,071	1,214,671,400	768,831,650	25,830	2,123,212,450
TOTALS	93,582	19,140	56,677,000	3,352	1,837,062,800	31,639	3,845,171,400	4,275,591,200	54,131	10,014,502,400

Content Value derived by applying multiplier to building values based on HAZUS MH 2.1 (FEMA Hazards U.S., Multi-hazard loss estimator) standard contents multipliers per usage type as follows: Residential (50%), Commercial (100%), Industrial (150%), Agricultural (100%). For the purposes of these calculations, commercial and residential was calculated at a factor of 125%.

4.9 Critical and Essential Facilities and Infrastructure

Jurisdictions have assessed the vulnerability of critical and essential facilities to the identified hazards. These type of facilities are defines as:

- Critical Facility – facilities essential in providing utility or direction during either response or recovery to an emergency.
- Essential Facility – facilities that if damaged, would have devastating impacts on disaster response and/or recovery.
- High Potential Loss Facility – facilities that would have a high loss or impact on the community.
- Transportation/Lifeline Facility – facilities and infrastructure critical to transportation, communications, and necessary utilities.

JURISDICTION *(Attributed to physical location, not ownership)*	Airport Facility	Bus/Public Transit Facility	Childcare Facility	Communications Tower	Electric Power Facility	Emergency Operations Center	Fire/EMS Service Facility	Government Facility	Public Housing Facility	Shelter Facility	Bridges	Hospital/Healthcare Facility	Military Facility	Natural Gas Facility	Nursing Home Facility	Law Enforcement Facility	Potable Water Facility	Railroad Facility	Sanitary Pump Station	School Facility	Storm water Pump Station	Tier II/EHS Chemical Facility	Wastewater Facility	TOTALS
Avoca	0	0	2	0		0	1	2	0	0	0	1	0		1	2	0	0		1		2	1	13
Carson	0	0	1	0		0	1	4	0	0	0	0	0		0	0	1	0		1		0	1	9
Carter Lake	0	0	9	1		0	1	4	0	0	0	0	0		0	1	0	0		1		6	0	23
Council Bluffs	1	1	127	37		1	5	12	1	17	47	20	2		4	2	1	10		24		58	1	371
Crescent	0	0	1	0		0	1	2	0	0	3	0	0		0	0	0	0		1		1	1	10
Hancock	0	0	0	0		0	1	2	0	0	0	0	0		0	0	0	1		0		1	1	6
Macedonia	0	0	0	0		0	1	1	0	0	0	0	0		0	0	1	0		0		1	1	5
McClelland	0	0	0	0		0	1	2	0	0	0	0	0		0	0	0	0		0		0	1	4
Minden	0	0	0	0		0	1	2	0	0	1	0	0		0	0	0	0		0		0	1	5
Neola	0	0	4	0		0	1	3	0	1	3	1	0		0	0	1	0		0		2	1	17
Oakland	0	0	4	0		0	1	4	0	0	1	1	0		1	0	1	0		1		3	1	18
Treynor	0	0	2	0		0	1	2	0	2	0	1	0		0	0	1	0		2		0	1	12
Underwood	0	0	3	0		0	1	1	0	0	5	1	0		0	0	0	0		2		3	1	17
Walnut	0	0	2	0		0	1	4	0	0	1	0	0		0	0	1	0		0		0	1	10
Pott. County *(Unincorporated)*	0	0	1	38		0	1	6	0	2	308	0	0		0	0	1	0		2		22	0	381
TOTALS	1	1	156	76		1	19	51	1	22	369	25	2		6	5	8	11		35		99	13	901

** Categories not populated: no response from owner or in process.*

4.10 Other Assets

Assessing the vulnerability of the county planning area also involves considering natural, historic, and cultural assets of the area for the following reasons:

- The plan participants may decide that these type of resources require a greater degree of protection due to their unique or irreplaceable nature.
- When the potential impact is higher for these resources, identifying them prior to the impact will allow for more prudent care post-incident.
- Rules for reconstruction, restoration, rehabilitation, or replacement are often different for those type of resources.
- Maintained or protected natural resources can reduce natural hazard impacts such as wetlands and riparian habitat.

4.10.1 Threatened and Endangered Species

Common Name	Scientific Name	Habitat	Status
Northern long-eared bat	*Myotis septentrionalis*	Caves, mines, wooded areas, upland forests	THREATENED
Prairie brush clover	*Lespedeza leptostachya*	Dry to mesic prairies with gravelly soil	THREATENED
Western prairie fringed orchid	*Platanthera praeclara*	Wet prairies, sedge meadows	THREATENED
Least tern	*Sterna antillarum*	Bare alluvial and dredged spoil islands	ENDANGERED
Piping plover	*Charadrius melodus*		THREATENED
Pallid sturgeon	*Scaphirhynchus albus*	Large rivers	ENDANGERED



4.10.2 National Register of Historic Places

Ref#	Historic Name	Listing Date	City	Address
04001401	Norton, Charles Henry and Charlotte, House	12/30/2004	Avoca	401 N. Chestnut St.
81000265	Pottawattamie County Sub Courthouse	7/2/1981	Avoca	Elm St.
86000873	Graceland Cemetery Chapel	4/28/1986	Avoca	Graceland Cemetery, US 59
96001583	Turner, Francis A. and Rose M., House	1/31/1997	Avoca	1004 Cherry St.
01000861	Bennett Building	8/8/2001	Council Bluffs	405 West Broadway
02000455	100 Block of West Broadway Historic District	5/9/2002	Council Bluffs	W. Broadway, First St., and Fourth St.
05001019	Willow--Bluff--3rd Street Historic District	9/15/2005	Council Bluffs	Roughly bounded by Worth, High School Ave., Clark Ave. and W side Bluff St.
07000113	Chevra B'nai Yisroel Synagogue	3/7/2007	Council Bluffs	618 Mynster St.
07000281	Lincoln--Fairview Historic District	4/10/2007	Council Bluffs	Roughly bounded by W. Kanesville Blvd., Oakland Ave., Fairview Cemetery, and N. 1st St.
08000357	Pioneer Implement Company	4/30/2008	Council Bluffs	1000 S. Main St.
10000160	Park/Glen Avenues Historic District	4/7/2010	Council Bluffs	101-508 Glen Ave., 102-471 Park Ave., 209 & 301 W. Pierce, & 524 & 600 Huntington
11000392	Hughes--Irons Motor Company	6/23/2011	Council Bluffs	149-161 W. Broadway
12000780	McCormick Harvesting Machine Company Building	9/10/2012	Council Bluffs	1001 S. 6th St.
13000832	Bregant, Jean and Inez, House	10/16/2013	Council Bluffs	514 S. 4th St.
14000253	Sandwich--Marseilles Manufacturing Building	5/27/2014	Council Bluffs	1216-1230 S. Main St.
14000286	Hotel Chieftain	6/6/2014	Council Bluffs	38 Pearl St.
66000338	Dodge, Grenville M., House	10/15/1966	Council Bluffs	605 S. 3rd St.
72000481	Pottawattamie County Jail	3/16/1972	Council Bluffs	226 Pearl St.
76000802	Beresheim, August, House	8/13/1976	Council Bluffs	621 3rd St.
79000928	Jefferis, Thomas, House	12/25/1979	Council Bluffs	523 6th Ave.
79000929	Tulleys, Lysander, House	10/18/1979	Council Bluffs	151 Park Ave.
79000930	Wickham, O. P., House	6/18/1979	Council Bluffs	616 S. 7th St.
79000931	Y.M.C.A. Building	6/27/1979	Council Bluffs	628 1st Ave.
80001457	Dodge, Ruth Anne, Memorial	2/8/1980	Council Bluffs	Fairview Cemetery
82002637	Reverend Little's Young Ladies Seminary	2/4/1982	Council Bluffs	541 6th Ave.
84001306	Cavin, Thomas E., House	9/27/1984	Council Bluffs	150 Park Ave.

Ref#	Historic Name	Listing Date	City	Address
84001310	Hughes, Martin, House	9/27/1984	Council Bluffs	903 3rd St.
84001312	State Savings Bank	6/4/1984	Council Bluffs	509 W. Broadway
85000774	Haymarket Commercial Historic District	4/11/1985	Council Bluffs	S. Main St.
92000923	St. Peter's Church and Rectory	7/24/1992	Council Bluffs	1 Bluff St.
95000557	Wickham--De Vol House	5/4/1995	Council Bluffs	332 Willow Ave.
95000856	Chicago, Rock Island & Pacific Railroad Passenger Depot	7/21/1995	Council Bluffs	1512 S. Main St.
95001315	Shea, John J. and Agnes, House	11/22/1995	Council Bluffs	309 S. 8th St.
99000048	Council Bluffs Free Public Library	1/27/1999	Council Bluffs	200 Pearl St.
79000932	Carstens Farmstead	7/10/1979	Shelby	S of Shelby on IA 168
86001470	Eckle Round Barn	6/30/1986	Shelby	Off IA 168
91000536	German Bank Building of Walnut, Iowa	5/1/1991	Walnut	Jct. of Highland and Central Sts.

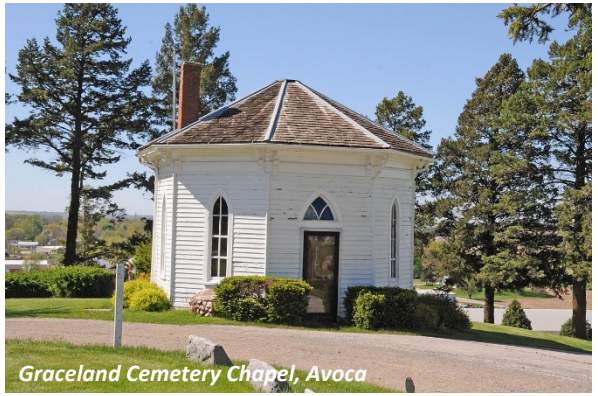
4.10.3 National Historic Landmarks

Ref#	Historic Name	Other Name	Listing Date	NHL Date	City	Address
66000338	Dodge, Grenville M., House	General Dodge House	10/15/1966	11/5/1961	Council Bluffs	605 S. 3rd St.



General Dodge House, Council Bluffs


German Bank Building, Walnut


Graceland Cemetery Chapel, Avoca

CHAPTER V
HAZARD PROFILES

Each hazard identified in Chapter IV is profiled individually in this chapter in alphabetical order. The level of information presented in the profiles varies by hazard based on the information available. With each update, new information, as applicable, will be included to allow for better evaluation and prioritization of the hazards that affect the county.

Each profile will describe the hazard, geographic location/extent, historical incidents, probability of future occurrence, vulnerability overview, and any jurisdiction specific information for those locations that may be disproportionately impacted by a particular hazard compared to the overall planning area.

The hazards identified in Chapter IV for this plan include:

- Animal/Plant Disease
- Drought/Extreme Heat
- Earthquake
- Flash Flood
- Grass/Wildland Fire
- Hazardous Materials
- Human Disease
- Infrastructure Failure
- Landslide
- Levee/Dam Failure
- Mass Casualty Event
- Radiological Incident
- River Flood
- Severe Thunderstorm
- Severe Winter Storm
- Tornado

5.1 Animal / Plant Disease

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
2	2	1	4	2.05

5.1.1 Description

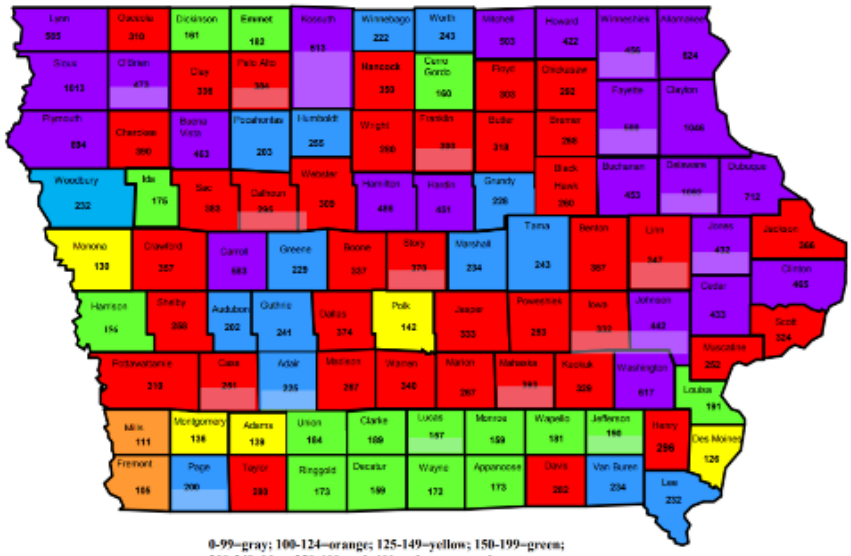
Agricultural infestation is the naturally occurring infection of vegetation, crops or livestock with insects, vermin, or diseases that render the crops or livestock unfit for consumption or use. Land use in Pottawattamie County is significantly agricultural which poses an economic threat to the county and state related to animal/plant disease.

The State of Iowa Department of Agriculture and Land Stewardship track and monitor the following reportable animal diseases: Avian Influenza, Chronic Wasting Disease, Foot and Mouth Disease, Johne's disease, and Scrapie.

5.1.2 Extent and Vulnerability

Pottawattamie County Ag Statistics *(USDA AgCensus 2012)*		
Number of Farms	1,188	
Land in Farms	532,833	Acres
Average Farm Size	449	Acres
Market Value – Crop Sales	$325,485,000	
Market Value – Livestock Sales	$139,064,000	
Corn for grain	255,321	Acres (ranked 2nd in Iowa/15th in U.S.)
Corn for silage	3,529	Acres (ranked 32nd in Iowa/509th in U.S.)
Soybeans for beans	198,464	Acres (ranked 3rd in Iowa/24th in U.S.)
Oats for grain	1,030	Acres (ranked 12th in Iowa/286th in U.S.)
Hay, Grass, Greenchop – all uses	7,211	Acres (ranked 48th in Iowa/1,929th in U.S.)
Hogs and pigs	82,575	Head (ranked 67th in Iowa/196th in U.S.)
Cattle and calves	57,300	Head (ranked 17th in Iowa/399th in U.S.)
Poultry layers	1,879	Birds (ranked 50th in Iowa/1,346th in U.S.)

Registered Animal Feeding Operations by County



0-99=gray; 100-124=orange; 125-149=yellow; 150-199=green; 200-249=blue; 250-400=red; 401 and over =purple

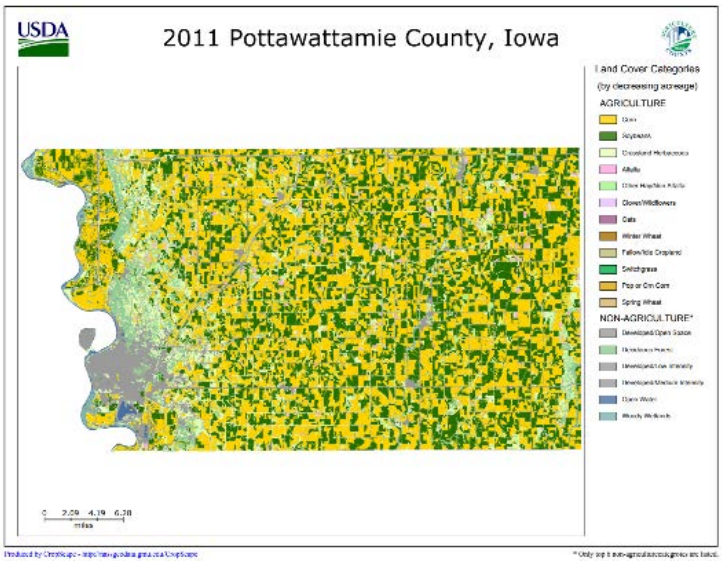
As of January 2017

Total = 32,505

Premises Registered in Iowa

5.1.3 Historical Occurrence and Probability

Although there would be little impact to the health and welfare of the human population, an animal or plant disease epidemic in Pottawattamie County could significantly affect those working in the agricultural industry. This would include those businesses that serve and support the agriculture industry where the sales of ag products would be reduced, impacting jobs at those type of businesses as well, which are predominately centered in small rural communities.



The vast majority of the county's land mass is occupied by crops and associated livestock lots at farms and agricultural businesses. There have been no plant disease epidemics in the county of any significance in the past thirty years. High-Path Avian Influenza (HPAI) impacted Iowa in 2015 which affected seventy- seven (77) poultry sites across Iowa and causing the reduction of 31,502,052 birds (layers, pullet, turkey, hatchery, yard flock) across the state. Pottawattamie County is home to no large poultry farms and involvement in the response included being a route county (transportation of dead poultry to disposal sites) and providing hazardous materials technicians for decontamination surveillance at the disposal site in Mills County near Glenwood. It is assessed based on the agricultural industry that there is a median chance of incident based on the ag security and surveillance laws and rules governing the industry as well as a low historical occurrence for the county.

5.1.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	Each incorporated city has a facility or employer related to the agricultural animal/plant/crop sector. An epidemic of this hazard would significantly impact the population residing on and operating farms in the unincorporated areas. The cascading economic impact to other jurisdictions is not quantifiable at this time.
Carson	
Carter Lake	
Council Bluffs	
Crescent	
Hancock	
Macedonia	
McClelland	
Minden	
Neola	
Oakland	
Treynor	
Underwood	
Walnut	
County *(Unincorporated)*	
Schools	

5.2 Drought / Extreme Heat

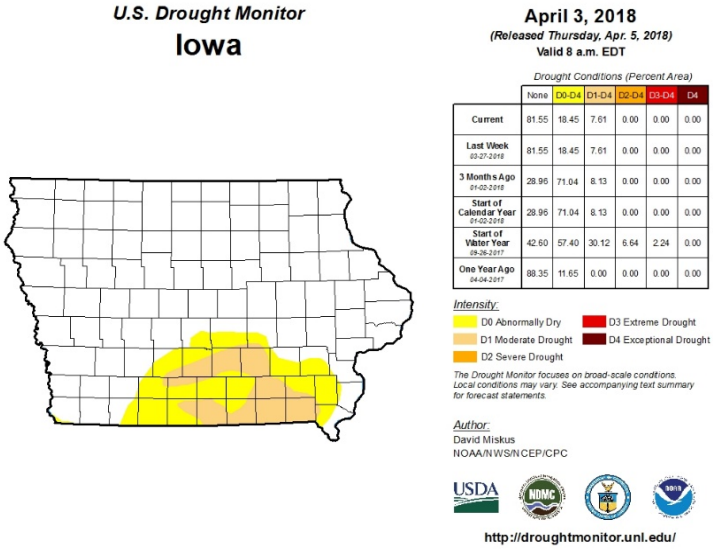
Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
2	3	1	4	2.40

5.2.1 Description

Drought: A period of prolonged lack of precipitation for weeks at a time producing severe dry conditions and typically, for the area, associated with occurrences of extreme heat events.

Extreme Heat: Temperatures in excess of 100° F or three (3) successive days of 90° F or higher. A typical heat advisory is issued at 105° F and a warning at 115° F.

5.2.2 Extent and Vulnerability



These type of events can be spotty or widespread. Droughts may last from weeks to a period of years. Prolonged droughts can have a significant economic impact on the planning area. Increased demand for water and electricity during these events can cause resource shortages which can have an adverse effect on public health as well as increased industrial and consumer costs. There can also be a significant impact on the agricultural sector which has a ripple effect to supporting industry and the national and even world food production and distribution markets. There are three types of drought that can impact the planning area: *Meteorological Drought (precipitation deficiency), Hydrological Drought (declining surface and groundwater supplies), and Agricultural Drought (soil moisture deficiencies).*

Extreme heat events can impose stress on both humans and animals. Heat injuries can be common during prolonged extreme heat events. Urban areas can be at particular risk due to air stagnation and a significantly higher amount of heat absorbing materials such as asphalt, concrete, and metals.

The entire planning area is susceptible to drought and extreme heat conditions as these events typically happen over a large regional area encompassing hundreds of miles.

During these conditions the electrical and water production entities of the energy sector are impacted by increased use demands. Shallow personal or municipal well systems

could suffer as a result of prolonged drought conditions. The health and safety of residents are also a concern. Small children and the elderly are more susceptible to heat-related injury and illness during extreme heat conditions, especially those without adequate cooling environments. People who work outdoors and the homeless population are also at increased risk. Animals in the agricultural sector without auxiliary sources of impacted water supplies will also be at risk during prolonged events.

5.2.3 Historical Occurrence and Probability

Droughts have occurred in the planning area anywhere from zero (0) to six (6) years within each of the past five (5) decades with the exception of the 90's. There were no identified droughts within the 90's and six years of drought in the 2000's. The last significant drought period was in 2012. Additionally, the planning area experiences at least one extreme heat event annually with the intensity and duration varying from year to year.

The planning area will certainly continue to experience extreme heat events on an annual basis and periodic drought conditions, though the extent and duration are difficult to forecast for planning purposes.

5.2.4 Jurisdiction Specific Information

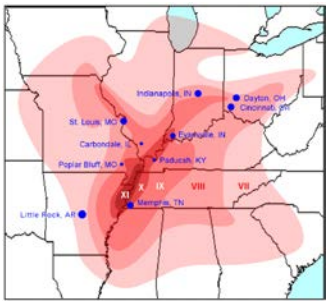
JURISDICTION	SUMMARY and NOTES
Avoca	Vulnerability among jurisdictions within the planning area are generally uniform. It is unknown how many residents are without air conditioning or an effective means to stay cool. Jurisdictional vulnerability to local water supplies is variable, at best, based on the conditions being experienced and would need continually assessed. Schools have enacted policies regarding student health and safety during extreme heat conditions if they are unable to keep facilities cool.
Carson	
Carter Lake	
Council Bluffs	
Crescent	
Hancock	
Macedonia	
McClelland	
Minden	
Neola	
Oakland	
Treynor	
Underwood	
Walnut	
County *(Unincorporated)*	
Schools	

5.3 Earthquake

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
1	2	4	1	1.75

5.3.1 Description

A sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface classified as either tectonic (natural shifting), volcanic (byproduct of volcanic activity), or artificially produced (mining, drilling, or other manipulation).



5.3.2 Extent and Vulnerability

The extent of effect on the planning area will be completely dependent on the earthquake's magnitude in relation to its epicenter or point of origin. An earthquake's affects in the planning area would likely produce very little to no injury, loss of life, or extensive property damage. The nearest major seismic zone is approximately 580 miles away; the New Madrid Seismic Zone in Missouri.

The most likely earthquake related scenario would be jurisdictions within the county serving as reception centers and emergency/temporary shelters for those evacuated from a major seismic area such as the New Madrid Seismic Zone which has the capability of producing a major earthquake.

5.3.3 Historical Occurrence and Probability

The planning area has a very low earthquake risk. Although residents have felt very weak tremors as the result of an earthquake hundreds of miles away, there have been no recorded earthquakes in the planning area since the collection of geological data in 1931. The USGS database shows that there is a 0.29% chance of major earthquake within 31 miles (50km) of Pottawattamie County within the next fifty (50) years.

5.3.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	Vulnerability among jurisdictions within the planning area are generally uniform. Should the county experience a direct seismic event, the energy and chemical sectors would potentially be impacted as well as homes and buildings built prior to the 1940's.
Carson	
Carter Lake	
Council Bluffs	
Crescent	
Hancock	
Macedonia	
McClelland	
Minden	
Neola	
Oakland	
Treynor	
Underwood	
Walnut	
County *(Unincorporated)*	
Schools	

5.4 Flash Flood

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
4	2	4	2	3.20

5.4.1 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 (training). 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 flood waters move at very fast speeds and can roll large objects, 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.

5.4.2 Extent and Vulnerability

Many areas, both urban and rural, within the planning area are at risk for flash flooding. Particularly at risk are those in low lying areas; close to dry creek beds or drainage ditches; near water; or on land with large amounts of impermeable surfaces. Streets in locations with no or poor storm drainage systems can experience streets that become moving rivers impacting travel, damaging infrastructure, and flooding basements.

Creeks, drainage areas, and agricultural fields that traverse roadways in the county can put additional risk to motorists. Nearly half of all flash flood fatalities are auto related.

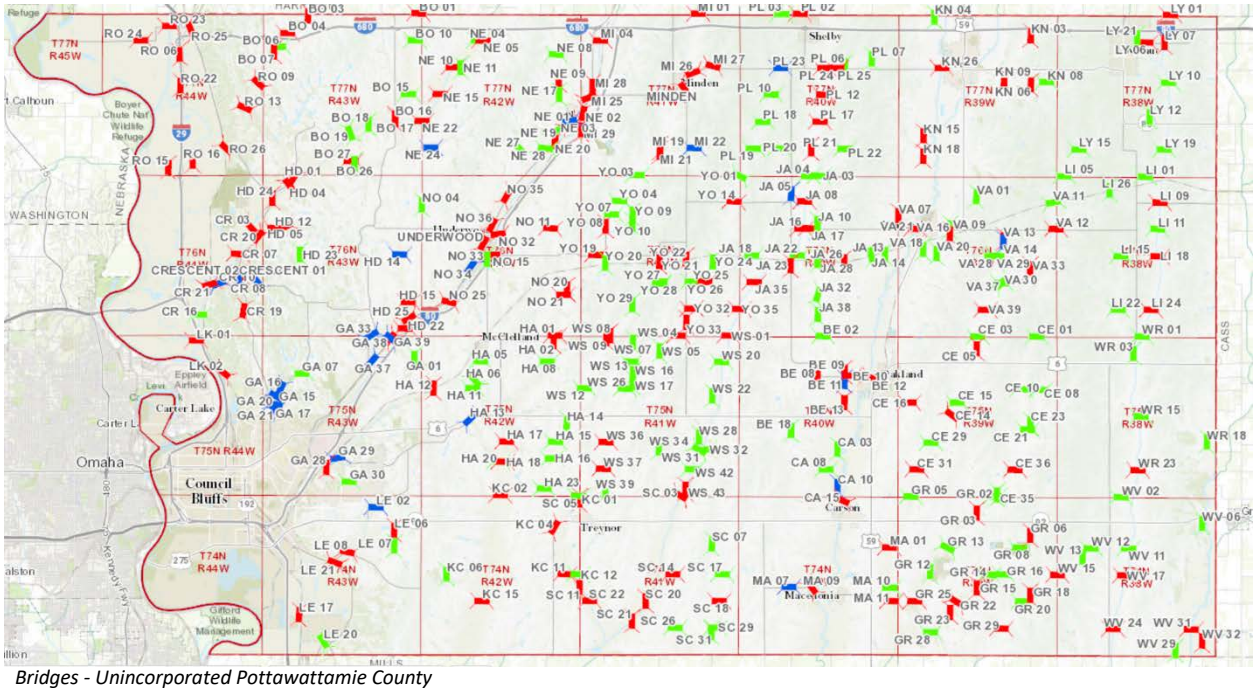
5.4.3 Historical Occurrence and Probability

The planning area is no stranger to flash flooding. Many events occur during the typical severe weather season, albeit at minor levels with little to no injury, death, or property damage. However, 10% of the federal disaster declaration are directly related to flooding and nearly 65% of all disaster declarations in the planning area involved some level of flash flooding as part of the overall event.

Residential developments continue to push from the main metropolitan area of Council Bluffs into the traditionally rural areas of the county. This development increases runoff and makes drainage planning important in all areas of development. Flash flooding is equally probable across the watersheds of the county and the planning area is highly likely to be affected by flash flooding in the near future.

5.4.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	The W Nishnabotna River forks north of Avoca bordering the city on the east and west. The branches re-converge south of town, which is the lowest elevation and at most risk of flooding. The Avoca Community School District, Pottawattamie County Fairgrounds, and a MidAmerican Energy substation are in close proximity to the west fork of the river with the substation less than 1,200 ft from the riverbank. The east bank runs along the city park and an agricultural business with chemical storage within 720 ft. of the riverbank.
Carson	The city park, water and wastewater treatment facilities are prone to flash flooding along the W Nishnabotna River which borders the west side of town.
Carter Lake	Some low laying areas around the northern portion of the city along the lake are prone to some flash flooding during extreme high rain events.
Council Bluffs	Low-laying areas, especially those close to dry creek beds or drainage ditches are at risk of flash flooding. There are identified areas in the west and south portions of the city that have insufficient storm sewers that experience flash flooding during heavy rain events.
Crescent	Structures adjacent to Crescent and Pigeon Creek are subject to flash flooding. Areas south of East Welch are prone to ditch build-up and flash flooding. This includes Crescent Elementary, ball fields, and the City Maintenance Facility.
Hancock	The W Nishnabotna River runs along the west end of Hancock placing the county park (Botna Bend), the sewer lagoons, sewer lift station, and an ag industry facility all within 100 to 1600 feet of the riverbank.
Macedonia	No flash flood impacts.
McClelland	No flash flood impacts.
Minden	Keg Creek runs along the southern end of the town, which is in the 100 yr floodplain. The creek is surrounded by agricultural fields that runoff into the creek at and north of the city creating a potential flash flood hazard. The bridge on 340th St, one of the main entrances to town is subject to damage and/or closure during these events.
Neola	A quarter of the properties in town are within the 100 year floodplain. Primarily, the properties in the southwest portion of town nearest Mosquito Creek are most at risk for flash flooding.
Oakland	An extremely hilly community, urban flash flooding is a regular occurrence during heavy rain events. Excess water drains east to west down steep street slopes to US Hwy 59/6. Particularly areas near Brown Street, the Chautauqua Park area, and the southwest business district are more prone to this flash flooding as excess water rapidly flows to the W Nishnabotna River which makes up the towns western border.
Treynor	No flash flood impacts.
Underwood	The east side of Underwood is in proximity of the Mosquito Creek with less than 20% of the town in the 100 yr floodplain. Portions of the western and central city is in the 500 yr floodplain.
Walnut	Very small portion of Walnut Creek lie within undeveloped parts of the town with minimal flash flood risk.
County *(Unincorporated)*	There are 322 bridges, several culverts, and ditches maintained by the county are subject to damage and/or closure during flash flooding events in the unincorporated county. Most of the potentials are along dry creek beds, drainage ditches, and creeks in the rural areas that extremely sensitive to heavy rain events that drain into these waterways.
Schools	As described in the community specific notes.



Bridges - Unincorporated Pottawattamie County

5.5 Grass / Wildland Fire

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
2	1	4	2	2.00

5.5.1 Description

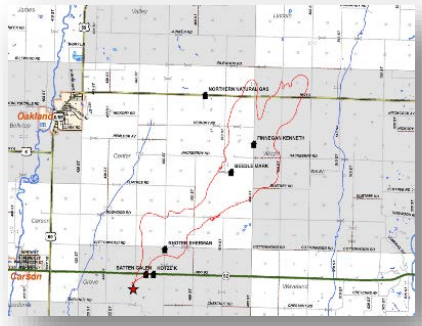
An uncontrolled natural vegetation fire that threatens life and property in either a rural or wooded area and is beyond normal day-to-day response capabilities.

5.5.2 Extent and Vulnerability

Most fires of this type are contained to road right-of-way or rail right-of-way areas and are less than a few acres in size. High winds coupled with the right meteorological conditions can quickly turn a small fire into a multi-acre incident that would threaten property and lives.

5.5.3 Historical Occurrence and Probability

There have been numerous wildfires in the planning area over the past decade that have prompted a response beyond that capability and capacity of any single department. Even more predominately urban areas, like Council Bluffs, that still have open grassland or hilled timber areas see upwards to twenty (20) plus grass/wildland fires per year despite a standing open burning ban in many communities in the planning area.



Geographic Area Burned (2005)

On March 6, 2005, a smoldering tree stump from a controlled burn was rekindled in extremely dry conditions with high winds. This ignited grassy areas and crop residue near Carson which in total burned approximately 4,000 acres resulting in the total loss of four (4) homes, several vehicles, outbuildings, and farm implements with an estimated loss of over $5,000,000. The fire stretched for nearly eight (8) miles and expanded to nearly three (3) miles wide at one point. Multiple fire departments responded with over 60 pieces of fire equipment, over 200 firefighters, and 21 farmers with tractors and tillage equipment. In addition, several law enforcement personnel from 5 law enforcement agencies assisted with traffic, scouting, and evacuations. Air resources were deployed from 2 law enforcement agencies to help scout the fire progression and threatened residents, structures, and firefighting personnel. Two firefighters received minor injuries during the event. The incident was brought under control after six (6) hours of operation and firefighters provided constant patrols, responding to flare ups and reported hotspots over the next 48 hours.


Aerial Photo of burned area (2005)

Even with this historical incident, the probability of a similar occurrence is limited. Since the 2005 fire, departments have taken several steps to mitigate such an incident. Some of the activities include: enhanced Incident Command System training and implementation, purchase of wildland specific equipment, wildland firefighting training, and participation and promotion of prescribe fire and controlled burn operations to help reduce ground litter that promotes fire spread. Additionally, automatic mutual aid responses have been pre-identified for this type of incident for the rapid deployment of mutual aid and incident management resources.



Aerial photo of burned area (2005)

5.5.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	The planning area land mass is predominately rural county/cropland subject to widespread fire during extreme dry conditions. However, the vast majority of fires experienced are able to be controlled by the jurisdictional department with or without implementing existing inter-local response agreements. Many natural fire breaks exist based on the construction and number of rural roads in the county. Predominately all municipalities are surrounded by crop and grassland but the immediate switchover to domesticated and treated grass along with paved roads acting as fire breaks significantly reduce the risk of a rural grass/wildland fire spreading into an incorporated municipality. Automatic inter-local response agreements for major fire events are pre-programmed into the dispatching system to rapidly deployed needed assets during a major wildfire event. In addition, a coordinated burn ban implementation program is used during times of high-risk and prolonged wildfire threat conditions which are monitored daily in the Emergency Operations Center.
Carson	
Carter Lake	
Council Bluffs	
Crescent	
Hancock	
Macedonia	
McClelland	
Minden	
Neola	
Oakland	
Treynor	
Underwood	
Walnut	
County *(Unincorporated)*	
Schools	



Controlled Burn Operation - Loess Hills south of Council Bluffs

CRP Land controlled burn

Urban controlled burn project – Oakland's Chautauqua Park

5.6 Hazardous Materials

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
4	3	4	1	3.40

5.6.1 Description

Accidental release of chemical substances or mixtures that may cause harm or damage to persons, property, or the environment when release to the soil, water, or air. This can occur during the production, handling, or transportation of hazardous substances via road, rail, water, or pipeline. It may even occur by the illegal dumping of hazardous materials often referred to as “orphan dumps.”

5.6.2 Extent and Vulnerability

The transportation of hazardous substances within Pottawattamie 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.

Depending upon weather conditions and the amount and type of material, a worst-case incident of any fixed facility site in Pottawattamie County in which 100 percent of an extremely hazardous substance (EHS) is released during a 10 minute period could result in an immediate impact of up to five (5) or more miles. Up to 30,000 residents could be affected by a worst-case release. Response time by technician level hazardous materials response team would normally be under 10 minutes, however, the incident commander’s decision to evacuate or shelter citizens in place may have to be made within minutes of the release.

5.6.3 Historical Occurrence and Probability

The fire-rescue departments in the county respond to several hazardous materials related incidents annually. The county hosts approximately 100 sites that store various quantities of reportable hazardous materials storage. This does not account for facilities with quantities under reportable quantity guidelines nor does it account for the plethora of hazardous substances that can be found in every residence throughout the county. The county’s many miles of interstate, highway, and agricultural roads which make our county a hotbed of interstate and agricultural commerce provide a daily potential of a hazardous materials release due to improper transportation loading, storage, or a common traffic accident.

Notable Historical Occurrences		
Date	Location	Summary
6-29-1997	UP Railyard – Council Bluffs	30,000 gal ethyl alcohol & benzene leak from a railcar prompting a cleanup and recovery operation that took several weeks.
5-16-2000	I-80 E of Avoca	Semi accident resulting in the fatalities of the driver and passenger and fire releasing household chemicals into the atmosphere and the Nishnabotna River. WB I-80, east of Avoca, was closed for (9) hours and normal traffic patterns were disrupted for (30) hours.
12-9-2000	I-80 EB Interchange – Council Bluffs	Semi loaded with propane went over an embankment at the I-80 EB interchange closing I-80 and I-29 for over (13) hours.
10-26-2006	Rural Council Bluffs	Semi parked outside the Stern Oil Co.'s warehouse/distribution center caught fire and spread to the warehouse which stored large amounts of petroleum products. Over (14) fire departments, along with (3) law enforcement agencies, IDNR, EPA, Offutt AFD FD, Eppley Airfield FD and several assisting agencies conducted emergency operations for over (8) hours to extinguish the blaze.
3-23-2007	I-80 WB near Shelby	UPS truck near the 38 mile marker of I-80 caught fire while hauling 200# of organic peroxide.
7-27-2007	Rural Crescent	Orphan dump of (9) drums of unknown chemicals abandoned in a field near Crescent.
11-20-2008	Avoca	(2) Anhydrous ammonia pup tanks rolled over in Avoca near the Nishnabotna River venting over 850# of product into the atmosphere that prompted area shelter in place operations.
2-22-2011	Rural Honey Creek	Orphan dump of (105) containers of various household hazardous waste near 152nd St and Sumac Rd.
10-24-2012	Treynor	Fuel tanker filling underground fuel tanks at Casey's began to roll from the pumps spilling gasoline at a rate of 200-300 gpm.
8-18-2015	Carter Lake	Used motor oil spill at a residence contaminating public right of way and threatening storm sewer drainage.
10-7-2016	Rural Council Bluffs	An ethanol tanker loading at the SIRE Ethanol Plant exploded and started an ethanol based fire during the loading process. The emergency operation ran for over (6) hours with (100) personnel from (23) different agencies between (3) counties, (3) state agencies, (1) federal agency, and (5) private organizations.


SIRE Ethanol Fire


Orphan Dump - Crescent


Stern Oil Fire

5.6.3.1 Fixed Facilities

There were 100 facilities required to report their chemical inventories in 2017 based on EPA and Iowa DNR reporting guidelines (Tier II Facilities). Of those, 76 were declared Extremely Hazardous Substance facilities (EHS) based on the type and/or quantity of substances stored. The most prevalent EHS in the county is anhydrous ammonia stored in bulk quantities.

Incidents experienced in the planning area have required businesses being evacuated for simple caustic substance spills, evacuations of homes and workplaces, or the discovery of illegally dumped unknown chemicals. In a heavy agricultural based county the prevalence of gasoline, fuel oil, pesticides, herbicides and similar substances guarantee the likelihood of future incidents.

2017 Fixed Facility Statistics

Reportable Spills	24
Spills Considered Toxic	13
# Chemical Storage Facilities	100
# Facilities with EHS*	76

EHS – Extremely Hazardous Substance as defined by the Environmental Protection Agency.

5.6.3.2 Highway Transportation

With the amount of highway traffic and several other modes of transportation in the planning area, an eventual accident based release is inevitable. However, the vast majority of these incidents are confined to the incident site and rarely pose a significant threat to people or property. However, there have been some notable transportation related hazardous materials incidents.

The crossroads of I-80 and I-29 are a significant thoroughfare of interstate transportation. Over 90,000 vehicles a day pass through this area, moving freight and commodities in all directions across the country. Common among all of our highways are substances such as, but not limited to: corrosives, solvents, fuel, alcohol, asphalt, poison, flammables, hazardous waste, sulfuric acid, ammonias, nitrogen, and non-flammable gases.

5.6.3.3 Rail Transportation

Approximately (55) major trains move through Council Bluffs daily and (4) rail companies – Burlington Northern, Iowa Interstate, Union Pacific, and Canadian National – service or traverse the planning area from north to south and east to west. These railcars carry a substantial amount of hazardous chemicals – liquids (up to 40,000 gallons per car), solids (up to 200,000 gallons per car), and gases. The hundreds of shipments per year include corrosives, gases, explosives, liquid and solid poisons, radioactive materials, combustible liquids, and environmentally hazardous substances.

5.6.3.4 Pipeline Transportation

Seven (7) pipeline companies – NuStar, Northern Natural Gas, Buckeye Partners, Magellan, CHS McPherson Refinery, Oneok NGL Pipeline, and Southwest Iowa Renewable Energy – operate pipeline in the planning area. Pipelines operated range from 2 to 30 inches and transport petroleum and fuel gases.

5.6.3.5 Water Transportation

The Missouri River makes up the county's western border spanning (39) miles north to south. Along that stretch of riverfront there are facilities on both the Iowa and Nebraska banks that have storage tanks, liquid handling/loading facilities, barge loading terminals, pipeline, drum storage, or liquid waste treatment structures which all present a potential risk for a spill or leakage into the river. Additionally, the Missouri is a navigable waterway with barge traffic hauling hazardous substances in both liquid and solid form during navigable seasons on the river. There are four (4) major bridges and one (1) rail line crossing the river.

5.6.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	• Lies within the vulnerability zone radius of (1) fixed facility and several modes of transportation. Anhydrous ammonia is the most significant threat. • A major I-80 truck stop on the north end of town creates an area where semis carrying hazardous materials can congregate. State and federal highway routes with heavy truck traffic in and around the city increase the community's risk of a transportation hazmat incident. • A stem of the Northern Natural Gas pipeline terminates within the eastern portion of the city.
Carson	• There are no fixed facilities. State Highway 92 runs the south edge of the city. • U.S. Hwy 59 just east of Carson and State Hwy 92 running through the south edge of Carson places the city at risk during a transportation hazmat incident. • Northern Natural Gas operates a 2 inch line entering from the north near Mildred and North Streets.
Carter Lake	• There are (6) fixed facilities in the city with (3) designated as having EHS chemical(s). The city also borders the Missouri River. • Abbott Dr and Locust St are major thoroughfares of the city. Hazmat substances are common transport items in these areas which are on their way to the regional airport (Eppley Airfield) or one of the fixed facilities within the city or the City of Omaha. • Williams Pipeline Group operates petroleum lines that serve the city and Eppley Airfield. It is a 6 inch line that carries gasoline, fuel oils, aviation fuels, liquefied gasses, and crude oil. A rupture could present a potentially dangerous hazard to the entire city.
Council Bluffs	• The city hosts (68) fixed facilities of which (34) store one or more EHS chemicals. Although many sites are identified they have a very minor amount of reportable chemicals stored and would likely not impact an area outside the primary property. Other facilities, however, have the potential to impact a significant area under the right release and weather conditions that could prompt the implementation of public protective measures that could affect up to 30,000 residents. • There are many residential areas immediately adjacent to several major transportation routes in and around the city, especially at the Midwest crossroads of I-80 and I-29 that host significant quantities of hazmat transports on a daily basis. Any accident along these routes could impact approximately 25% of the population immediately. • Several pipelines operate in and around the city ranging from 2 to 30 inches in diameter conveying petroleum products. The most common risk is from the large amount of excavating operations done within the city for various reasons and natural gas line penetrations are a fairly common occurrence within the city that typically impact just the immediate area. A rupture or compromise of a large main could impact a significant portion of the city either directly (as a hazard) or indirectly (isolated areas and traffic disruptions).
Crescent	• There are no fixed hazmat sites in Crescent. • (2) major rail lines and I-29 are within a couple miles of the city proper and under the correct atmospheric and weather conditions, any hazmat transportation incident could affect the majority, if not all, of the city. • A large oil pipeline runs from northwest to southeast through the northeast quadrant of the city. This area does have numerous residential structures that could be impacted in an event.

Hancock	• The presence of anhydrous ammonia on the west end of Hancock poses a significant threat to the city based on the small size of the town. A large area of the town could easily be in the plume cloud under the right weather conditions. • The presence of the fixed sites in Hancock increases the hazmat transportation volume and accident potential for the small community. • There are no major pipelines running through the city.
Macedonia	• There are no fixed hazmat sites that pose a significant threat to the city. • U.S. Hwy 59 is found east of the city approximately 2 miles and under the correct wind conditions and hazardous substance could impact a portion of the city. • There are no major pipelines running through the city.
McClelland	• There are no fixed hazmat sites in McClelland. • The lack of major transportation routes in the area significantly decrease a threat due to transportation, but the volume of agricultural operations in the area do provide a potential for an incident. • There are no major pipelines running through the city.
Minden	• There are no fixed hazmat sites in Minden. • The proximity of I-80 north of Minden provides a small potential for a portion of the city to be impacted by a major leak or explosion of an extremely hazardous substance. • A Northern Natural Gas pipeline traverses the eastern portion of the city and transects another pipeline less than a mile north of the city limits.
Neola	• The agricultural Co-Op facility within the city poses an anhydrous ammonia threat that could impact a majority of the city under a significant release scenario. • Proximity to I-80 east of the city and a major thoroughfare (Railroad Hwy) running through the community provides a slightly increased risk of a transportation incident for the community. • A stem of the Northern Natural Gas pipeline traverses eat to west through the city.
Oakland	• Oakland hosts (4) EHS sites with the entire community at risk or within a significant portion of the vulnerability zone. Additionally, the community assisted living and nursing home is in a property adjacent to an area that often stores several agricultural pup tanks for anhydrous where even a small to moderate leak could prompt a complete evacuation of the facility. A major explosion or leak at any of the facilities could prompt a complete evacuation of the city. • US Hwy 59 and US Hwy 6 intersect both north and south of the community as well as running through the center of the city. These routes see a significant amount of semi traffic hauling hazardous substances as well as a significant amount of area agricultural traffic to fixed facilities within the city hauling ag chemicals and products. • A stem of the Northern Natural Gas pipeline connect to Oakland at the southeast corner of the city limits.
Treynor	• Treynor has no fixed sites within the city and would be minimally impacted by an incident of a fixed site east of the community. • State Hwy 92 runs through the heart of Treynor and is Treynor's "Main Street". Along this route are (2) school facilities, several businesses and residential properties. Hwy 92 is a significant route of travel throughout the planning area that is frequented by hazardous substance carriers. • A stem of the Northern Natural Gas pipeline connects to the southwest outside the city limits.
Underwood	• Underwood has (2) fixed sites. One site is within the city proper and under optimal wind conditions could impact a large portion of the community during a leak. • Proximity to I-80 east of the city and a major thoroughfare (Railroad Hwy) running through the community provides a slightly increased risk of a transportation incident for the community. • A stem of the Northern Natural Gas pipeline connects to the northeast portion of the city.
Walnut	• There are no fixed hazmat sites in Walnut. • I-80 runs the northern edge of the city with significant transport traffic. Additionally, county road M47 and Tamarack Rd (old State Hwy 83) intersect in Walnut and are primary agricultural routes for the eastern portion of the planning area seeing high quantities of field chemical or anhydrous ammonia transports to end users. • A stem of the Northern Natural Gas pipeline terminates in the city limits on the southern border.
County *(Unincorporated)*	• There are several fixed sites with various substances such as anhydrous ammonia, ethanol, and other fuels that could impact populated areas under the correct weather conditions either as an immediate impact to health and safety or a respiratory hazard as a bi-product of combustion. • The overall county contains some the highest amounts of highway, interstate, secondary roads, rail, and pipeline miles in the state. This places an overall high risk countywide, especially when analyzed with the data obtained in the countywide hazardous materials commodity flow study. The highest impact areas would be in and near the population centers where spills, leaks, or bi-products of hazardous material combustion would pose life safety and health hazards along with longer duration transportation disruptions or environmental impacts.
Schools	• School facilities share the identified risks with their host communities as detailed in this table. An incident, regardless of cause, could force facilities to shelter in place or evacuate due to fixed facilities, transportation, or pipeline emergencies originating in or within proximity of their host communities.

5.7 Human Disease

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
2	2	1	4	2.05

5.7.1 Description

A medical, health, or sanitation threat to the general public such as contamination, epidemic, pandemic, plagues, infestations, etc.

5.7.2 Extent and Vulnerability

Public Health agencies work to reduce the impact of communicable diseases and to eliminate the morbidity associated with diseases. Prevention and care services target STDs, tuberculosis, and other infectious diseases. While vaccines are available for many diseases, citizens remain vulnerable to other diseases known and unknown. Depending on the type of disease and the ease of which it spreads, an epidemic could impact a significant portion of the county.

Due to the highly mobile nature of today's society, diseases can travel and infect people in a short period of time. People living in cities or close proximity to each other are more likely to become infected at a rapid rate, but resident in more rural areas are not any less immune. As many rural communities and those living in unincorporated areas travel daily to places of employment, entertainment venues, or shop for living essentials predominately in the larger population centers, a major disease epidemic will likely reach every corner of the county.

5.7.3 Historical Occurrence and Probability

Although there have not been any major disease epidemics in recent history the county public health system was taxed in the fall of 2009 with national outbreak of the H1N1 virus. This epidemic lasted (8) months from September 2009 through May 2010. It required over 100 assigned personnel for operations, implementation of several "point of distribution" vaccine clinics, partnership with local doctor offices, public school, major employers, and other community partners. Vaccine and supplies were drawn from emergency contracts and the Strategic National Stockpile through the Iowa Department of Public Health.

In December 2014, the planning area was preparing for the potential impacts of an emerging Ebola outbreak that had started in Texas. There was no impact in the planning area other than preventative education and information operations to the public.

5.7.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	Vulnerability among jurisdictions within the planning area are generally uniform. Although vaccines are available for many diseases, residents remain at risk. The concentration of the county population is part of the Omaha/Council Bluffs Metro area which is a very fluid and mobile area that is home to a major national transportation intersection and a Midwest regional airport.
Carson	
Carter Lake	
Council Bluffs	
Crescent	
Hancock	
Macedonia	
McClelland	
Minden	
Neola	
Oakland	
Treynor	
Underwood	
Walnut	
County *(Unincorporated)*	
Schools	

5.8 Infrastructure Failure

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
3	2	4	2	2.75

5.8.1 Description

The widespread breakdown or disruption of normal communication capabilities or an extended interruption of potable water, electric, petroleum or natural gas service. This could include major telephone outages, loss of local government emergency communications systems, long-term interruption of electronic broadcast services, or the long-term disruption and distribution of potable water, electric, petroleum, or natural gas, including local supply shortages.

5.8.2 Extent and Vulnerability

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 government 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 services and response times. Depending on the nature of the disruption, energy failure can impact the entire county at most, to just specific neighborhoods or sections at least. Potable water supply disruption impacting the entire county is unlikely as most communities have their own source or system. Water system loss is more likely to be disrupted as a cascading event to another event, such as a disruption to electrical service.

The impacts of a communications failure on citizens would be indirect and would create more of an inconvenience than a threat to health and safety. Essential communications equipment throughout the county is supported by backup systems, and incorporated cities, along with the Emergency Management Agency, can provide limited alternate communications capabilities in the event of a prolonged failure. A short-term energy disruption would cause more of an inconvenience than a threat to health and safety. An extended power failure or fuel source and natural gas disruption would pose a threat, particularly in the winter, especially to vulnerable populations such as the elderly or sick. Most critical facilities in the county have access to a fixed or portable generator, though backup power is a luxury to many residents.

5.8.3 Historical Occurrence and Probability

In 1988 a tornado struck near the Pottawattamie County Courthouse and temporarily disabled countywide radio communications located there. Otherwise, there have not been any documented instances of long-term emergency communications failures. Isolated incidents of telephone communications or 911 communications failures affecting portions of the county occur nearly every year. Most of these instances last anywhere between 1 to 6 hours in duration. However, in relation to some of the winter storms that

prompted a Presidential Disaster Declarations, some sections of the county were without residential and business telephone service for up to nine days.

Minor power outages occur somewhere in the county at least 3 to 5 times a year; many of which were direct results of other hazard events (i.e. storms). The most recent serious power outages to affect the county occurred in 2007 and 2010 in conjunction with severe winter storms that prompted Presidential Disaster Declarations. Many residents, especially those in unincorporated areas were without power for up to or slightly greater than 72 hours.

The risk of a long-term (more than a few hours) communications failure in the planning area is relatively low. Restoration of communications capabilities during a prolonged blackout would be a priority, and during most hazard events the county will activate the emergency operations center (EOC) with emergency communications restoration a high priority. The probability of another extended power outage, or other vital infrastructure resource is dependent on the size, scope and circumstances under which systems might fail or be adversely affected. The most vulnerable, the county's electricity, is provided by Mid-American Energy and a few rural electric cooperatives, which have several power grids located throughout the county. The probability of a short-term outages somewhere in the county is nearly a given each year, but prolonged outages are unlikely to occur frequently.

5.8.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca Carson Carter Lake Council Bluffs Crescent Hancock Macedonia McClelland Minden Neola Oakland Treynor Underwood Walnut County *(Unincorporated)* Schools	**COMMUNICATIONS** Disruption of continuity of operations would be the primary vulnerability among incorporated cities. There could be delays in emergency response and coordination until a secondary means to communicate is operational. The 911 center for the county is located at the county courthouse. The system has significant redundancies and a backup facility. The EOC has amateur radio capabilities that can tie impacted jurisdictions to operating coordination centers. Residential communication outages will hinder distributing information to citizens effectively. **POTABLE WATER** Most jurisdictions provide their own water supply. A few cities are served by another city system or a rural water association. The loss of distribution would significantly impact the health and welfare of the populous throughout the planning area. Mass transportation of potable water to areas with a prolonged outage would be sparse and cost intensive. Many rural residents have private wells and would be minimally impacted outside of a drought situation affecting those residents. The loss of water at a population center would have a direct impact on fire service operations as well as health and medical operations and considerations. **ELECTRICITY/NATURAL GAS** All jurisdictions, except Neola, receive their electricity from a private provider – natural gas is all provided by private providers. Restoration priorities and operations would need coordinated on behalf of jurisdictions based on impacts. Medical device dependent individuals, hospitals and clinics are the most vulnerable to a prolonged outage. Extreme heat events in tandem with outages or rolling blackouts for conservation, cooling vulnerable populations is a concern. Heating during extreme winter weather events is also of equal concern. Electricity and natural gas is a critical resource for the industrial and agricultural sectors in the planning area. **TRANSPORTATION FUELS** Gasoline, fuel oils, and other related products are critical during extended emergencies as well as recovery. The shortage of fuel would significantly impact all jurisdictions. The ag and industrial sectors are heavily dependent on fuel for operations. Most of the jurisdictions are "bedroom communities" where the majority of the population rely on commuting to job centers near the metro area. A moderate or longer shortage would have a drastic impact on families, economic stability, and would compromise recovery operations.

5.9 Landslide

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
1	1	4	1	1.45

5.9.1 Description

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. Vulnerable slopes fail as a result of fire, rainstorms, earthquakes, and various human activities.

5.9.2 Extent and Vulnerability

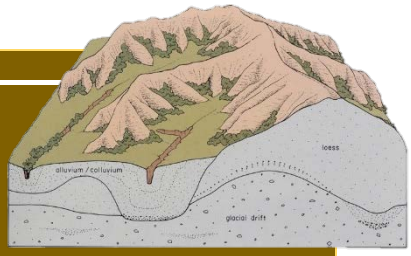
An event in the planning area would most likely occur in the western loess hills of the county and be limited to an area less than a square mile at the most. Such an event would be limited to residences located at the top or bottom of the county's steeper bluffs/hills with the most significant potential between the cities of Crescent and Council Bluffs. Landslides could impact roadways, hindering emergency response capabilities.

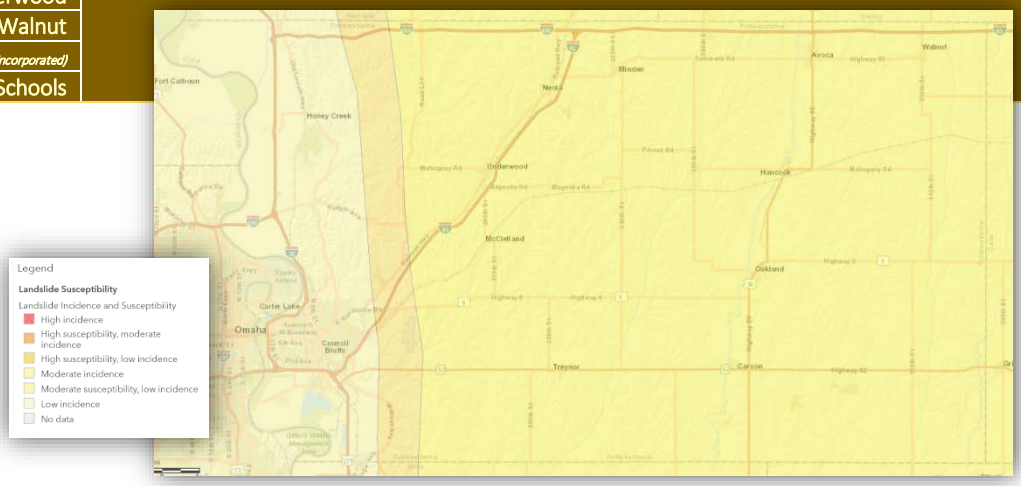
5.9.3 Historical Occurrence and Probability

There have been no documented occurrences of significant landslides in the planning area for the past 30 years.

5.9.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	Due to the presence of some very steep Loess Hills bluffs in the western part of the county it is likely that landslides will occur. These slides would likely encompass an area of 1 mi^2 or less. 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 location of the most susceptible areas for these events to occur is such that damage to property would not be widespread. 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.
Carson	
Carter Lake	
Council Bluffs	
Crescent	
Hancock	
Macedonia	
McClelland	
Minden	
Neola	
Oakland	
Treynor	
Underwood	
Walnut	
County *(Unincorporated)*	
Schools	





5.10 Levee/Dam Failure

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
2	4	4	4	3.10

5.10.1 Description

Loss of structural integrity of a wall, dike, berm, or elevated soil by erosion, piping, saturation, overtopping or under seepage causing water to inundate normally dry areas. A break in, or imposed threat from, any water retention fixture which may endanger a population adjacent to or downstream of the containment area.

5.10.2 Extent and Vulnerability

The levee system in place will prevent most floods from leaving the floodway, but if a flood is large enough to overtop a levee or collapse a wall, very few buildings in flood-prone areas would withstand the force and volume of the water. In the event of a dam failure, flooding would affect areas in close proximity and downstream at a minimum.

5.10.3 Historical Occurrence and Probability

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 in damages to thousands of properties in southwest Iowa. Levees were later rebuilt to withstand a 500-year flood event.

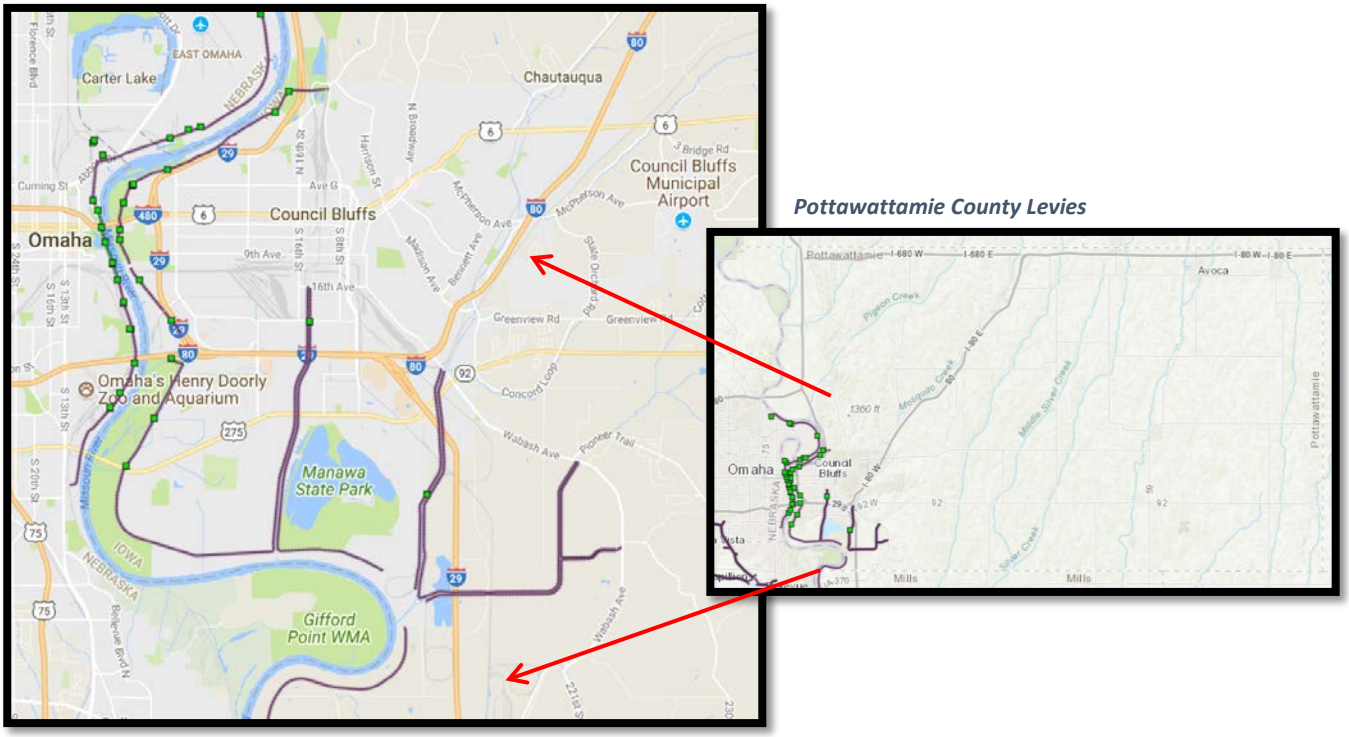
In May of 2011, controlled flooding of the Missouri River by the U.S. Army Corps of Engineers created active record flooding conditions over a period of over four months. From May through October, levees along the Missouri River were inundated with water inundating western areas of the planning area. Millions were lost to property damage, agricultural production, and road systems, and though there were no levee failures, structural integrity of the levees was significantly compromised. Restoration, repair and reinforcement of levees and drainage systems along the Missouri River began in late 2011 and will continue into the foreseeable future.

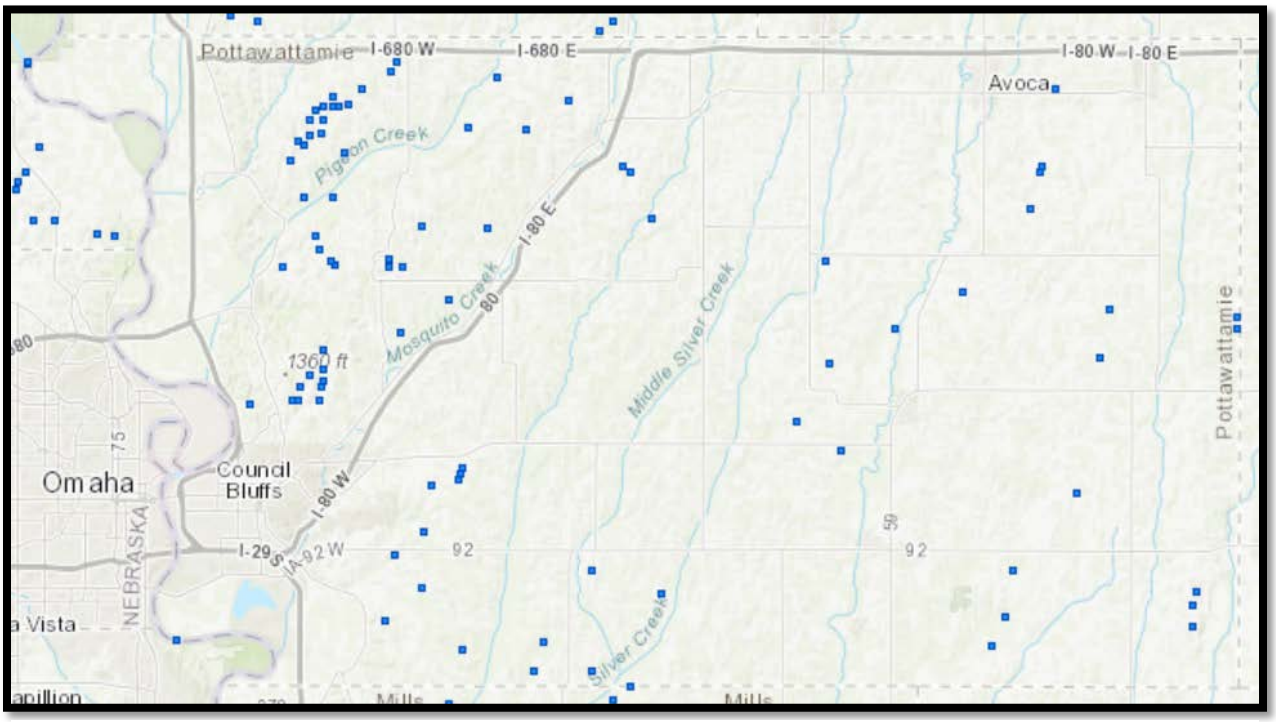
There are no documented dam failures that have affected the residents of Pottawattamie County in the last 30 years.

The likelihood of a levee failure in Pottawattamie County is low. However, almost all of the necessary factors for a levee failure are beyond the control of local officials. Those factors include substantial snowpack and/or rainfall over a prolonged period of time and the potential for an upstream dam failure along the Missouri River in South Dakota.

In the extremely remote event of failure of one or more of the Corps of Engineer 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. Many dams in Pottawattamie County are beginning to show signs of age and wear, increasing the risk of a failure with

time. These dams are inspected on an annual basis to mitigate failure. Presently the probability of any dam failing in the next few years is relatively low. Overall, there are 84 total dams of varying size in the county, 2 of which have been classified as “high hazard” potential dams. A countywide dam inventory is included in the appendices section of this plan.





Pottawattamie County Dam Sites

5.10.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	No direct threat.
Carson	No direct threat.
Carter Lake	The city would be threatened and impacted by a breach of the levee on the Nebraska side of the river. A dam failure of one or more of the northern Missouri River dams would, at a minimum impact the entire city potentially inundating many areas of the city and cutting off the primary traffic routes along the eastern border.
Council Bluffs	The city is significantly vulnerable to a potential levee failure. Most of the western border of the city, home to residential, industrial/chemical, and entertainment facilities, is protected by the levee system. A 500-year flood levee; it was stressed and damaged during the 2011 floods. It will take considerable time to completely rehabilitate and strengthen the levee system. A dam failure of one or more of the northern Missouri River dams would impact the city with rural area flooding to the north and likely leading to the overtopping or failure of a portion of the protective levee system within the city. Access and use of I-29 will be cut off. Additionally, failure of the Indian Creek Dam Site No. 2 would release a volume of water nearing 8' that would rush southward through the Indian Creek system toward the city. Significant property damage and loss of life of unwarned motorists, pedestrians, and residents would be highly likely.
Crescent	No direct threat. A dam failure of one or more of the northern Missouri River dams would, at a minimum impact rural area residents and cut the city off from road systems to the west of the city.
Hancock	No direct threat.
Macedonia	No direct threat.
McClelland	No direct threat.
Minden	No direct threat.
Neola	No direct threat.
Oakland	No direct threat.
Treynor	No direct threat.
Underwood	No direct threat.
Walnut	No direct threat.
County *(Unincorporated)*	No direct threat.
Schools	The Council Bluffs CSD, St. Albert Catholic Schools, Heartland Christian Schools, and Lewis Central CSD would all see significant disruptions to operations. Many students and staff would be directly impacted personally by a levee breach and transportation routes will be compromised. Some facilities, based on the actual breach location and active flood duration, could be compromised by water encroachment or associated power disruption.

5.11 Mass Casualty Event

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
2	3	4	2	2.60

5.11.1 Description

Pottawattamie County hosts one of largest inventory of total road/highway transportation miles, rail miles, and is home to local and regional air traffic as well as commercial and pleasure river traffic. This hazard does not address the numerous single or multiple road transportation incidents that occur but focuses on those \transportation incidents resulting in mass casualties with the highest potential to exceed local response capacity.

Road/Highway Transportation: A single or multi-vehicle incident that requires responses exceeding local response capacity.

Rail Transportation: A derailment or train accident which directly threatens life or property, or which adversely impacts a jurisdiction from delivering emergency services.

Waterway Transportation: An incident involving commercial or pleasure craft threatening life and property in the form of drowning, fuel spillage, and property or infrastructure damage.

Air Transportation: An incident involving military, commercial, or private aircraft resulting in the need for multiple jurisdiction resources and extended operations. Some small private and commercial aircraft incidents (single engine planes, crop dusting equipment, helicopters, etc.) will often be handled by normal response operations.

5.11.2 Extent and Vulnerability

The entire planning area is vulnerable to mass casualty incidents form transportation modes, however the highest probability exists in and around the Council Bluffs Metro area where which has the highest density of population and modes/amount of transportation.

Road/Highway Transportation: There are over 3,330 miles of roadway within the planning area with significant traffic on the major road systems throughout the county. The most vulnerable are those commuting on these road systems throughout the county, especially the interstate and highway systems.

Roadway System	Mileage
Interstate (IDOT)	682
US Highway (IDOT)	231
State Highway (IDOT)	188
Farm to Market (Pott.Co.)	1,007
Local Roads (Pott.Co. & Locals)	1,232
Total	**3,339**

Rail Transportation: The extent and vulnerability to a rail incident is within those jurisdictions in proximity to existing rail lines, crossing, and yards. There is no standard passenger train service in the planning area although there may be times during rail line

rerouting that there could be limited passenger service within the planning area. Population impact would typically be limited to a population affected by a rail incident involving hazardous materials shipment.

Waterway Transportation: The extent of an incident would be the immediate impact area with the exception search and rescue operations and/or a hazardous materials release related to commercial river transports. Areas of vulnerability, by rank, include the Missouri River, Lake Manawa, and Carter Lake (lake). A vessel incident even with limited patient numbers could cause a larger response due to the technical nature of water operations, especially considering the impressive channel speeds of the Missouri River. The U.S. Coast Guard Auxiliary, 8th Western Rivers Dist., Division 33 maintains and executes a disaster emergency plan for the Missouri. However, local first responders will bear the responsibility of executing immediate response actions.

Air Transportation: This type of incident would normally be restricted to a crash site which would be estimated to be not more than a few standard city blocks. However, the impacts and effects could vary widely considering that the vast majority of the county and its most densely populated area resides within the approach and departure paths of Eppley Airfield. There is also a significant amount of military aircraft operations over the county in relation to Offutt Air Force Base just off the southwest portion of the planning area. An impact in a populated area or major highway/interstate artery could significantly expand the impact and vulnerable population beyond that of the aircraft passengers and crew.

5.11.3 Historical Occurrence and Probability

Road/Highway Transportation: There are thousands of accidents reported annually, many without or with a few injuries. There are typically less than a dozen incident per year that rise to a Level I Mass Casualty Incident which is described as a motor vehicle accident resulting in 5 to 10 injured persons. The last recorded significant mass casualty road/highway incident was June 2011 on I-80 near the Shelby Exit where a charter bus for a high school trip rolled down an embankment resulting in a (50) patient mass casualty response. The majority of patients were uninjured or had minor injuries. Due to the amount of road/highway miles within the county and amount of motor traffic, probability will always remain high.



I80 Bus Rollover, June 2011

Rail Transportation: Since the late 1970's, approximately (40) rail incidents have been recorded reporting (47) injuries and (6) fatalities related to those incidents. Nearly all were recorded at highway/rail crossing intersections. There is a relatively low probability for a mass casualty incident related to a rail accident that does not involve a hazardous substance release.



C&NW Derailment, Dec. 1961, Council Bluffs

Waterway Transportation: There have not been any recorded large-scale water related transportation incidents in the planning area over the past 30 years. The Missouri River is monitored by the U.S. Army Corps of Engineers and U.S. Coast Guard Auxiliary for safe navigable conditions for large commercial watercraft which reduces the probability of a large-scale incident.

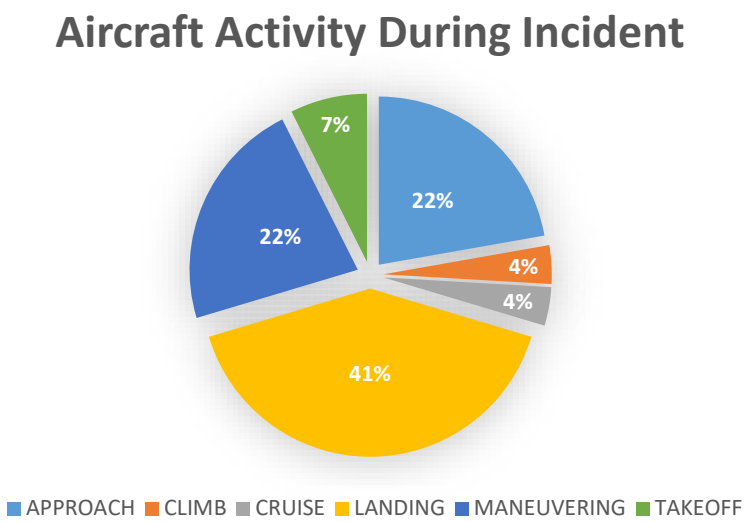
Air Transportation: There have been (27) aircraft crashes in the planning area since 1982 resulting in (9) fatalities, (4) serious injuries, and (8) minor injuries. All these incident have involved small (1 or 2 engine) fixed wing aircraft or rotor wing aircraft. With the significant amount of daily commuter air travel over the county and aircraft used for agricultural production, the probability of an incident is high, however the type of aircraft and location of the incident will dictate the vulnerability and overall extent.



I-29 Crash, Council Bluffs (Dec.2010)



Helicopter Crash, Macedonia (Sept.2014)



5.11.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	I-80 borders the northern edge of Avoca. A large scale transportation incident would impact local services
Carson	Highway 92 and 59 intersect at the eastern edge of Carson with 92 running through the southern portion of the city. These highways are major routes with heavy commuter and commercial traffic.
Carter Lake	Resides within close proximity to Eppley Airfield putting the population at risk of being impacted directly by an incident or indirectly should an incident occur at the airport. Abbott Drive sees approximately 20,000 vehicles per day with many commuter and commercial vehicles traveling to Eppley Airfield. A major rail line runs in the city south of Ave H with a hotel approximately 50 yards away from the line. The area is also industrial with large petroleum storage that could exacerbate a derailment incident. The Missouri River is the only waterway with commercial maritime traffic that includes hazardous substance shipments. This activity poses a potential risk to the city.
Council Bluffs	A significant portion of residential and business areas are in line with approach and departure paths of Eppley Airfield. Should an airline have an incident during takeoff or landing, the impacts of a populated area crash would be significant resulting in multiple fatalities and injuries that would overwhelm the local public safety system. Interstates 80, 29, and 480 along with Highways 6 and 92 are very high volume traffic routes in and around the city. There is a very high amount of commuter and commercial traffic (including hazardous substance shipments) that make the city susceptible to a major traffic incident, especially during peak travel hours or planned events. The city has a rich railroad history and rail traffic (non-commuter) is prevalent in the city, especially at the numerous crossings, sidings, switch stations, and loading/unloading points. It is estimated that a major rail incident could impact approximately 5% of the population at any given point depending on the scope of the accident and materials transported. The Missouri River is the only waterway with commercial maritime traffic that includes hazardous substance shipments. This activity poses a potential risk to the city.
Crescent	Also within Eppley's approach and departure paths, the city could be impacted by a crash scenario. Impacts would likely be peripheral and transportation related based on the geographical area. I-29 is less than a mile west of the city and large traffic incident would have local resource and travel restriction/rerouting implications. Additionally, Old Lincoln Highway is a major arterial road that runs north/south through the community. Crescent could be impacted by a derailment incident involving hazardous substances. 2 lines run north/south within 2 miles of the city.
Hancock	No direct threat.
Macedonia	No direct threat.
McClelland	No direct threat.
Minden	I-80 is two miles north of the city. Local traffic would be impacted by a major interstate event in the area with traffic rerouting and local emergency services would be taxed.
Neola	Neola sits south of the I-80 and I-680 split. This intersection is prone to accidents and a potential site for a mass casualty event considering the high volume of commuter and commercial traffic. BNSF has a line that runs along Front Street (the main route through town) which, depending on the scope of a derailment and materials being shipped, could impact critical facilities in the area (fire station, water treatment plant) as well as the central business district.
Oakland	Highways 6 and 59 split at both the southern and eastern edges of the city as well as running directly through the center of the community. These are major transportation routes for commercial traffic, especially hazardous substance shipments. The community will see between 1,500 and 2,000 vehicles per day.
Treynor	The city is bisected by Highway 92. It is largely used as a primary commuter route for the traveling workforce and an agricultural route for grain markets.
Underwood	I-80 runs adjacent to the city on the east. Railroad Highway runs through the community and is a major transportation route in the western part of the planning area. A major event on 80 would cause the rerouting of traffic through the city. BNSF's line (also runs through Neola) could put the city's wastewater treatment operations and the Agriland FS at risk in a major derailment with hazardous substances. These facilities are within 1 mile of the line.
Walnut	I-80 runs along the northern border of Walnut. This site is particularly dangerous during winter storm events often causing traffic to stop in and around the community or attempts to reroute through the community. Walnut is often a shelter site for stranded motorist during major winter events.
County *(Unincorporated)*	There are no unincorporated significant impacts related to transportation mass casualty incidents. The sparse rural population limits the impacts of an event occurring in an unincorporated area not in proximity to a population center.
Schools	Tri-Center CSD (Neola) could see operational disruption with a major event occurring at the 80/680 split. Riverside CSD is set at the southern split of Hwy 59/6 (Oakland) which poses an increase for accident potential with a large amount of inexperienced teenage drivers navigating a 4-way sign controlled intersection with heavy traffic volumes. All schools share the commensurate amount of risk exposure as identified above in their host communities.

5.12 Radiological Incident

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
1	3	4	4	2.35

5.12.1 Description

An accident involving radioactive waste and materials that are shipped through the planning area. During commodity flow research, the identified routes of I-80, I-29, I-680, and Highways 6 and 59 have been identified as knowingly having radiological materials shipped through the planning area.

5.12.2 Extent and Vulnerability

The security of certain shipments and containers that materials are shipped in are extremely robust and reduce the risk of a large-scale radiological incident not related to an act of terrorism/intentional release. Those most vulnerable to an incident would be those in the immediate accident area of transported materials and any first responders caught unaware of materials present. Communities along the primary routes of the planning area also bear some minimal vulnerability depending on the actual incident location.

5.12.3 Historical Occurrence and Probability

The only known occurrence that had potential for causing an incident of this nature occurred in 2002. A tractor trailer hauling a radiological waste container was involved in a property damage accident on I-80. There was no breach or damage to the container and required no emergency response. Probability for an incident remains low for the county.

5.12.4 Jurisdiction Specific Information

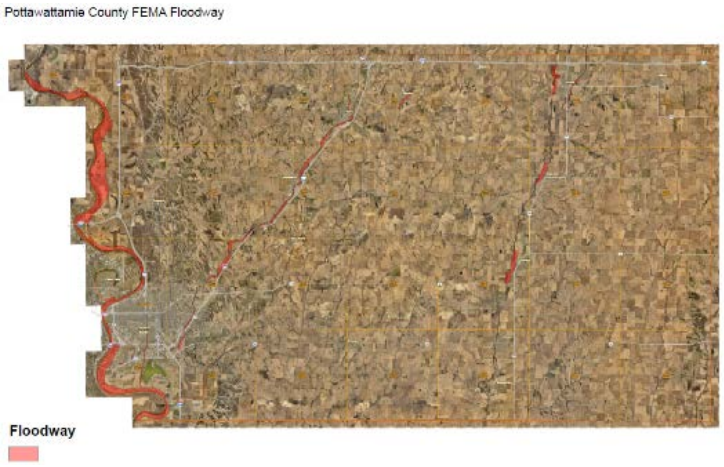
JURISDICTION	SUMMARY and NOTES
Avoca	Radioactive waste that is transported is typically low level waste and would not pose any serious health threats unless exposure was long-term. However, any incident in the planning area would likely require assistance from outside resources. Being in close proximity to major transportation routes increases a jurisdiction's risk but the probability of an occurrence is significantly low.
Carson	
Carter Lake	
Council Bluffs	
Crescent	
Hancock	
Macedonia	
McClelland	
Minden	
Neola	
Oakland	
Treynor	
Underwood	
Walnut	
County *(Unincorporated)*	
Schools	

5.13 River Flooding

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
3	3	1	3	2.70

5.13.1 Description

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. They can be slow or fast rising but generally develop over a period of days and in relation to another natural hazard (i.e., severe storms, prolonged rainy periods, etc.). Flooding is a natural and expected phenomenon that occurs annually, usually restricted to specific streams, rivers or watershed areas.



5.13.2 Extent and Vulnerability

Over 15% of the planning area is affected by the 100 or 500-year floodplain areas defined by FEMA. Many jurisdictions are located in and along these areas. The most vulnerable to this hazard are those jurisdictions along the Missouri River which defines the entire western border of the planning area and the communities along the West Nishnabotna River in the eastern portion of the planning area.

There are (41) parcels documented within the planning area that have structures in the identified floodway. This is a significant reduction due to mitigation projects, zoning enforcement, and redefinition of FIRM maps by FEMA. As of December 31, 2017, there are (20) properties identified as "Repetitive Loss Properties" for flooding hazards.

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The following data is NOT authorized for public release in accordance with the Privacy Act of 1974, 5 USC § 552a

Repetitive Loss Properties *(12-31-2017)*

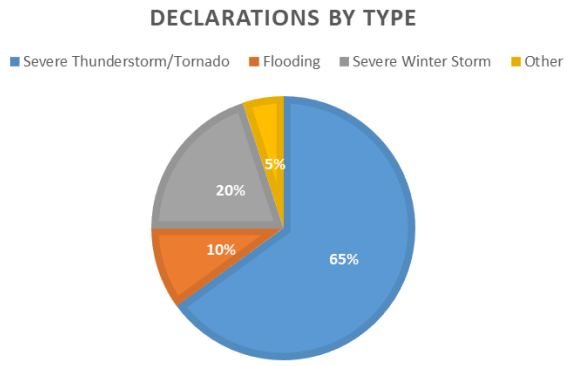
Address	City	Insured	Mitigated	Address	City	Insured	Mitigated
1727 AV F	COUNCIL BLUFFS	NO	NO	807 N 36TH ST	COUNCIL BLUFFS	NO	NO
1401 FRANKLIN	COUNCIL BLUFFS	YES	NO	1522 4TH AVE	COUNCIL BLUFFS	YES	NO
1401 FRANKLIN BLDG 2	COUNCIL BLUFFS	YES	NO	1101 6TH AVE	COUNCIL BLUFFS	NO	NO
1401 FRANKLIN BLDG 3	COUNCIL BLUFFS	YES	NO	1716 7TH AVE	COUNCIL BLUFFS	YES	NO
GOOSEHAVEN LOOP	CRESCENT	NO	NO	331 N 7TH ST	COUNCIL BLUFFS	NO	NO
72 LAKEWOOD VILLA LN	COUNCIL BLUFFS	NO	NO	517 9TH AVE	COUNCIL BLUFFS	NO	NO
324 N 17TH ST	COUNCIL BLUFFS	YES	NO	15469 TEAL LN W	HONEY CREEK	NO	YES
305 S 18TH ST	COUNCIL BLUFFS	NO	NO	15594 JET LN	CRESCENT	YES	NO
2015 2ND AVE	COUNCIL BLUFFS	YES	NO	20970 RIVERROAD N	CRESCENT	YES	YES
800 N 35TH ST	COUNCIL BLUFFS	NO	NO				
805 N 36TH ST	COUNCIL BLUFFS	NO	NO				

- *There are no properties identified as Severe Repetitive Loss*

Residential	Commercial

5.13.3 Historical Occurrence and Probability

The planning area has had (6) Presidential Disaster Declarations specific to flooding as the primary hazard and need for assistance. There have been (9) additional declarations made in the planning area under the category of Severe Storms where at a minimum, flash flooding was part of the combination hazard requiring a declaration, although not necessarily the primary hazard event. This signifies that flooding, as a component or primary hazard, to nearly 75% of all federally declared disasters is one of the most common occurring hazards in the planning area.



Historically, the largest floods in the planning area occurred in 1952, 1993, and 2011. These events caused millions in damage destroying homes, infrastructure, and businesses. The 2011 flood placed the planning area in the most significant risk and potential for devastating losses and loss of life. The May of that year, the U.S. Army Corps of Engineers began releasing record amounts of water from Gavins Point Dam in South Dakota to mitigate infrastructure damage/failure to the system due to record precipitation and delayed snow melt in the upper Missouri River basin. This caused record flooding in the western portion of the planning area for (5) months. In the inundated area I-29, I-680, and several local roads were cut off and/or completely destroyed. The event forced emergency evacuations, prolonged relocation of residents, and stressed, damaged, and degraded the integrity of the planning area levee system which protects Council Bluffs. The fear and potential of a sudden and catastrophic levee failure would have had direct loss of life implications for nearly 20,000 residents.

2011 Missouri River Flooding Losses	
Individual Assistance (total paid)	$5,722,370.20
Public Assistance (total paid)	$18,821,021.78
Total	$24,543,391.98

Considering the historical occurrences, it is likely there will be a minor flood event within the next (3) years and a moderate or major flood event within the next decade.



2011 Missouri River Flooding

5.13.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	East and West branches of the W Nishnabotna River surround the city. The southern portion of the city is most at risk being home to the county fairgrounds, school, and school sports complex. There lower elevations on the east of the city along the river which is home to the city park, ballfields, walking trails, and swimming pool are also at risk.
Carson	The W Nishnabotna traverses the west and south side of Carson. The rodeo grounds, city park, ball field, and water/sewer treatment infrastructure are all at risk from flooding along the river.
Carter Lake	Although the Missouri River is located on the east side of the city, distance from the river makes direct inundation unlikely. The high water table will increase flooding risk in the form of basement inundation and inability to drain water during river flood events.
Council Bluffs	Approximately half the city is constructed in the Missouri River floodplain which poses a significant risk to the city from the river and tributary streams should there be a compromise to the levee system. The Corps of Engineer Levee system built after the 1952 flood protects much of the at risk areas along the Missouri. The far southern portion of the city is not protected by the levee and there is a secondary flood threat from tributary creeks backing up during river flooding events.
Crescent	The city hosts Pigeon Creek on the west side of the city and Crescent Creek on its south. The Missouri is approximately 10 miles to the west. Some areas of the city without storm sewer infrastructure are at higher risk that others.
Hancock	The W Nishnabotna River flows on the west side of the city in close proximity to Botna Bend Park, the City Park, Hancock Elevator and Fertilizer, and the city's sewer lift station. All these facilities were breached and damaged in 1993.
Macedonia	There are no special flood hazards.
McClelland	There are no special flood hazards.
Minden	The city hosts Keg Creek near the southern and eastern portions of the city. Most of the potential flood area is agricultural land and adjoining commercial buildings, threat to residential areas is minimal.
Neola	Mosquito Creek and Neola Creek run to the east and west of Neola.
Oakland	The W Nishnabotna River runs along the western border of Oakland. Oakland has conducted aggressive mitigation projects removing residential structures from the threat area over the past 20 years preserving the area as green space and recreational areas. The most vulnerable areas would be very few residential properties and businesses in the southwest portion of the city.
Treynor	There are no special flood hazards.
Underwood	Mosquito Creek runs east of the city posing a risk to those properties within close proximity. Mitigation work to the channel has reduced the risk of flooding for the city.
Walnut	Walnut Creek runs on the east side of the city. The city has mitigated flood risk by developing away from the hazard.
County *(Unincorporated)*	Botna Bend Park (Hancock) is vulnerable to Nishnabotna River flooding. This threatens not only campers using the facility but also the elk and buffalo herds on display at the campground.
Schools	• **AHSTW** is in the 1% annual chance flood hazard (Zone AE). • **Council Bluffs Schools** has (8) facilities in Minimum Hazard Zone X, (2) facilities in the 1% annual chance flood hazard Zone AE, (11) facilities in the Regulated Floodway Zone X (Reduced risk from levee), and (3) facilities in the 1% annual chance flood hazard Zone AH. • **Heartland Christian** is in the Regulated Floodway Zone X (Reduced risk from levee. • **Lewis Central** is in the 1% annual chance flood hazard (Zone AE). • **Riverside** facilities are all within the Minimum Flood Hazard Zone X category. • **St. Albert** facilities are within the Minimum Flood Hazard Zone X category. • **Treynor** facilities are within the Minimum Flood Hazard Zone X category. • **Tri-Center** facilities are within the Minimum Flood Hazard Zone X category, however, their athletic fields reside the 1% annual chance flood hazard Zone A. • **Underwood** facilities are within the Minimum Flood Hazard Zone X category. • **IWCC Comm. College** facilities are within the Minimum Flood Hazard Zone X category, however, some of its property is within both the Regulate Floodway and the 1% annual chance flood hazard Zone AE.



June 2008 Flooding - Oakland



2007 Flooding between Hancock & Oakland



2012 Missouri Flood encroaching at Narrows River Park

5.14 Severe Thunderstorms *(Thunderstorms, Lightning, Hail, Wind)*

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
4	2	4	1	3.10

5.14.1 Description

Atmospheric imbalances and turbulence that can result in heavy rains, winds in excess of 58 mph, surface hail greater than .75" in diameter, dangerous cloud-to-ground lightning, and even tornadoes. *[Note: tornadoes are discussed as a separate hazard]*

5.14.2 Extent and Vulnerability

Severe thunderstorms can cover a number of miles with the most severe portion of individual systems generally isolated. However, thunderstorms that impact the planning area will affect most residents in one way or another. It is highly probable that multiple jurisdictions in the planning area will be affected by the same storm system moving in its typical west to east. Severe thunderstorms can produce rapid and significant accumulations of rainfall. They can produce dangerous lightning, extreme winds, and large hail. Each of these hazard alone but especially when combined can produce property damage, electrical system interruptions, communications interruptions, fires, transportation interruptions, infrastructure damage, delays in emergency services, injuries, and even death.

5.14.3 Historical Occurrence and Probability

Thunderstorms occur and will occur in the planning area on a yearly basis, typically in the spring and summer months, but they can occur any time during the year under the right conditions. These severe storm events have prompted (9) Presidential Disaster Declarations since 1965, (4) of which have occurred in the last decade.

5.14.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	The vulnerability from severe thunderstorms among jurisdictions in the planning area is generally uniform. Storms can damage homes, vehicles, wipe out entire fields of crops, injure livestock and pets, cause injury and death, and damage other property by the size and sheer force of hail, significant and rapid rainfall, devastating winds, and dangerous lightning. Persons caught outside during a storm are most at risk. Power and communications failures often result from thunderstorms. However, loss of systems is usually temporary and many critical functions have backup capabilities.
Carson	
Carter Lake	
Council Bluffs	
Crescent	
Hancock	
Macedonia	
McClelland	
Minden	
Neola	
Oakland	
Treynor	
Underwood	
Walnut	
County *(Unincorporated)*	
Schools	

5.15 Severe Winter Storms

Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
4	2	2	3	3.00

5.15.1 Description

Winter storm systems that adversely and significantly impact day-to-day activities and public services. These events can include blizzard conditions, heavy and blowing snowfall, freezing rain/heavy sleet, extreme cold, or any combination thereof.

5.15.2 Extent and Vulnerability

Winter storms generally affect multiple counties and cover hundreds of miles. In addition to affecting the entire planning area, many severe winter storms often restrict access to communities for extended periods due to poor road conditions in adjoining rural areas. Almost 100 percent of the geographic area will be affected. Dangerous driving conditions and exposure to extreme conditions are the primary threats associated with severe winter storms. Power outages can be dangerous to vulnerable populations during extremely cold periods. It also hampers the public's ability to access needed services and commodities due to power, communications, or transportation disruptions due to the conditions and also pose a risk to the care and feeding of livestock.



2007 Blizzard – Rural Pottawattamie County

5.15.3 Historical Occurrence and Probability

The planning area will usually experience at least one heavy snowfall and/or freezing precipitation event annually. Severe winter storms have prompted (4) Presidential Disaster or Emergency Declarations since 1997.

5.15.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
Avoca	The vulnerability from severe winter storms among jurisdictions in the planning area is generally uniform. A severe winter storm could hinder or entirely shut down access to many of the jurisdictions, especially if major transportation routes and secondary road systems are impassable. In a long duration power outage associated with the event, heating of homes could become an issue. Emergency Services in all jurisdictions would face delayed responses and operational challenges in extreme conditions. Major highways and interstates could be impassable causing the need for temporary emergency shelters of stranded motorists and managing increased commercial traffic into communities when forced to exit closed road systems.
Carson	
Carter Lake	
Council Bluffs	
Crescent	
Hancock	
Macedonia	
McClelland	
Minden	
Neola	
Oakland	
Treynor	
Underwood	
Walnut	
County *(Unincorporated)*	
Schools	

5.16 Tornadoes

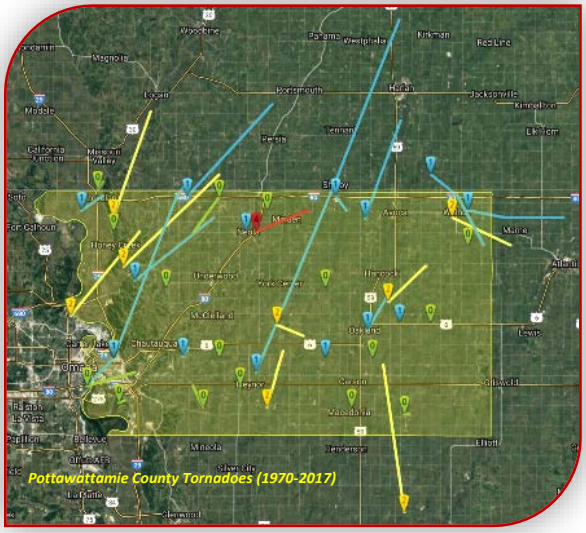
Hazard Score Calculation				
Probability	Impact	Warning Time	Duration	CPRI
3	4	4	1	3.25

5.16.1 Description

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.

5.16.2 Extent and Vulnerability

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 can also accompanied by large hail, lightning, heavy rain, and destructive straight-line/downburst winds. Extent of damage is largely dependent on the wind speed and duration of the tornado as defined in the Enhanced Fujita Scale, which describes severity of impact. The extent of impact can be as little as a single rural property to a few city blocks, or an entire community.



Those most at risk from tornadoes include people living in mobile homes, campgrounds, and other dwellings without secure foundations, basements, or storm shelters. People in automobiles are also very vulnerable to tornados. The elderly, very young, and the physically and mentally handicapped are especially vulnerable because the lack of situational awareness and/or possessing the mobility to escape to adequate shelter.

5.16.3 Historical Occurrence and Probability

There have been (42) documented tornadoes in the planning area since 1970. Tornadoes have been the primary or a contributing hazard causing (6) Presidential Disaster Declarations in the planning area since 1984. There have been (0) related fatalities and (96) attributed injuries to tornado events with (42) people being injured during the tornado of July 15, 1988, and F2 tornado that ripped through Council Bluffs at 3:14 p.m. The tornado was 100 yards wide and was on the ground for approximately 2.3 miles.



As part of "Tornado Alley," Iowa typically ranks third in the U.S. for strong to violent tornadoes (per 10,000 mi.^{2}). The planning area experiences multiple tornado watches and warnings issued by the National Weather Service annually creating a high probability of an actual touchdown could occur annually, somewhere within the 1,000 mi.^{2} planning area.

5.16.4 Jurisdiction Specific Information

JURISDICTION	SUMMARY and NOTES
	The vulnerability from tornadoes among jurisdictions in the planning area is generally uniform with special notes provided in the below section, as appropriate. A large and violent tornado impact on a rural community in the planning area, considering infrastructure and budgets, could hold the potential for such a community to be unable to survive the time and cost of rebuilding a small community.
Avoca	
Carson	
Carter Lake	Just over 15% of the communities housing is mobile homes.
Council Bluffs	As the largest population center in the planning area, another tornado in the city would significantly tax emergency response capabilities and infrastructure for the first 12-24 hours of response operations, creating a potential for a high number of concentrated casualties.
Crescent	
Hancock	
Macedonia	
McClelland	
Minden	
Neola	
Oakland	
Treynor	
Underwood	
Walnut	Almost 7% of the housing in the community is mobile home structures.
County *(Unincorporated)*	The county operates (4) public parks that allow camping and does not have public storm shelters available for use during a tornado event. In addition, the county maintains a large amount of primary and secondary road systems that will need cleared and/or secured to aid emergency services during a tornado emergency.
Schools	Most of the schools within the planning area were constructed previous to the trend of building a portion or section of the school as a designated storm/tornado shelter area that meets FEMA recommended specifications. Additionally, with typical storm timing in the planning area, it is not unreasonable to have multiple schools buses transporting students home during tornado potential times of the early afternoon at the beginning of severe weather season. Schools also host and travel for spring and summer sporting events during the peak of severe weather season for the planning area.



1988 Council Bluffs Tornado [photo credit: The Daily Nonpareil]

CHAPTER VI
MITIGATION STRATEGY

The following Chapter is a synopsis of the holistic mitigation strategy within the planning area. It will outline current and ongoing mitigation activities, mitigation goals and recommended strategies, selected mitigation priorities for possible implementation, and strategies or activities removed from the plan since the previous plan update.

As part of the development of this chapter, it was necessary to review the goals and strategies of the previous plan update. The Hazard Mitigation Planning Committee assessed the validity and/or feasibility of mitigation goals and then assessed the need for development of additional goals based on the updated hazard vulnerability assessment in relation to their home jurisdictions. With this completed, new and/or amended goals, with associated recommended implementation strategies for consideration by each jurisdiction within the planning area. Jurisdictions then selected only priority mitigation activities to be applied to their jurisdictions.

Jurisdictions selected their priority activities by considering a myriad of factors that included, but was not limited to:

- Social acceptance and/or population impact/effect;
- Technical feasibility and sustainment, as applicable;
- Administrative feasibility and sustainment;
- Political considerations;
- Legal implications or challenges;
- Economic impact and feasibility; and
- Environmental implications.

The Hazard Mitigation Planning Committee has selected the goals and strategies, further prioritized by selected jurisdictional activities that they believe will ultimately make all of Pottawattamie County a safer place.

6.1 Mitigation Goals and Strategies

The following goals, identified by the planning committee, and associated implementation strategies are a listing of priorities to be considered by each jurisdiction. Jurisdictions will continually review applicable goals and strategies and consider implementation of activities to achieve goals that enhance the health, safety, and security of their jurisdiction, regardless of funding method. This will be done by predetermining jurisdiction specific projects that are local priorities or identification as a goal implementation project after a significant event and availability of mitigation assistance funds. Identified jurisdictional activities will then be reported in Section 6.2 of this chapter.

Goal 1	Continue development of plans, policies, and programs to minimize the effect of any hazard that could impact the planning area.
Associated Hazard:	ALL HAZARDS
Strategy 1.1	Maintain a collaborative comprehensive emergency management plan, inclusive of a Hazard Mitigation Plan (Part B) guided by a multi-jurisdictional planning committee.
Strategy 1.2	Develop programs and/or ordinances that further mitigation enhancement.
Strategy 1.3	Provide public education regarding hazard awareness and preparedness measures, inclusive of a centralized public repository of mitigation and preparedness tools.

Goal 2	Minimize the potential impact and damages from flooding events.
Associated Hazard:	DAM/LEVEE FAILURE, FLASH FLOOD, RIVER FLOOD
Strategy 2.1	Enhance efficient flow of rivers and streams throughout the planning area as appropriate.
Strategy 2.2	Enhance efficient flow of storm water throughout the planning area as appropriate.
Strategy 2.3	Maintain and improve dam and levee structures as necessary.
Strategy 2.4	Maintain, update, and exercise emergency plans for flood protection systems.
Strategy 2.5	Maintain, enforce, and update zoning and floodplain management ordinances as needed.
Strategy 2.6	Continue and encourage participation in the NFIP.
Strategy 2.7	Educate the public regarding flood risk and NFIP.
Strategy 2.8	Consider ongoing floodplain property buyouts and infrastructure relocation/flood proofing projects to limit exposure to known flood hazard areas.
Strategy 2.9	Ensure emergency plans exist or are updated for known and significant flood risks, including provisions for training and exercise.

Goal 3	Minimize the potential impact of erosion along the banks of creeks, streams, lakes, ponds, and areas with steep grades.
Associated Hazard:	LANDSLIDE, FLASH FLOOD, RIVER FLOOD
Strategy 3.1	Implement stabilization projects on stream and river banks where necessary.

Goal 4	Minimize the potential damage and impact from severe weather events.
Associated Hazard:	SEVERE THUNDERSTORMS, SEVERE WINTER STORMS, TORNADOES
Strategy 4.1	Educate residents on severe weather safety and market registration to the countywide emergency notification system.
Strategy 4.2	Construct/enhance safe rooms/storm shelters in schools, public facilities, and open public areas (parks, campgrounds, etc.) that lack shelter space or inadequate shelters.
Strategy 4.3	Enforce local building codes that address structural integrity and safety.

Goal 5	Minimize the potential impact of infrastructure system disruptions.
Associated Hazard:	INFRASTRUCTURE FAILURE
Strategy 5.1	Ensure critical facilities have adequate backup power capabilities.
Strategy 5.2	Maintain and upgrade public infrastructure systems to maximize resilience and redundancy.
Strategy 5.3	Use ordinances to implement underground utility requirements to mitigate exposure to severe weather events.

Goal 6	Minimize risk of mass casualty transportation events.
Associated Hazard:	MASS CASULATY EVENTS
Strategy 6.1	Design and improve transportation routes commensurate with best practices and appropriate for existing and future traffic density.
Strategy 6.2	Partner in traffic incident management (TIM) and transportation improvement projects.

Goal 7	Minimize the potential damages and impacts of a hazardous substance release.
Associated Hazard:	HAZARDOUS MATERIALS, RADIOLOGICAL INCIDENT
Strategy 7.1	Ensure there is a qualified hazardous materials response and cleanup capability.
Strategy 7.2	Maintain and enforce hazardous substance ordinances, rules, and regulations as appropriate.
Strategy 7.3	Educate the public regarding their exposure and risk to local hazardous substances.
Strategy 7.4	Partner with the private sector and contiguous counties regarding hazardous substance preparedness and safety initiatives.

Goal 8	Minimize the potential impact of health related incidents.
Associated Hazard:	HUMAN and ANIMAL/PLANT DISEASE
Strategy 8.1	Collaborate on health monitoring and surveillance of human, animal and plant diseases that could affect the planning area.

Goal 9	Minimize the potential impact and damages of fires.
Associated Hazard:	GRASS/WILDLAND FIRE
Strategy 9.1	Develop ordinances to limit, prohibit, or require certain safety and notifications for open or controlled burning in the planning area.
Strategy 9.2	Encourage proactive land management practices to reduce fuels and improve habitat.

Goal 10	Minimize potential impact of prolonged drought and extreme heat conditions.
Associated Hazard:	DROUGHT/EXTREME HEAT
Strategy 10.1	Monitor municipal water systems to guide implementation of water conservation practices.
Strategy 10.2	Develop municipal water system emergency conservation plans and ordinances for use in water emergencies resulting from drought.

6.2 Current Mitigation Activities

This section identifies mitigation activities selected across the planning area that are continual in nature, have planning area-wide applicability or have been initiated for implementation from the previous plan update(s) or are newly identified mitigation priorities. Activities are identified according to the jurisdiction responsible for implementation, which may be one or more jurisdictions within the planning area.

Jurisdictions, as part of their normal budget processes, shall consider investment into all applicable strategies in Section 6.1 for activities pertinent to their jurisdictional needs. For activities that require local funding, governing bodies should begin to allocate funds as their budget processes allow. All jurisdictions should also consider mitigation goals, strategies, and activities when developing updates to any existing plans and ordinances. Some strategies and implementation activities can be relatively low cost with tremendous benefit when implemented.

	Goal Strategy	Activity/Description	Authority	Funding Source	Cost Est.	Feasibility Status
ALL JURISDICTIONS	1	Update mitigation plan data and information annually to culminate in a 5 year update project completed in 2023.	EMA	Local	$5,000/yr	Good
	1.1, 1.2					Initiated
	7	Develop regional LEPC with Mills & Montgomery Co to enhance hazmat safety & risk awareness initiatives. Target administrative completion & 1st meetings in 2019.	EMA	Local	$5,000/yr.	Good
	7.1, 7.2, 7.3, 7.4					Initiated
	1, 2, 4, 7	Emergency Services agencies conduct hazard awareness presentations to community organizations and schools annually.	DEPTS	Local	Not Reported	Good
	1.2, 1.3, 2.7, 4.1					Ongoing

	Goal Strategy	Activity/Description	Authority	Funding Source	Cost Est.	Feasibility Status
AVOCA	2	Conduct drainage improvement projects in the May Street & N Buttermilk Flat areas. (needs cost benefit info completed)	City Administrator	HMGP	$740,551	Poor
	2.2					NOI Submitted 10-2-2015

	Goal Strategy	Activity/Description	Authority	Funding Source	Cost Est.	Feasibility Status
CARSON	4, 5	Install generators to provide backup power to the water treatment plant, (2) well pumps, and the city hall which serves as the city's emergency shelter and coordination center.	City Clerk	HMGP	$163,465	Poor
	4.2, 5.1, 5.2					NOI Submitted 6-13-2017

	Goal Strategy	Activity/Description	Authority	Funding Source	Cost Est.	Feasibility Status
CARTER LAKE	2, 5	Study storm water infiltration to prioritize repairs and upgrades as identified. Timeline of study & repairs dependent on available funding.	Public Works	Local	Not reported	Fair
	2.2, 5.2					Initiated

	Goal Strategy	Activity/Description	Authority	Funding Source	Cost Est.	Feasibility Status
COUNCIL BLUFFS & POTTAWATTAMIE CO	1, 2, 3, 8, 9	Partnership project to conduct a joint land use study for the city's (2) mile extraterritorial jurisdiction and to create a regional urban conservation office for erosion and sediment control. Concept currently in development.	Elected Officials	Being assessed	Being assessed	Fair
	1.2, 2.1, 2.2, 3.1, 8.1, 9.2					Concept planning

	Goal Strategy	Activity/Description	Authority	Funding Source	Cost Est.	Feasibility Status
COUNCIL BLUFFS	5, 6	Participate with Iowa DOT on interstate development and renovation projects within city limits to ease congestion issues that contribute to potential life safety issues. Project to be completed in 2021.	Public Works Fire Dept Police Dept	Federal State	$2 bil	Excellent
	5.2, 6.1, 6.2					In progress Ongoing
	2, 5	Improve the drainage of the Mosquito Creek 22 channel. (5 year project)	Public Works	Local	$3.5 mil	Fair
	2.2, 5.2					Engineered
	2, 5	Install new pump station at 13th & Broadway.	Public Works	Local	$1.2 mil	Fair
	2.2, 5.2					Engineered
	2, 5	Separate storm and sanitary sewer systems into individual systems in a 21 block area (9th/16th Aves, Main/8th Sts) over a 4 year project period.	Public Works	Local	$4 mil	Fair
	2.2, 5.2					Engineered
	2, 5	Construct storm sewers & pump/lift stations in Twin City area over 6yr project period.	Public Works	Local	$12 mil	Fair
	2.2, 5.2					Engineered

	Goal Strategy	Activity/Description	Authority	Funding Source	Cost Est.	Feasibility Status
CONSERVATION POTTAWATTAMIE CO	4	Construct tornado/severe storm safe rooms in the (3) primary campgrounds within the county.	Conservation	HMGP	$200,000	Poor
	4.2					NOI Submitted 4-6-2015

	Goal Strategy	Activity/Description	Authority	Funding Source	Cost Est.	Feasibility Status
ROADS / ENGINEERING POTTAWATTAMIE CO	2	Conduct a stream stabilization project to prevent erosion and protect an existing bridge.	Engineer	Local	$250,000	Fair
	2.1, 2.2, 3.1					Planning
	2, 3	Construct a dam to stop erosion encroaching into (2) areas along county road L52.	Engineer	Local	Being assessed	Fair
	2.2, 2.3, 3.1					Planning
	2	Partner with Golden Hills RC&D and Northern Natural Gas to repair or replace (2) stream stabilization structures along Walnut Creek.	Engineer	Local	Being assessed	Fair
	2.1, 2.2, 2.3					Planning

	Goal Strategy	Activity/Description	Authority	Funding Source	Cost Est.	Feasibility Status
ALL SCHOOLS	1	Schools have partnered to create a planning area-wide school safety and security task force to address the enhancement of emergency plans and activities to minimize the impacts of emergencies and disasters on schools. Enhanced plans to be completed by 7-1-2019.	School Officials	Local	$10,000/yr	Good
	1.1					Initiated
	4	Schools will implement alert/warning systems provided by EMA to enhance awareness of hazards to minimize impacts of severe weather events on schools.	School Officials	Local	N/A	Good
	4.1					Initiated
	4	Schools will construct of safe rooms as opportunities arise for their facilities, especially during new construction or renovation projects.	School Officials	HMGP Local	N/A	Poor
	4.2					None pending

6.3 Completed Mitigation Activities

Goal Strategy	Activity Completed	Jurisdiction	Funding Source	Cost	Date Completed
4	Tornado Safe Room construction project.	Riverside Schools	HMGP	$841,879	8-15-2018
4.2					
2	Flood buyout (2011 Missouri River).	Pottawattamie County	HMGP	$5.72 mil	5-13-2015
2.8					
2	Voluntary property acquisition project.	Council Bluffs	HMGP	$885,480	12-10-2015
2.8					
2	Acquisition of flood damaged properties.	Council Bluffs	HMGP	$2.95 mil	7-15-2015
2.8					
2	Property acquisition along W. Nishnabotna River.	Oakland	HMGP	$160,646	4-22-2013
2.8					
1	Mitigation planning update.	Avoca, Carson, Carter Lake, Crescent, Hancock	HMGP	$40,000	1-8-2014
1.1					
2	Acquisition/demolition of property (3100 Harry Langdon Blvd).	Council Bluffs	HMGP	$1.15 mil	12-13-2010
2.8					
5	City Hall/Fire Department generator project.	Avoca	HMGP	$45,000	1-21-2010
5.1, 5.2					
1	Mitigation planning update.	Pottawattamie Co, Council Bluffs, Oakland	HMGP	$17,650	12-13-2010
1.1					

6.4 Evaluation and Public Participation

Emergency Management is responsible for monitoring and supporting activities identified in the mitigation plan. Local officials will assume responsibility for local implementation of mitigation goals and strategies. The plan will be reviewed annually by Emergency Management staff and local representatives. The review will determine progress made in addressing the mitigation goals, strategies, and activities outlined in the plan. As part of that evaluation, certain goals may need adjusted, removed, or new goals, strategies, and activities added to ensure that they continue to meet the needs of the 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 re-evaluation in order to remain compliant under the requirements of the Disaster Mitigation Act of 2000 to remain eligible for state and federal funding assistance.

Future reviews and updates will follow the procedure of:

Task A:	*Evaluate the effectiveness of the planning process*
	• Reconvene the planning committee
	• Review planning process
	• Build the planning team & local contributors cadre
	• Engage the public & stakeholders
	• Data gathering & analysis
	• Coordinate with other agencies
Task B:	Evaluate the effectiveness of actions
	• Identify actions/projects implemented & the results
	• Evaluate the actions/projects cost effectiveness
	• Document actions delayed or not implemented
Task C:	Determine why actions/projects did or did not work
	• Lack of available resources/funds
	• Political and/or popular support
	• Distribution of tasks among responsible parties
	• Time

While the 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 Hazard Mitigation Planning Committee representatives and neighboring jurisdictions. Public input will be continually accepted by developing an interactive webpage where the plan can be reviewed and comments provided on a continual basis. In conducting periodic evaluations of the plan, the Committee will consider any material changes to data in the adopted document; evaluate mitigation goals, strategies, and activities; and make revisions to account for changes, completed activities and outcomes achieved. For objectives and/or strategies that either have not been addressed or bypassed on the list, the Committee will explore the reasons for inactivity and re-evaluate their priority within the context of the multi-jurisdictional plan and the overall scheme of the planning area short-term strategic planning priorities.

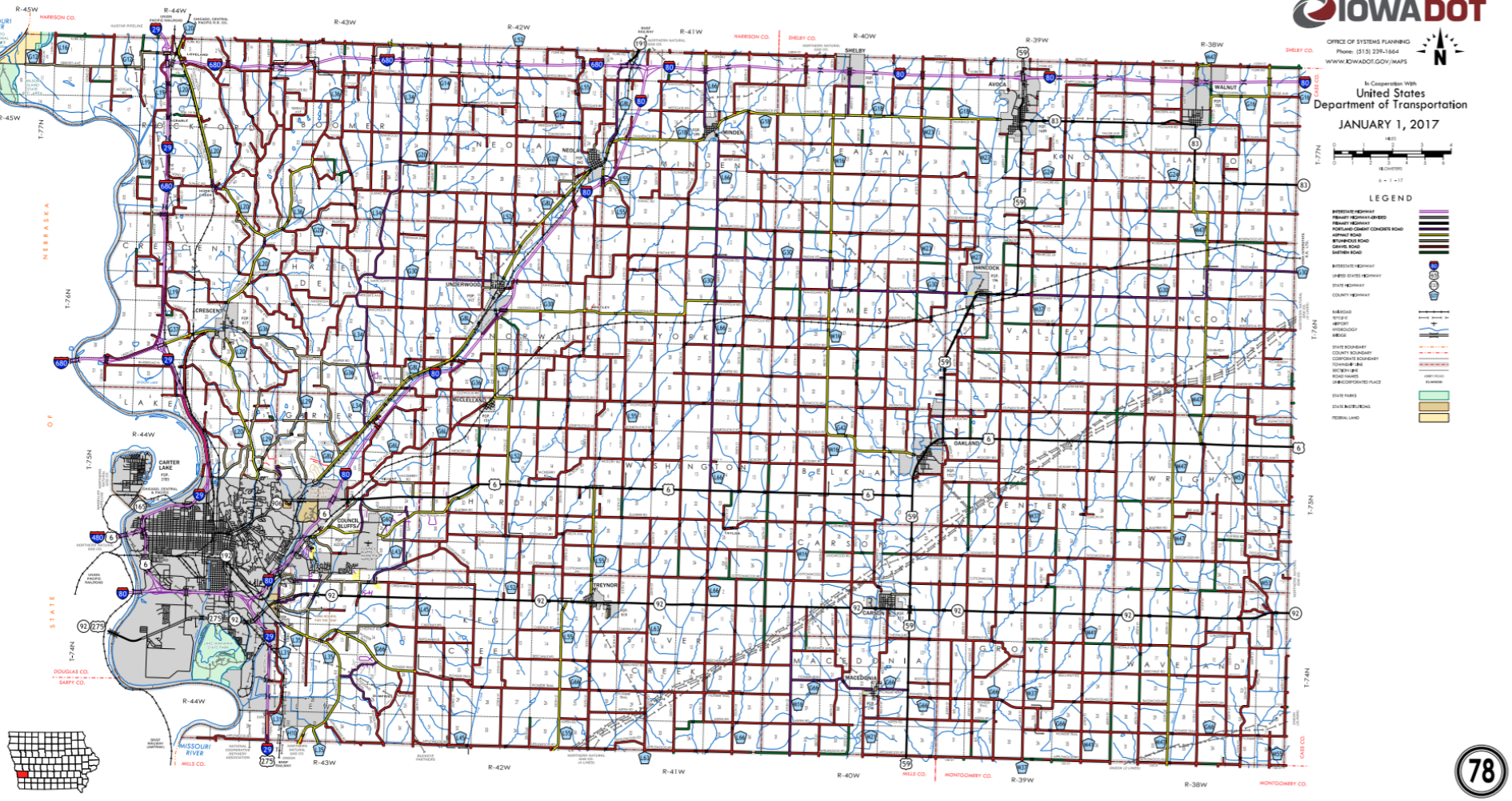
2018

MULTI-JURISDICTION HAZARD MITIGATION PLAN

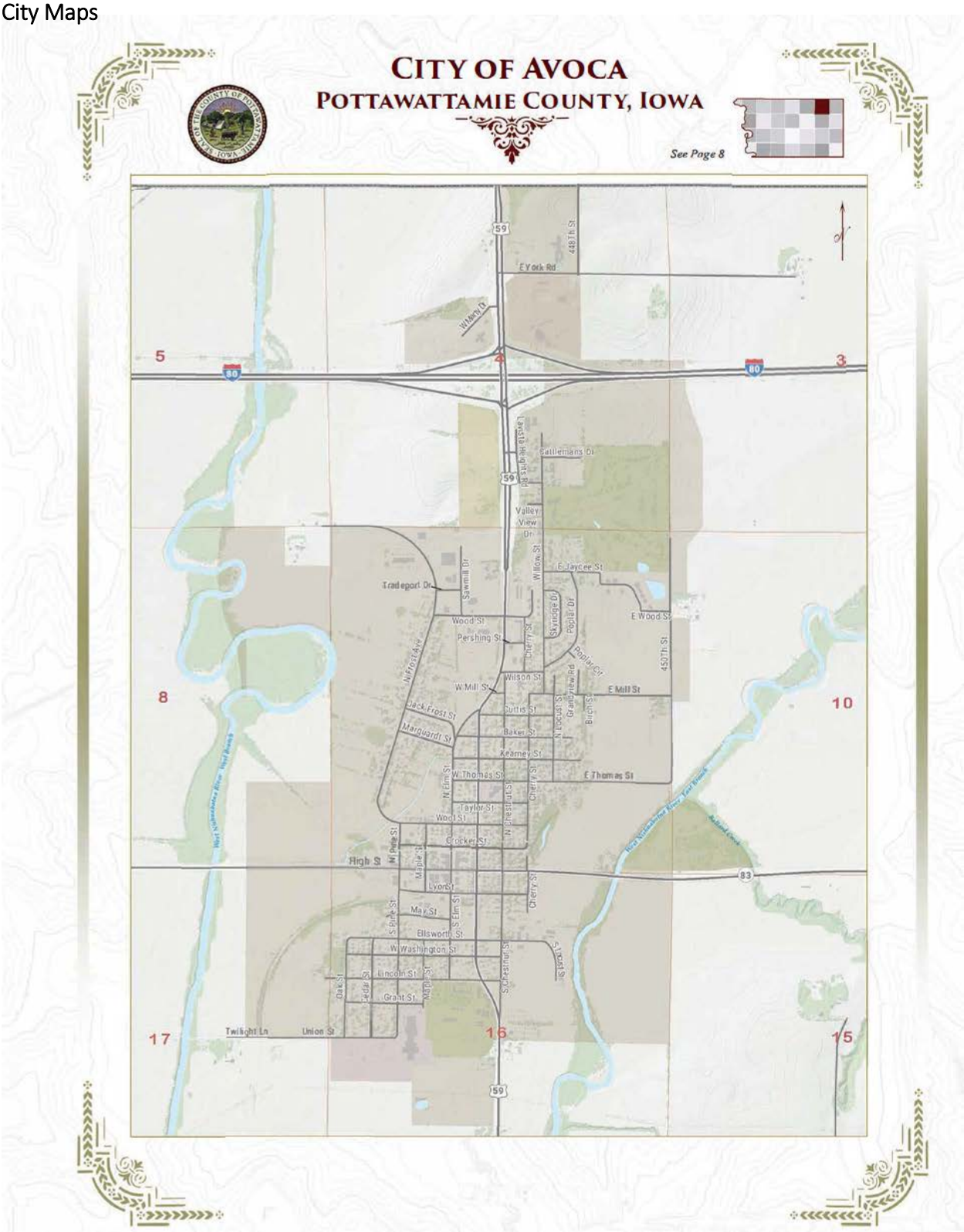
Part B: Pottawattamie County Comprehensive Emergency Management Plan

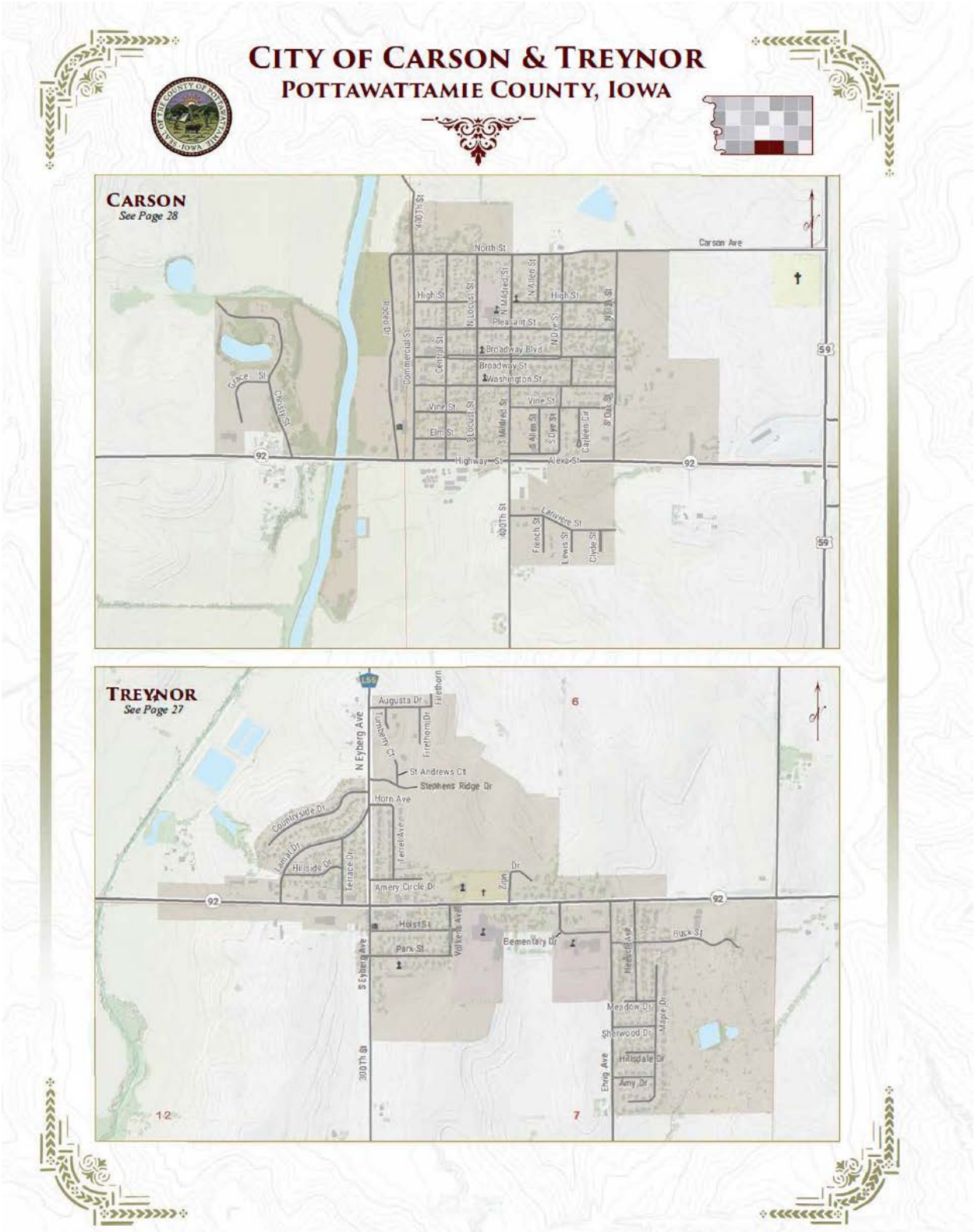
APPENDICES

APPENDIX A
Pottawattamie County Road Map



APPENDIX B
City Maps

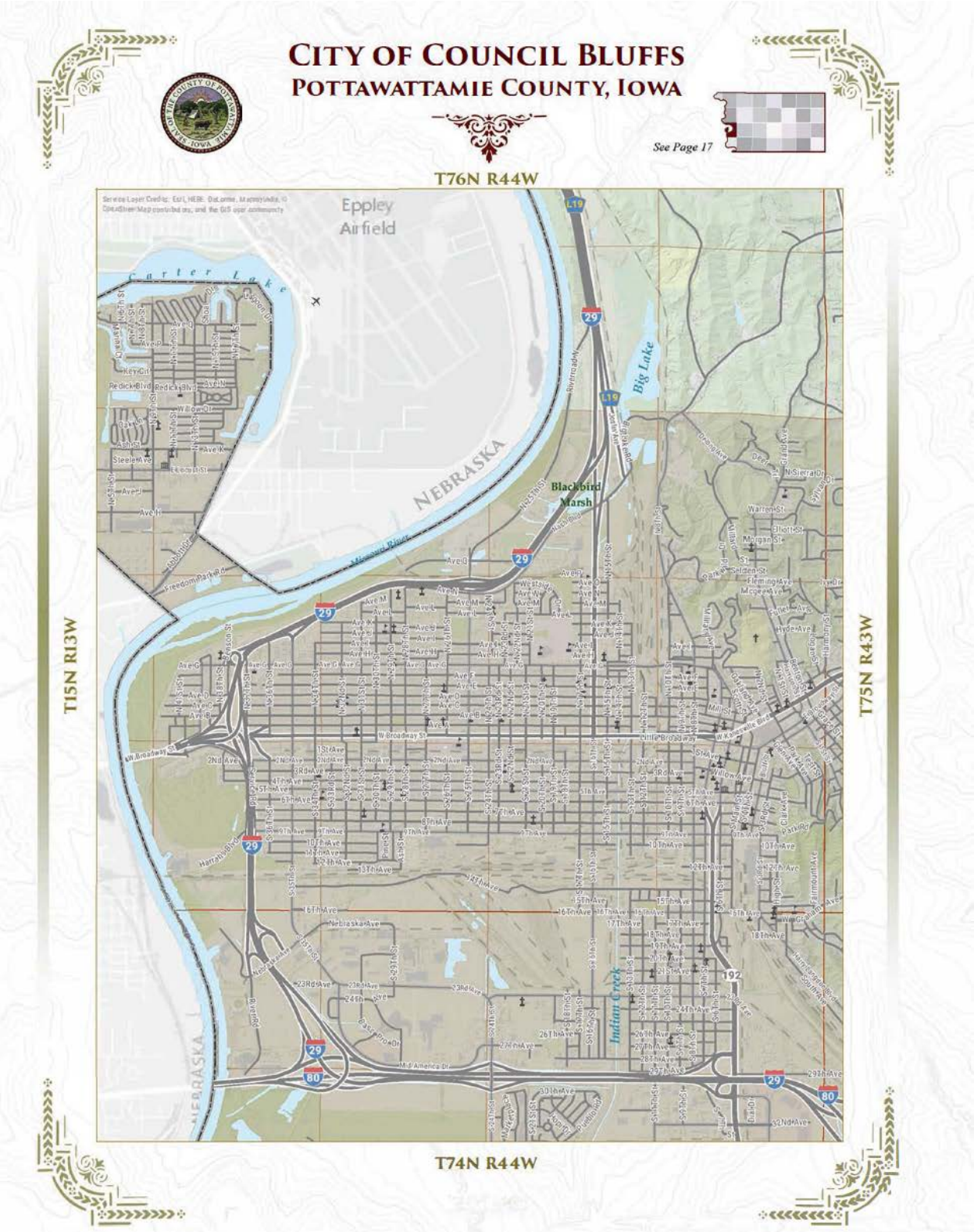


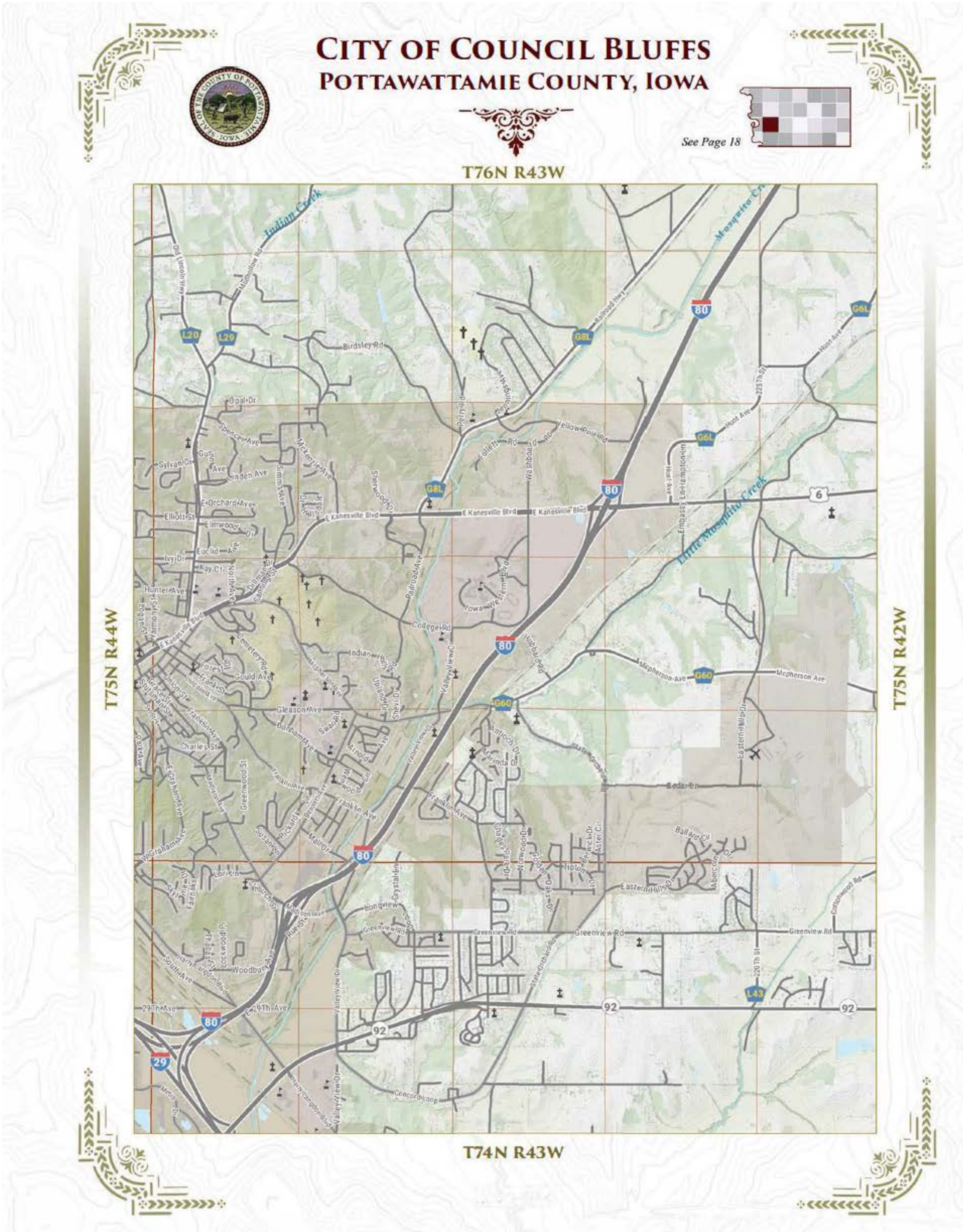

CITY OF CARSON & TREYNOR
POTTAWATTAMIE COUNTY, IOWA
CARSON
See Page 28
North St
Carson Ave
High St
Pleasant St
Broadway Blvd
Broadway St
Washington St
Vine St
Elm St
Highway St
Alexa St
Commercial St
Central St
Grace St
Chalmers St
400th St
Lariviere St
French St
Lewis St
Circle St
92
59
TREYNOR
See Page 27
Augusta Dr
Firethorn Dr
St Andrews Ct
Stephens Ridge Dr
Horn Ave
Countryside Dr
Hillside Dr
Terrace Dr
Amery Circle Dr
Holst St
Park St
Elementary Dr
Buck St
Meadow Dr
Sherwood Dr
Hillsdale Dr
Amy Dr
Maple Dr
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6
7
12
92
I-55

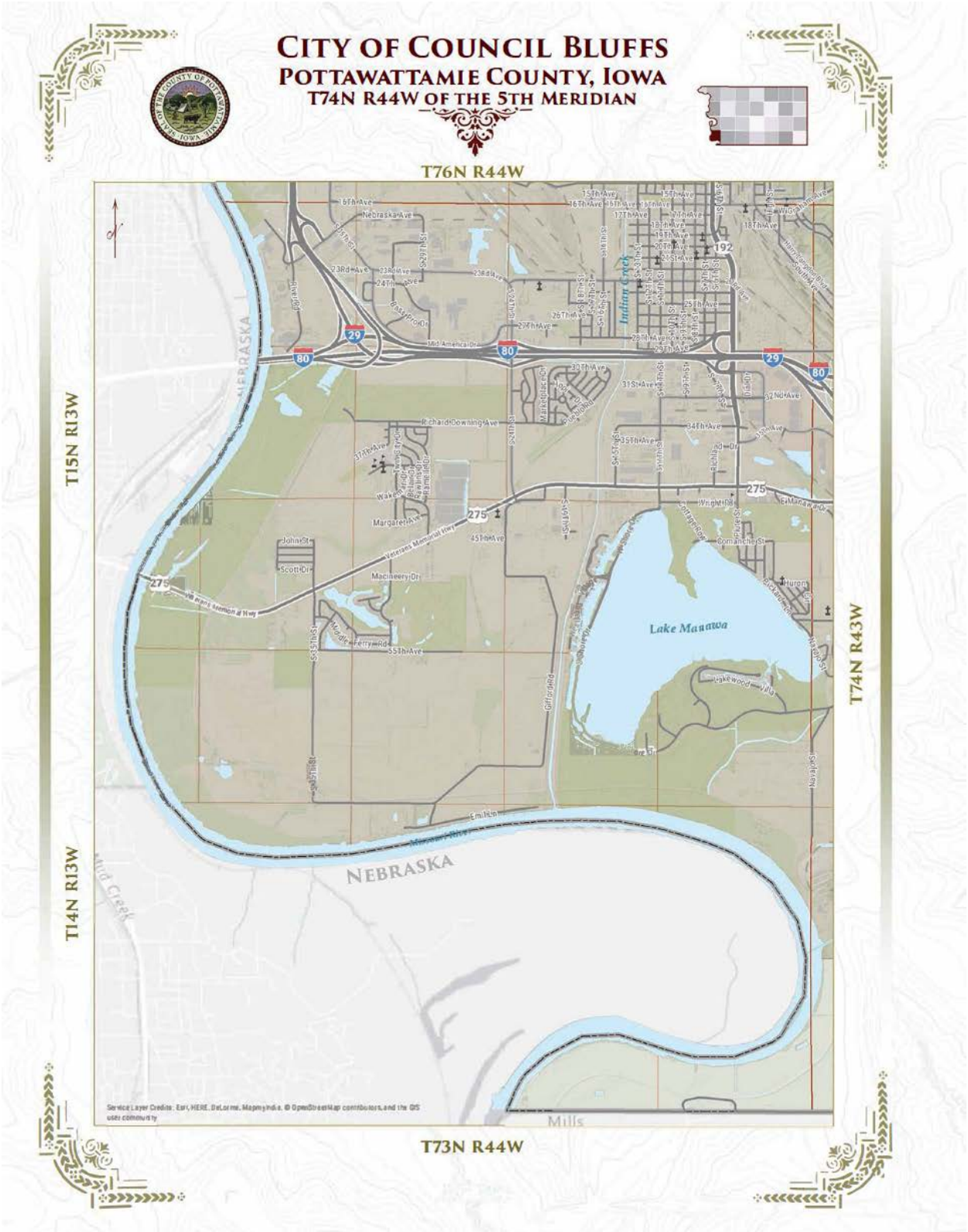
CITY OF CARTER LAKE
POTTAWATTAMIE COUNTY, IOWA

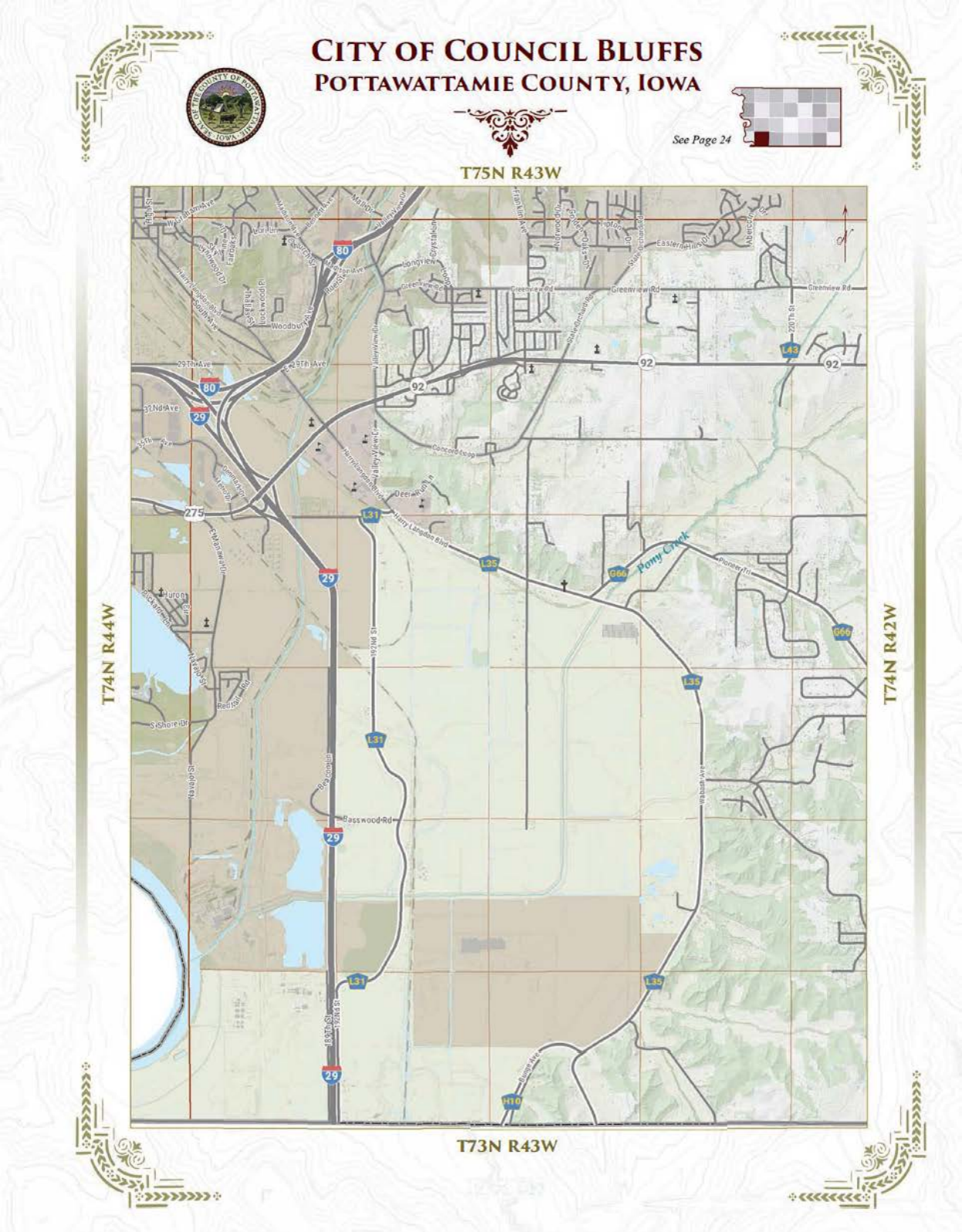
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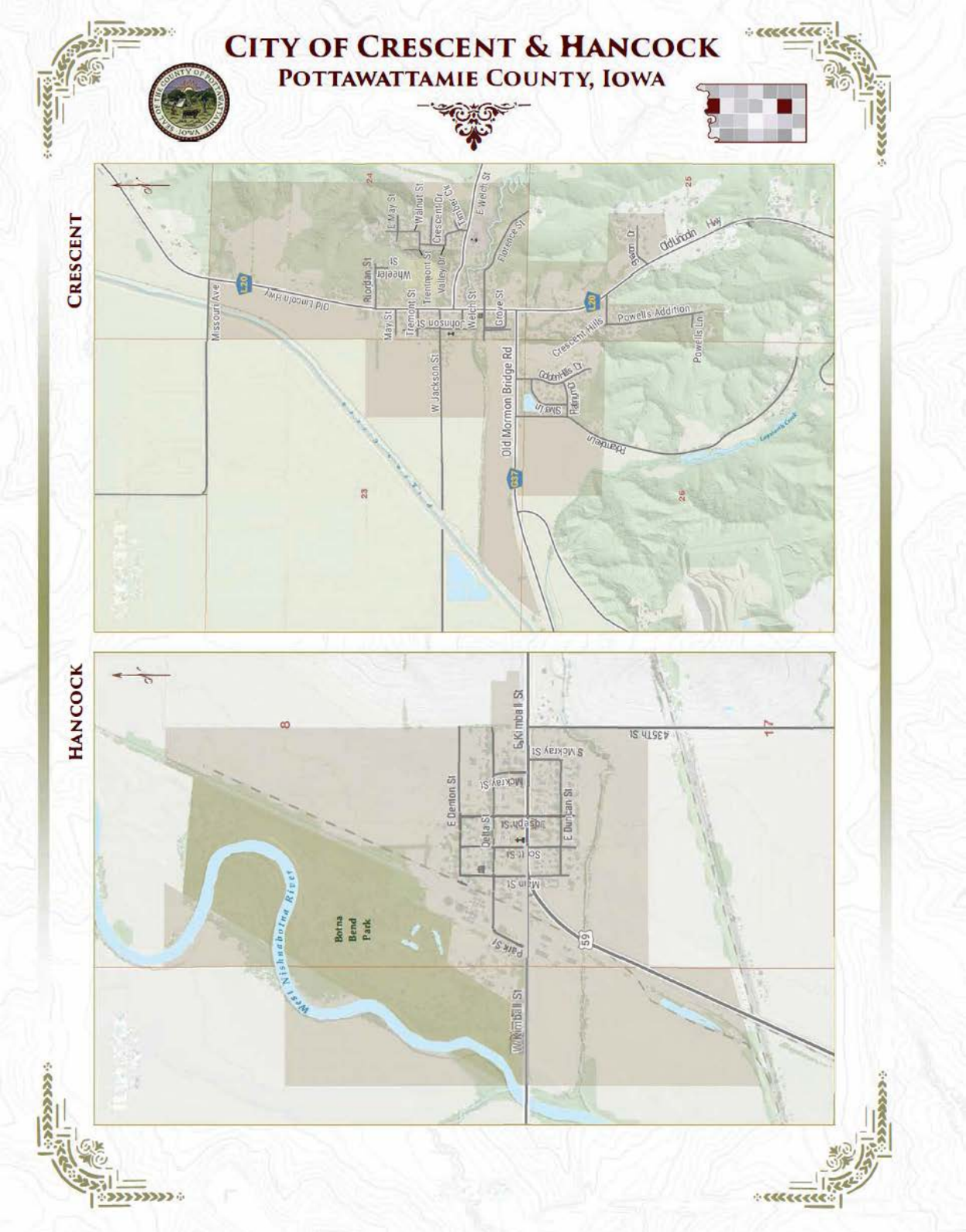


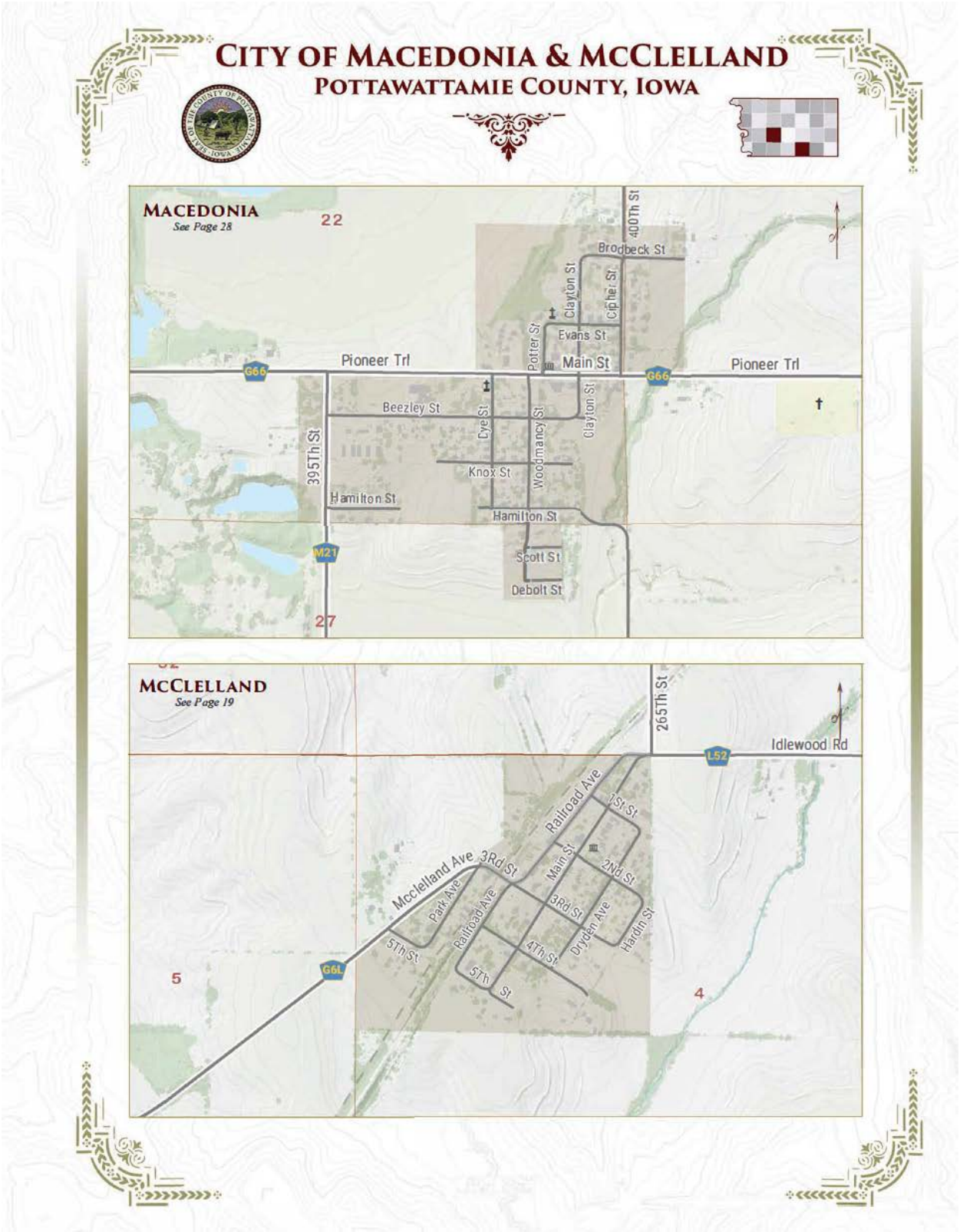

CITY OF COUNCIL BLUFFS
POTTAWATTAMIE COUNTY, IOWA
See Page 17
T76N R44W
T15N R13W
T75N R43W
T74N R44W
Eppley Airfield
Carter Lake
NEBRASKA
Big Lake
Blackbird Marsh
Missouri River
Indian Creek
W Broadway St
Nebraska Ave
Mid America Dr
Harrah's Blvd
Freedom Park Rd
Redick Blvd
Steele Ave
Willow Dr
Sunset Dr
Key Cir
Ashton St
Ave K
Ave J
Ave H
Ave G
Ave F
Ave E
Ave D
Ave C
Ave B
Ave A
Ave M
Ave N
Ave O
Ave P
Ave Q
Ave R
Ave S
Ave T
Ave U
Ave V
Ave W
Ave X
Ave Y
Ave Z
Avenue of the Saints
Burma Rd
Warren St
Elliott St
Morgan St
Fleming Ave
McGee Ave
Hyde Ave
Hamilton St
Willow Ave
Clark Ave
Park Rd
Fairmount Ave
Harrison St
Sunset Ave
Pierce St
Benson St
Locust St
Pacific St
Jackson St
Madison St
Monroe St
Franklin St
Jefferson St
Washington St
Lincoln St
Harney St
Douglas St
Farnam St
Dodge St
Capitol Ave
Cass St
Izard St
Webster St
Chicago St
Williams St
Nicholas St
Saratoga St
Ohio St
Avenue A
1st Ave
2nd Ave
3rd Ave
4th Ave
5th Ave
6th Ave
7th Ave
8th Ave
9th Ave
10th Ave
11th Ave
12th Ave
13th Ave
14th Ave
15th Ave
16th Ave
17th Ave
18th Ave
19th Ave
20th Ave
21st Ave
22nd Ave
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Baker Promenade
29
80
192

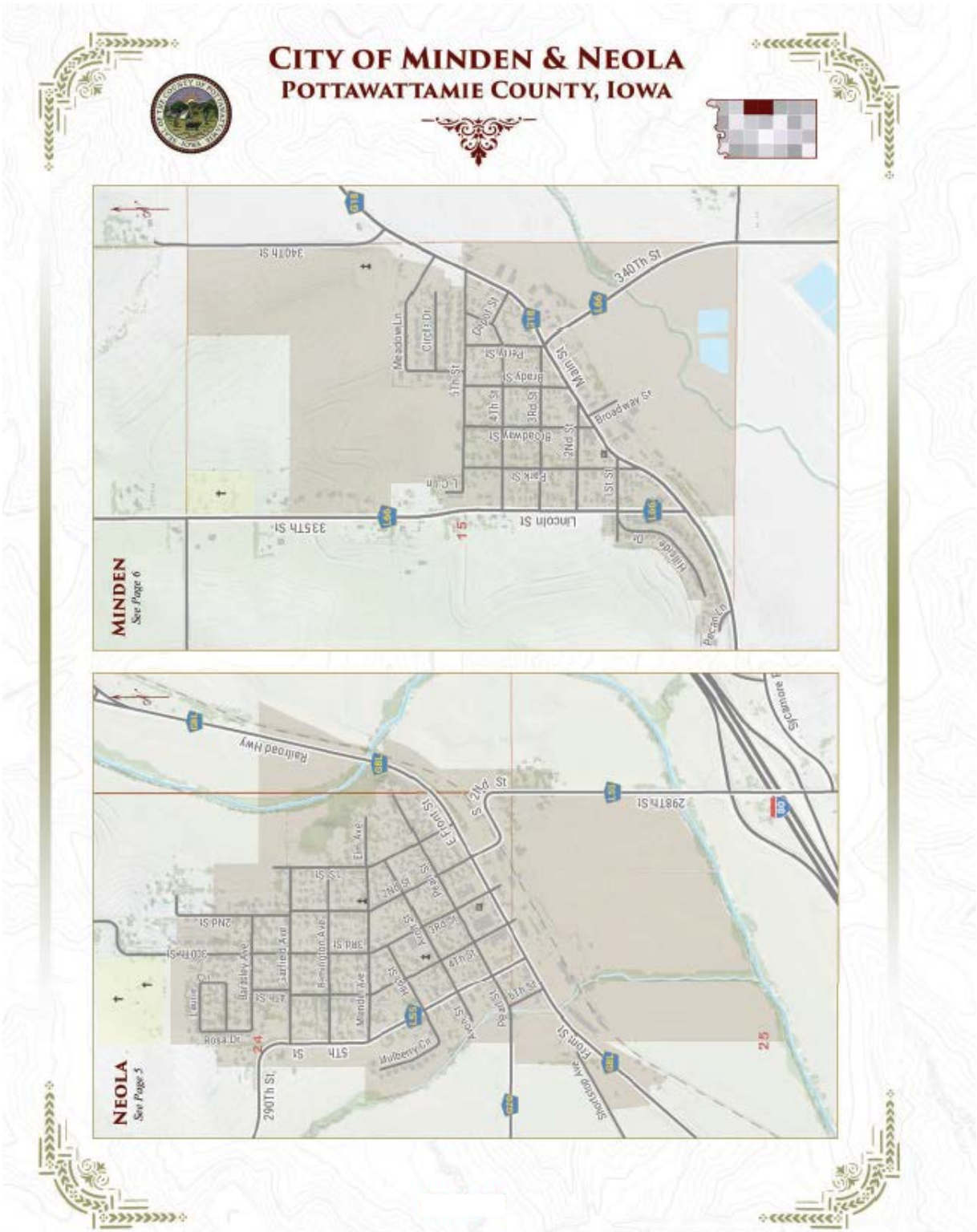

CITY OF COUNCIL BLUFFS
POTTAWATTAMIE COUNTY, IOWA
See Page 18
T76N R43W
T75N R44W
T75N R42W
T74N R43W
Indian Creek
Mosquito Cr
Little Mosquito Creek
Birdsley Rd
E Kanesville Blvd
Mcpherson Ave
Greenview Rd
College Rd
Gleason Ave
Franklin Ave
Charles St
E Graham Ave
Woodbury Ave
29Th Ave
E 29Th Ave
Hunt Ave
Cedar Ln
Euclid Ave
Elliott St
Sylvan Dr
Linden Ave
E Orchard Ave
Spencer Ave
Opal Dr
Concord Loop
Eastern Hills Dr


CITY OF COUNCIL BLUFFS
POTTAWATTAMIE COUNTY, IOWA
T74N R44W OF THE 5TH MERIDIAN
T76N R44W
T15N R13W
T14N R13W
T74N R43W
T73N R44W
NEBRASKA
Lake Manawa
Indian Creek
Mid America Dr
Veterans Memorial Hwy
Nebraska Ave
Richard Downing Ave
Margaret Ave
John St
Scott Dr
Macineery Dr
Wright St
Comanche St
Huron
Lakeview Dr
Mills


CITY OF COUNCIL BLUFFS
POTTAWATTAMIE COUNTY, IOWA
See Page 24
T75N R43W
T74N R44W
T74N R42W
T73N R43W
Pony Creek
Harry Langdon Blvd
Greenview Rd
Basswood Rd
Woodbury Ave
Concord Ave
Deer Run Dr
Huron
S Shore Dr
Wabash Ave
Pioneer Trl
Bluffs Run Blvd
Franklin Ave
Eastern Hills Dr
Aberdeen Dr
Longview
Fairoaks Dr
Marion
Hillcrest Rd
Sylvan Ln
Indian Hills Dr
Tuckwood Pl
Redwood Dr
Rosewood Dr
Sherwood Dr
Oakwood Rd
Valley View Dr
Hillcrest Dr
Fairview Ave
Fairoak Dr
Maple Ave
Oak Ln
Elm Ln
Ash Ln
Pine Ln
Spruce Ln
Cedar Ln
Willow Ln
Birch Ln
Hickory Ln
Walnut Ln
Locust Ln
Poplar Ln
Sycamore Ln
Chestnut Ln
Beech Ln
Magnolia Ln
Dogwood Ln
Redbud Ln
Hawthorn Ln
Juniper Ln
Cypress Ln
Fir Ln
Pine Ridge Dr
Forest Dr
Meadow Ln
Valley Dr
Creek Rd
Lake Dr
Park Dr
Garden Ln
Orchard Ln
Vine St
Grape St
Peach St
Apple St
Cherry St
Plum St
Pear St
Berry Ln
Strawberry Ln
Blueberry Ln
Raspberry Ln
Blackberry Ln
Gooseberry Ln
Currant Ln
Elderberry Ln
Mulberry Ln
Persimmon Ln
Pawpaw Ln
Quince Ln
Medlar Ln
Loquat Ln
Kumquat Ln
Lychee Ln
Rambutan Ln
Durian Ln
Jackfruit Ln
Breadfruit Ln
Soursop Ln
Sweetsop Ln
Cherimoya Ln
Custard Apple Ln
Ilama Ln
Atemoya Ln
Sugar Apple Ln
Bullock's Heart Ln
Pond Apple Ln
Wild Custard Apple Ln
Papaya Ln
Carica Ln
Mountain Papaya Ln
Babaco Ln
Chamburo Ln
Highland Papaya Ln
Stone Papaya Ln
Mexican Papaya Ln
Dwarf Papaya Ln
Red Papaya Ln
Yellow Papaya Ln
Orange Papaya Ln
Green Papaya Ln
Purple Papaya Ln
Black Papaya Ln
White Papaya Ln
Pink Papaya Ln
Blue Papaya Ln
Gray Papaya Ln
Brown Papaya Ln
Tan Papaya Ln
Beige Papaya Ln
Ivory Papaya Ln
Cream Papaya Ln
Off-White Papaya Ln
Eggshell Papaya Ln
Pearl Papaya Ln
Silver Papaya Ln
Gold Papaya Ln
Bronze Papaya Ln
Copper Papaya Ln
Platinum Papaya Ln
Titanium Papaya Ln
Aluminum Papaya Ln
Steel Papaya Ln
Iron Papaya Ln
Nickel Papaya Ln
Zinc Papaya Ln
Tin Papaya Ln
Lead Papaya Ln
Mercury Papaya Ln
Uranium Papaya Ln
Plutonium Papaya Ln
Neptunium Papaya Ln
Americium Papaya Ln
Curium Papaya Ln
Berkelium Papaya Ln
Californium Papaya Ln
Einsteinium Papaya Ln
Fermium Papaya Ln
Mendelevium Papaya Ln
Nobelium Papaya Ln
Lawrencium Papaya Ln
Rutherfordium Papaya Ln
Dubnium Papaya Ln
Seaborgium Papaya Ln
Bohrium Papaya Ln
Hassium Papaya Ln
Meitnerium Papaya Ln
Darmstadtium Papaya Ln
Roentgenium Papaya Ln
Copernicium Papaya Ln
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Flerovium Papaya Ln
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Oganesson Papaya Ln

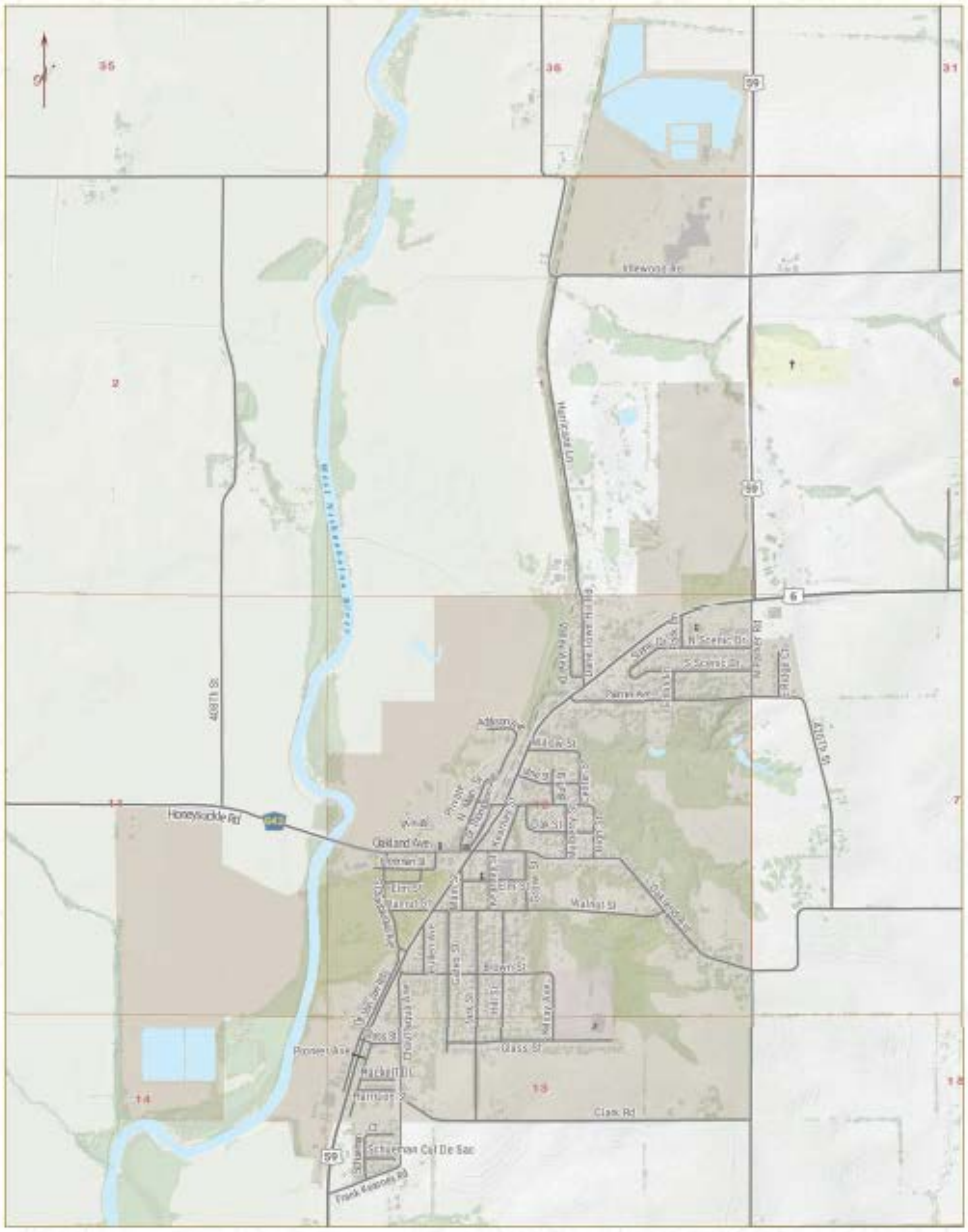

CITY OF CRESCENT & HANCOCK
POTTAWATTAMIE COUNTY, IOWA
CRESCENT
HANCOCK
Old Lincoln Hwy
Missouri Ave
Riordan St
Wheeler St
E May St
Walnut St
Crescent Ct
Trimble Ct
E Welch St
Florence St
Tremont St
Valley Dr
Johnson St
Welch St
Grove St
Old Mormon Bridge Rd
W Jackson St
Crescent Hills
Powells Addition
Powells Ln
Oldmixon Cir
Oldmixon Hwy
Shay Ln
Plainview Dr
Pleasant Run
Community Creek
Old Kimball St
S McKay St
435th St
E Denton St
Delta St
E Duncan St
Main St
Park St
W Kimball St
Botna Bend Park
West Nishnabotna River
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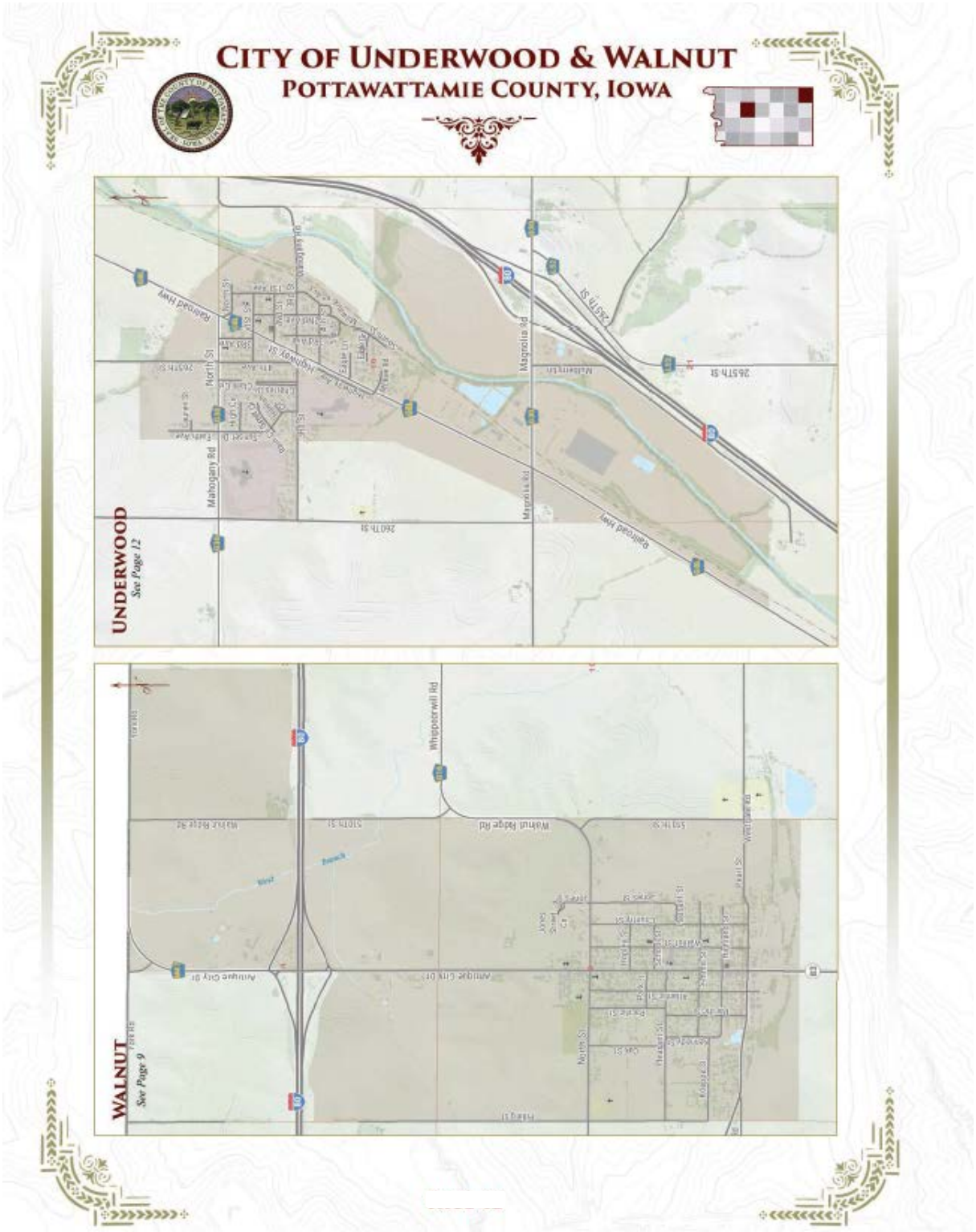

CITY OF MACEDONIA & MCCLELLAND
POTTAWATTAMIE COUNTY, IOWA
MACEDONIA
See Page 28
22
400Th St
Brodbeck St
Clayton St
Cipher St
Evans St
Potter St
Main St
Pioneer Trl
G66
Beezley St
Dye St
Woodmancy St
Clayton St
395Th St
Knox St
Hamilton St
M21
Scott St
Debolt St
27
MCCLELLAND
See Page 19
265Th St
Idlewood Rd
L52
Railroad Ave
1St St
Mcclelland Ave
3Rd St
Main St
2Nd St
Park Ave
Railroad Ave
3Rd St
Dryden Ave
Hardin St
5Th St
4Th St
5Th St
G6L
5
4


CITY OF MINDEN & NEOLA
POTTAWATTAMIE COUNTY, IOWA
MINDEN
See Page 6
NEOLA
See Page 5
340Th St
337Th St
Lincoln St
Broadway St
Main St
Railroad Hwy
298Th St
290Th St
E From St
Sycamore
15
24
25

CITY OF OAKLAND
POTTAWATTAMIE COUNTY, IOWA

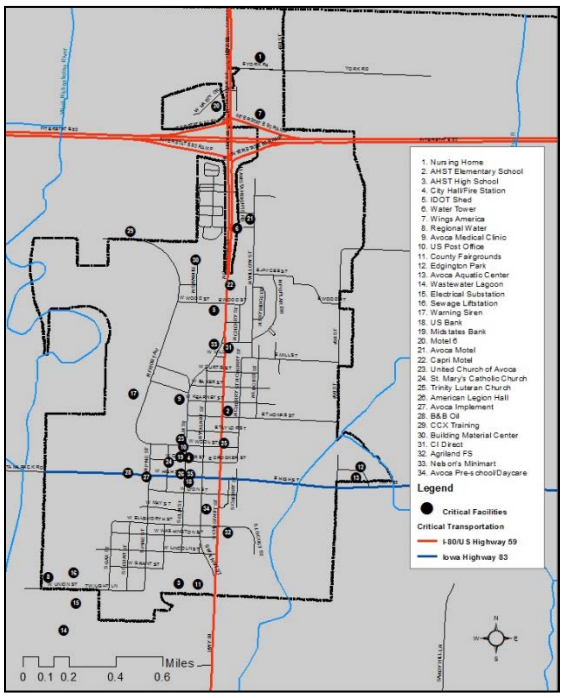
See Page 21



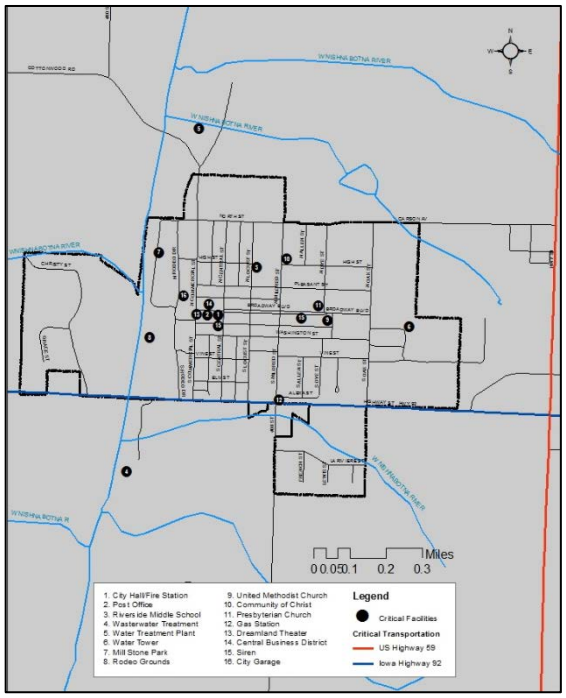

CITY OF UNDERWOOD & WALNUT
POTTAWATTAMIE COUNTY, IOWA
UNDERWOOD
See Page 12
WALNUT
See Page 9

APPENDIX C
Critical Facility Locations

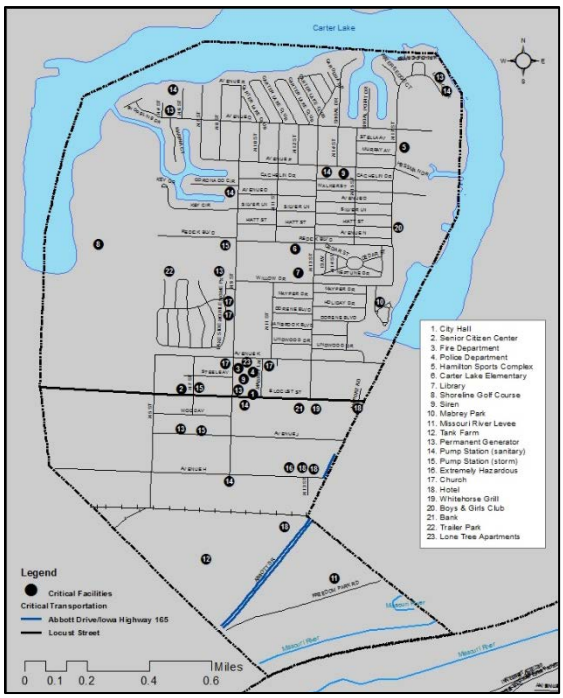
AVOCA



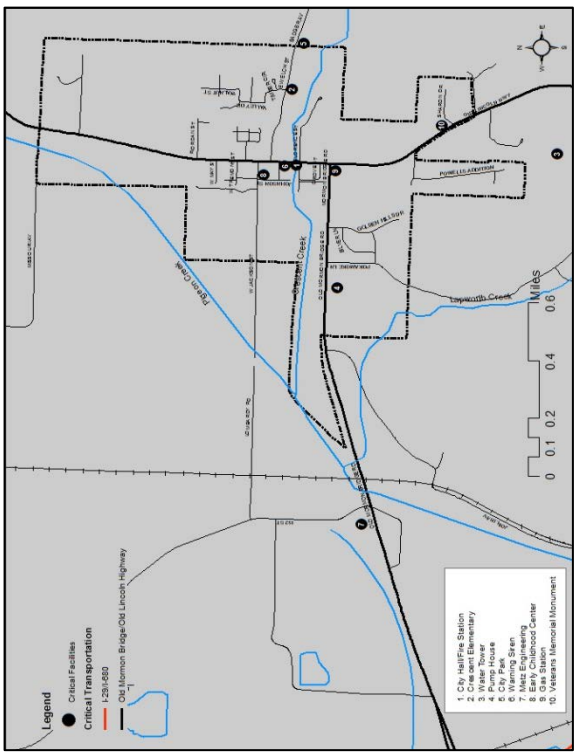
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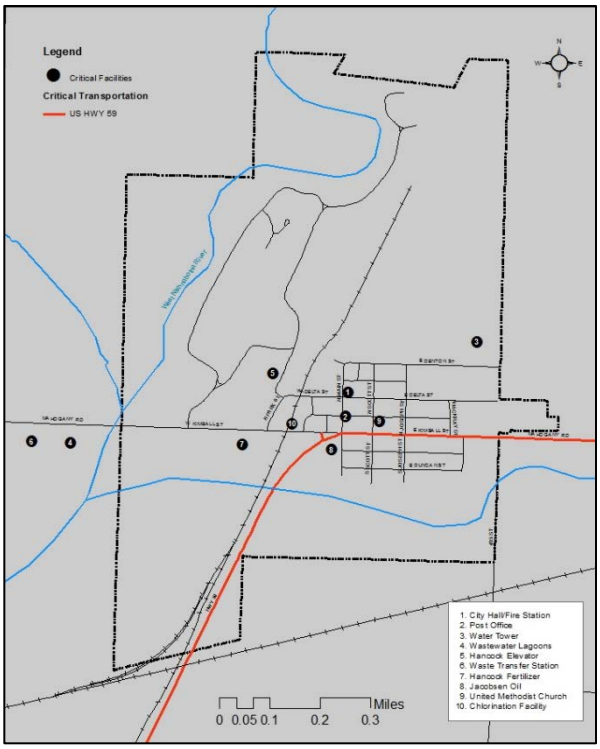
CARTER LAKE



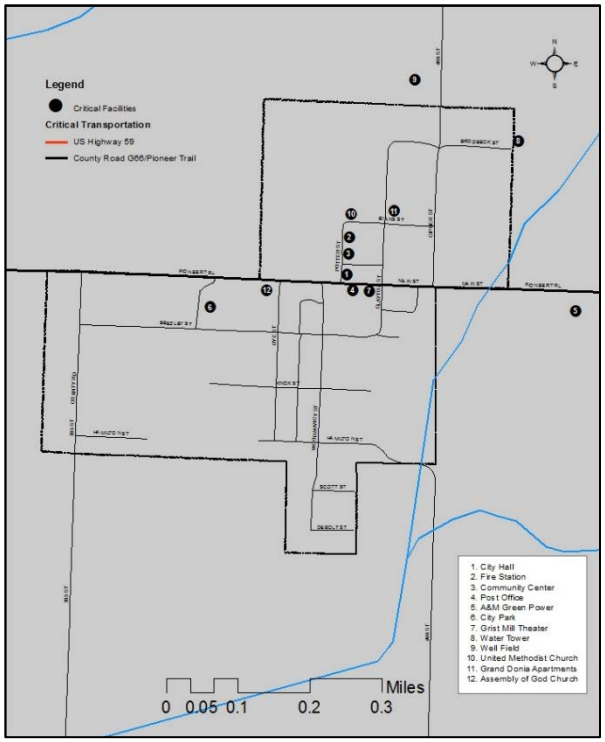
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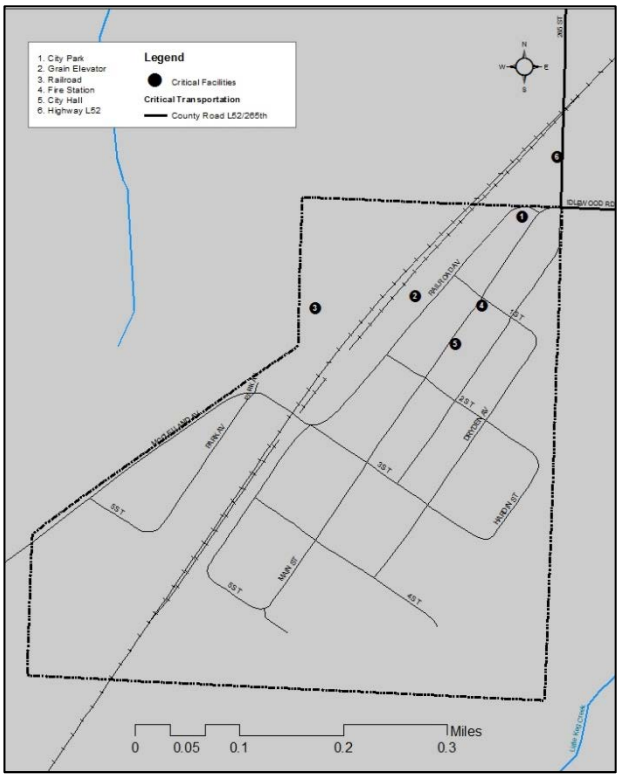
HANCOCK



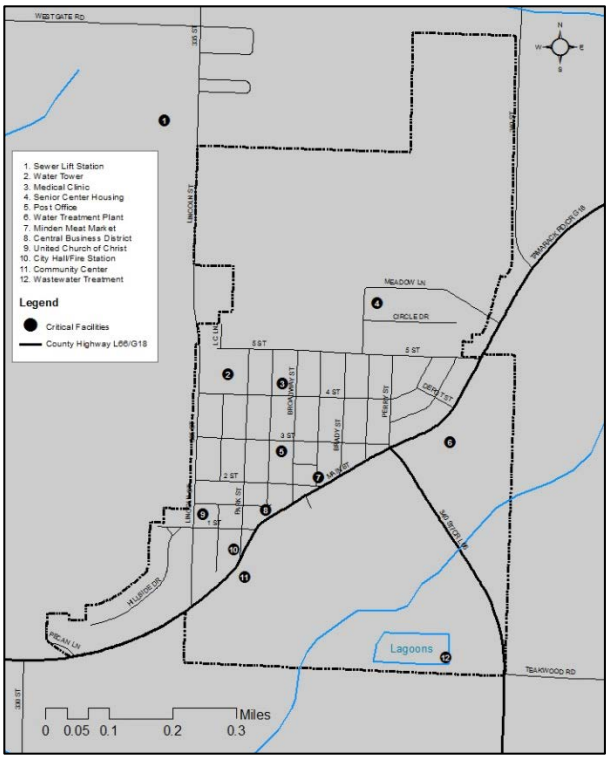
MACEDONIA



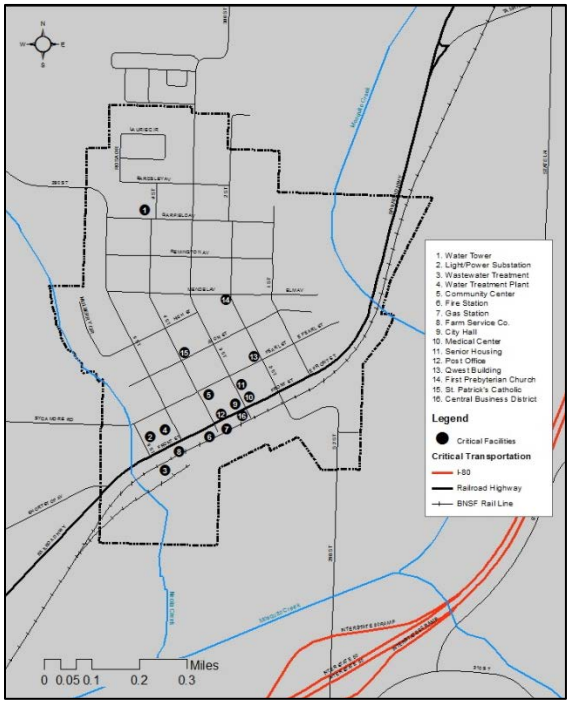
McCLELLAND



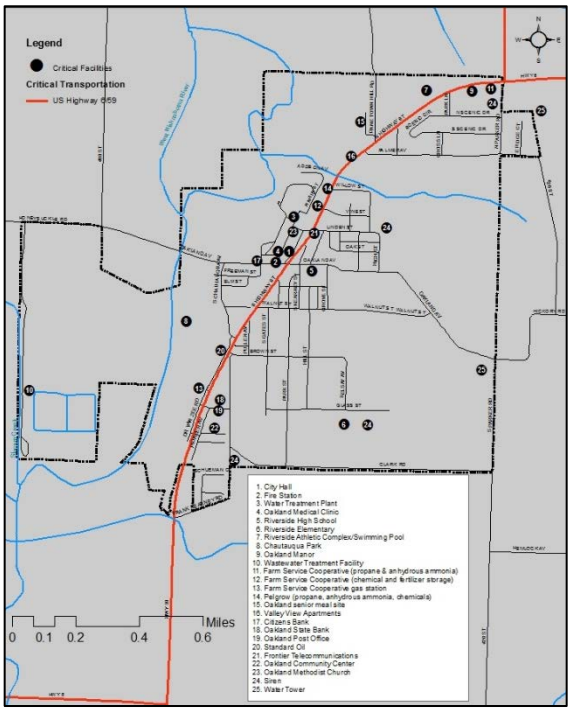
MINDEN



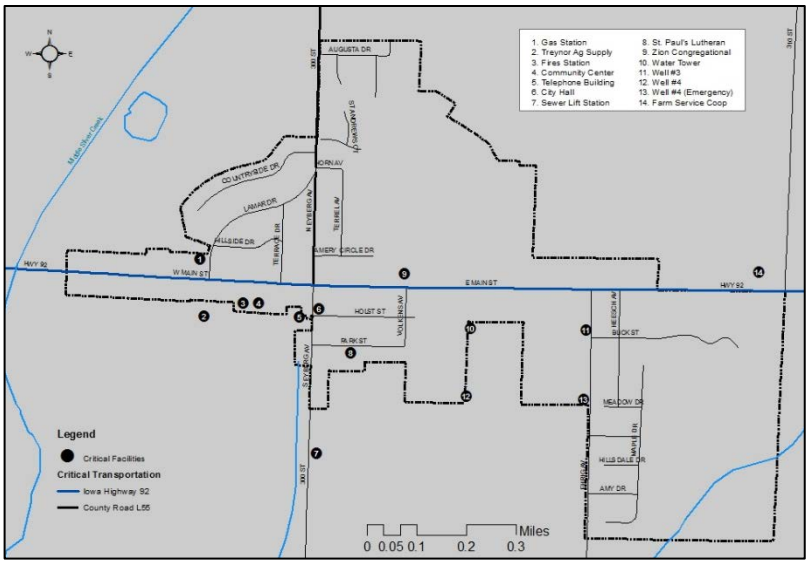
NEOLA



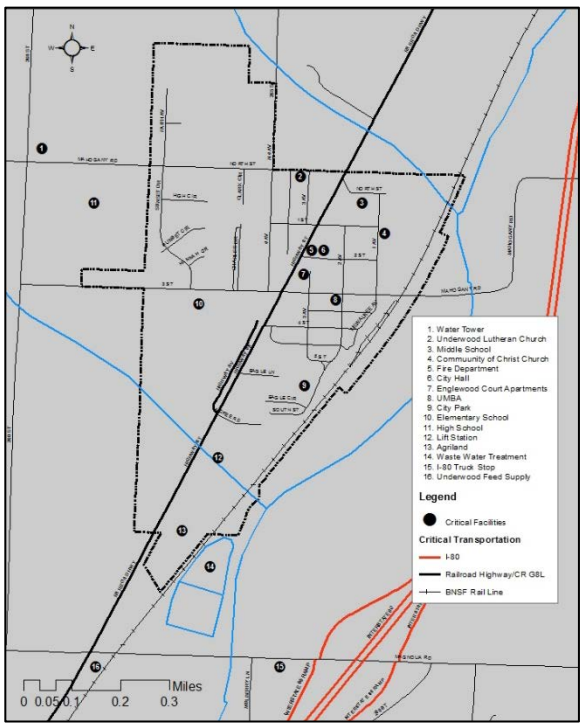
OAKLAND



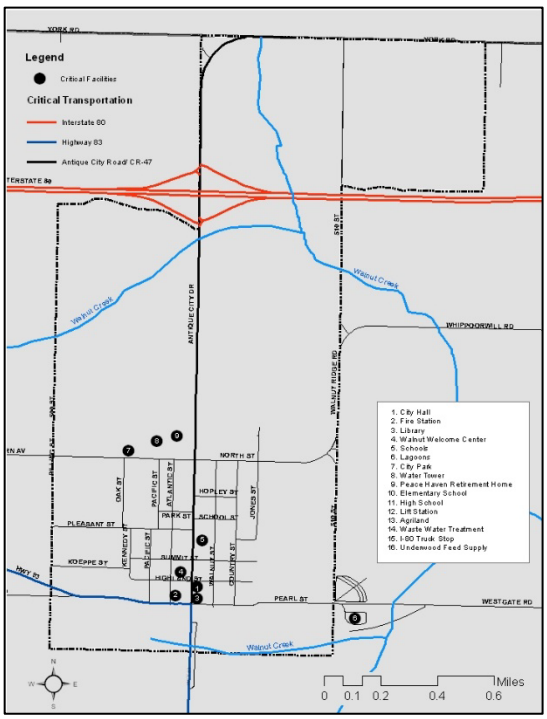
TREYNOR



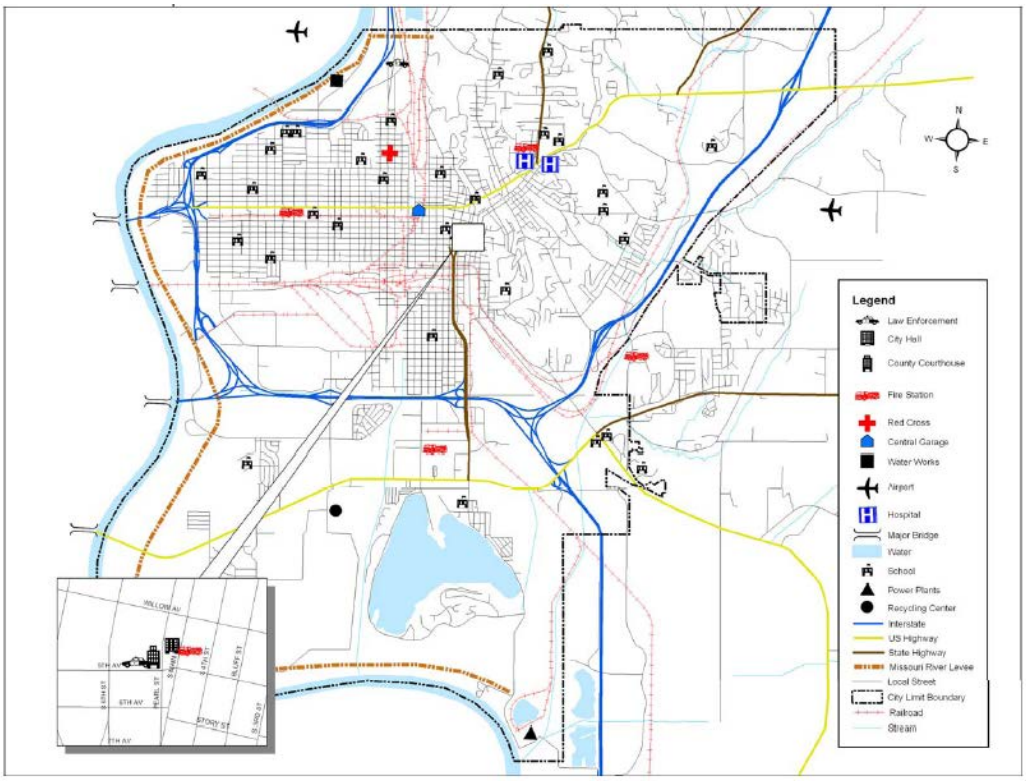
UNDERWOOD



WALNUT



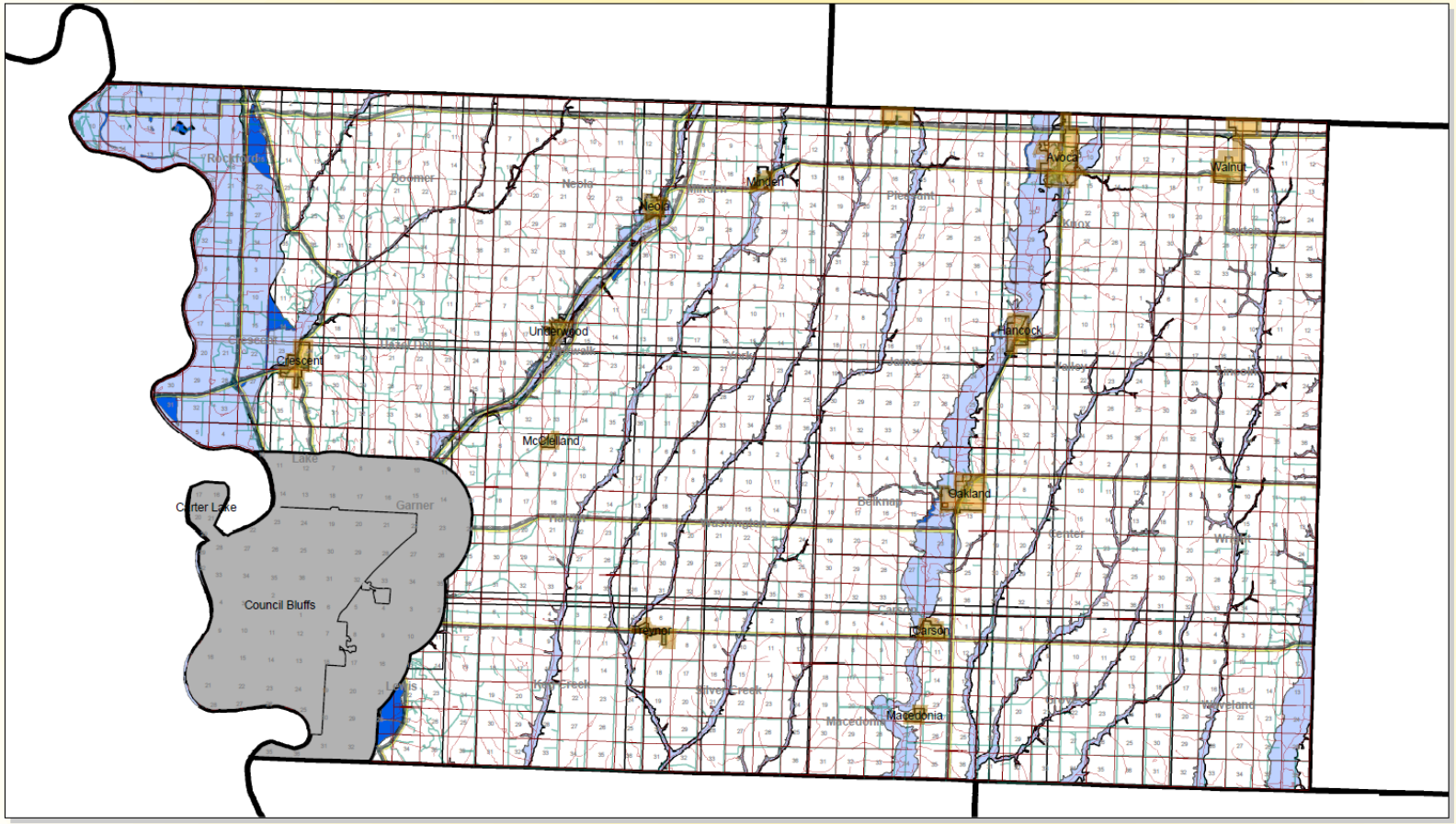
COUNCIL BLUFFS



APPENDIX D
FLOODPLAIN MAPPING

Illustration 3.8

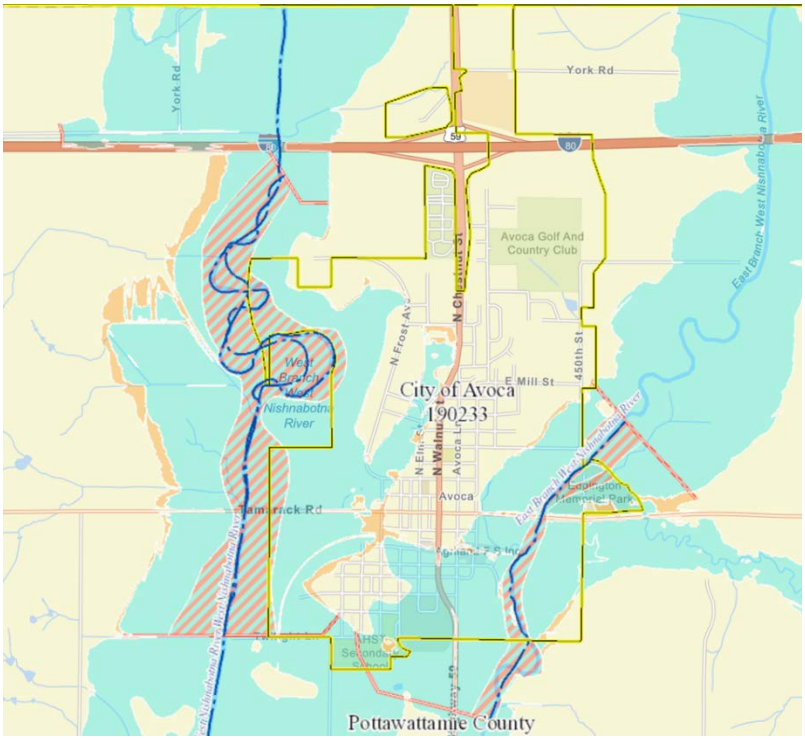
Pottawattamie County Floodplain Map



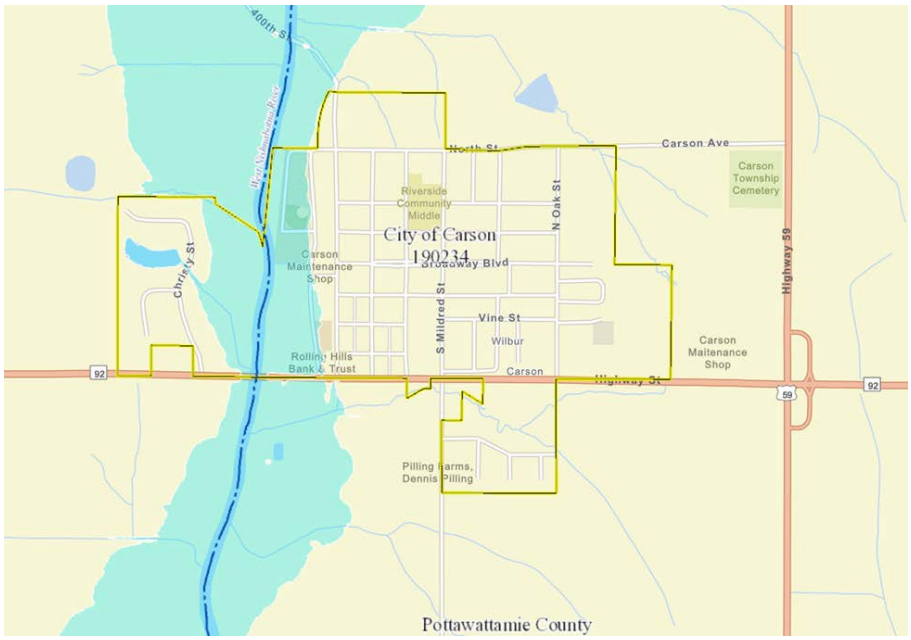
Note:
For details in the 2 mile area surrounding Council Bluffs, refer to 2 mile limit study, City of Council Bluffs, Iowa, Pottawattamie County, Iowa.

SCHEMMER ASSOCIATES
HANNA:KEELAN ASSOCIATES, P.C.
COMMUNITY PLANNING & RESEARCH

AVOCA



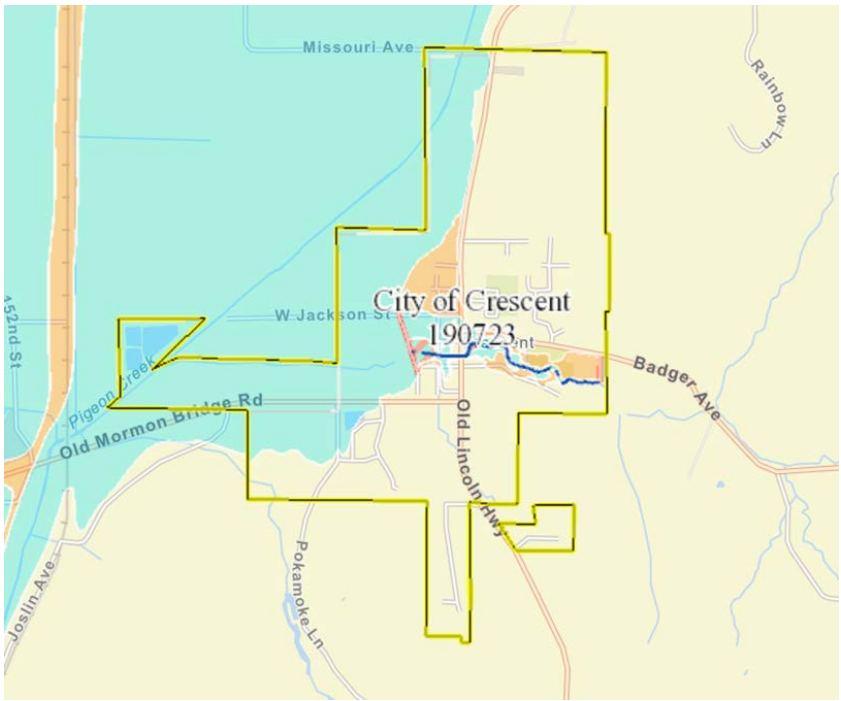
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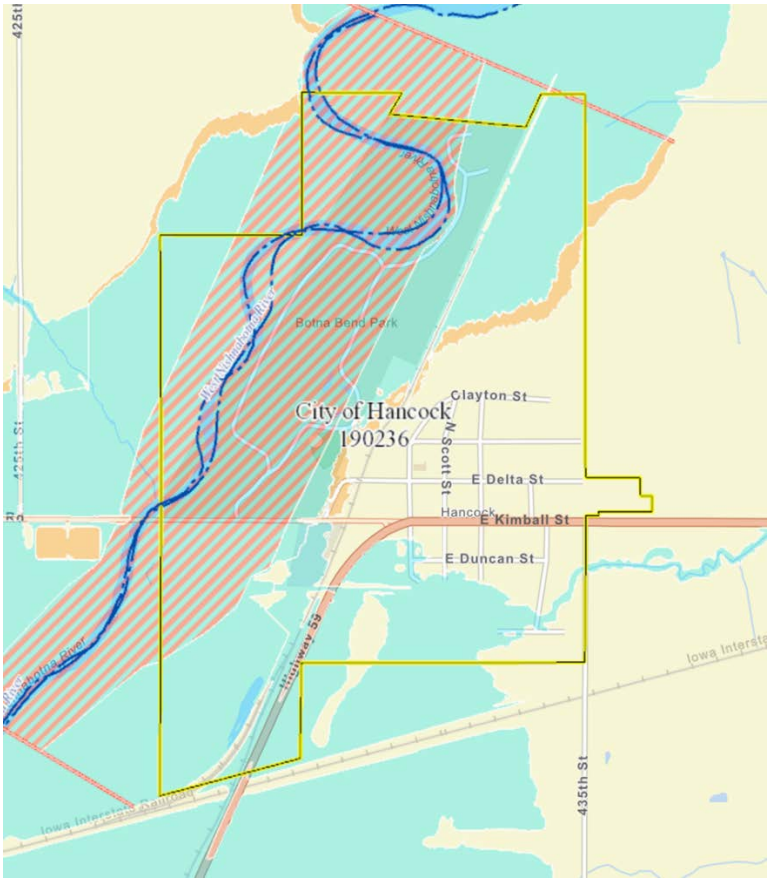
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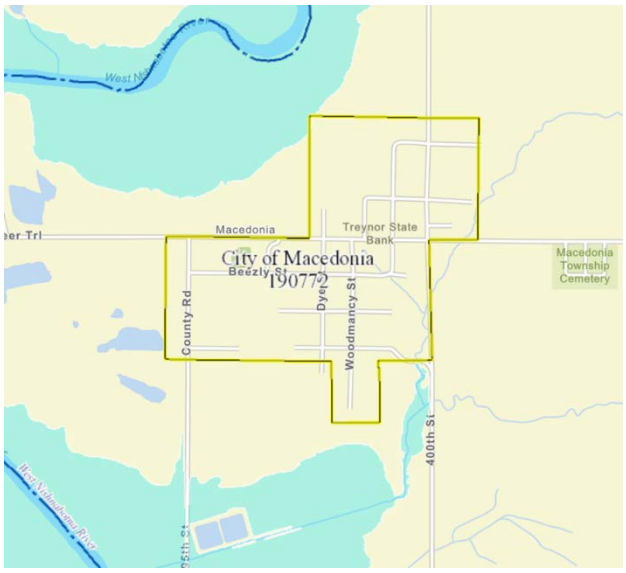
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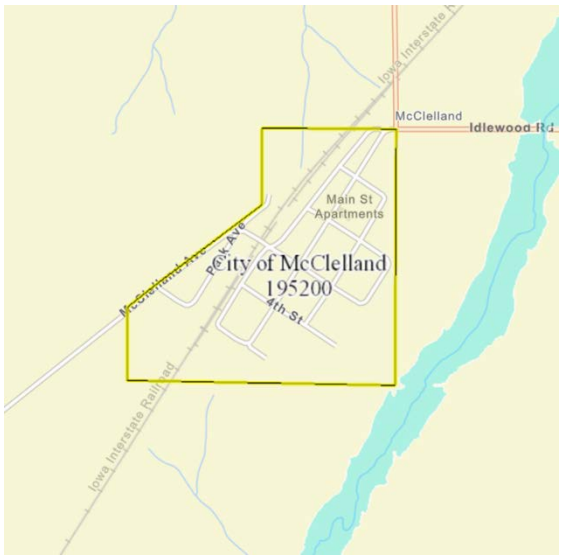
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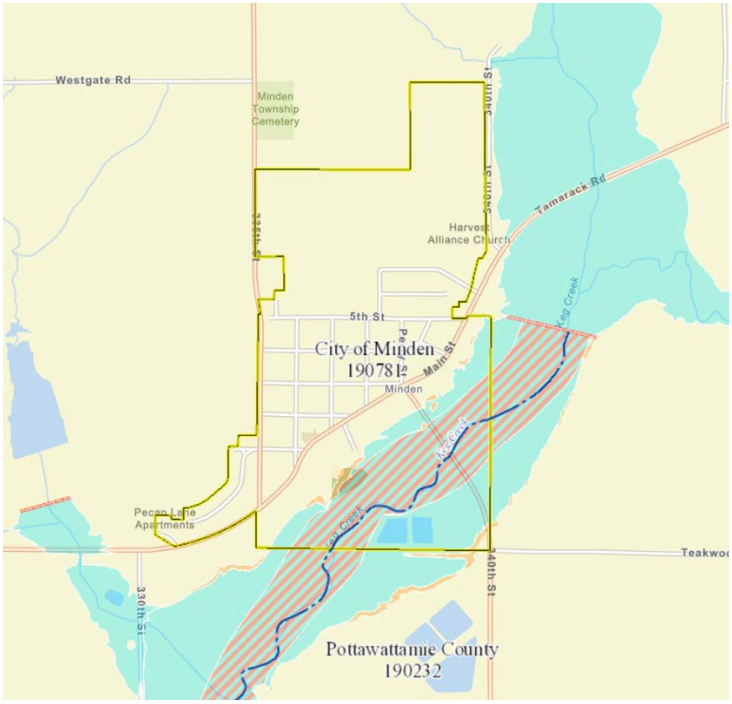
MACEDONIA



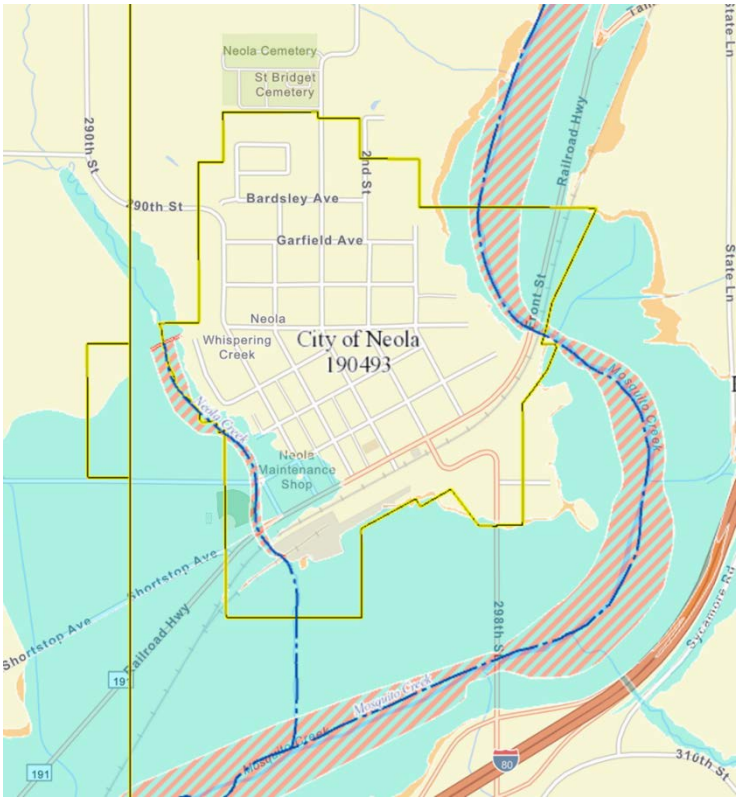
McCLELLAND



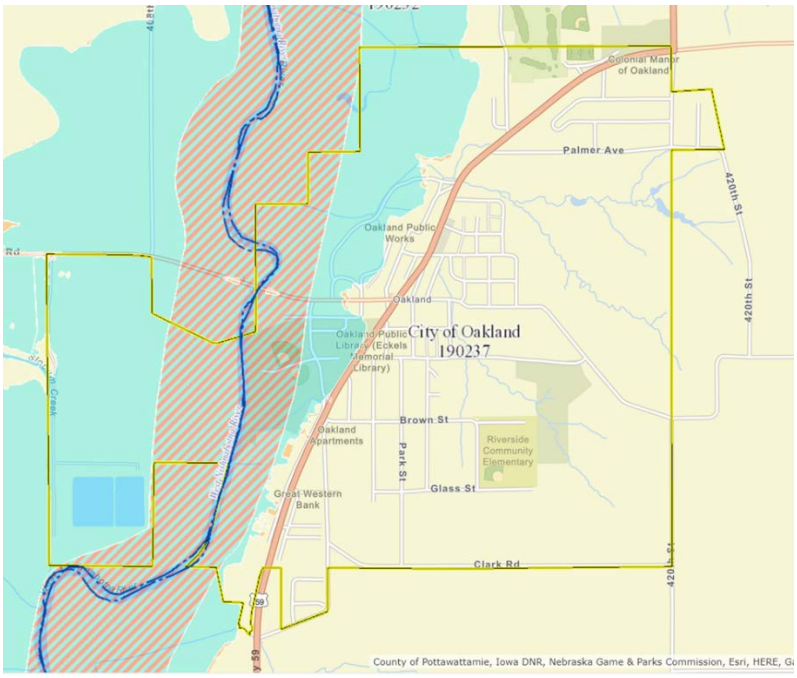
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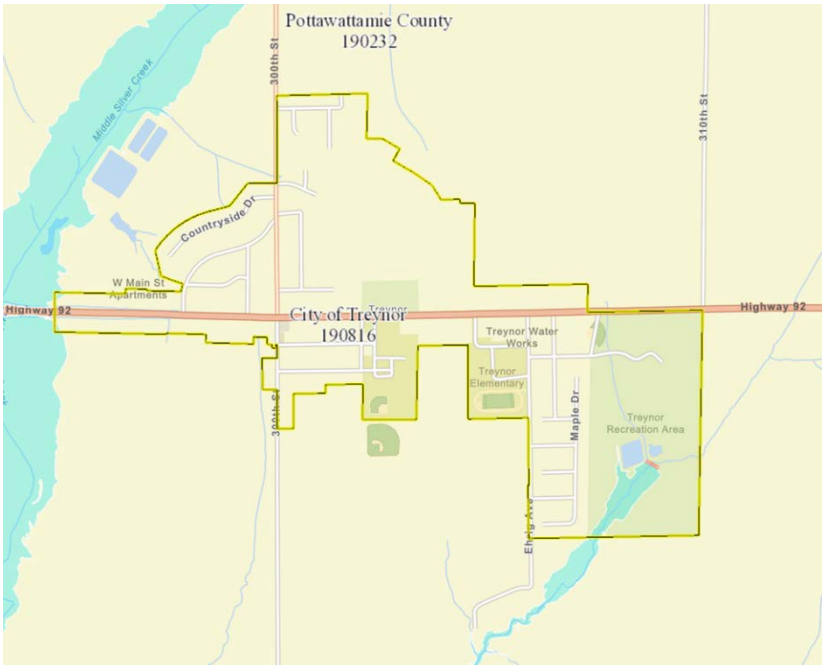
NEOLA



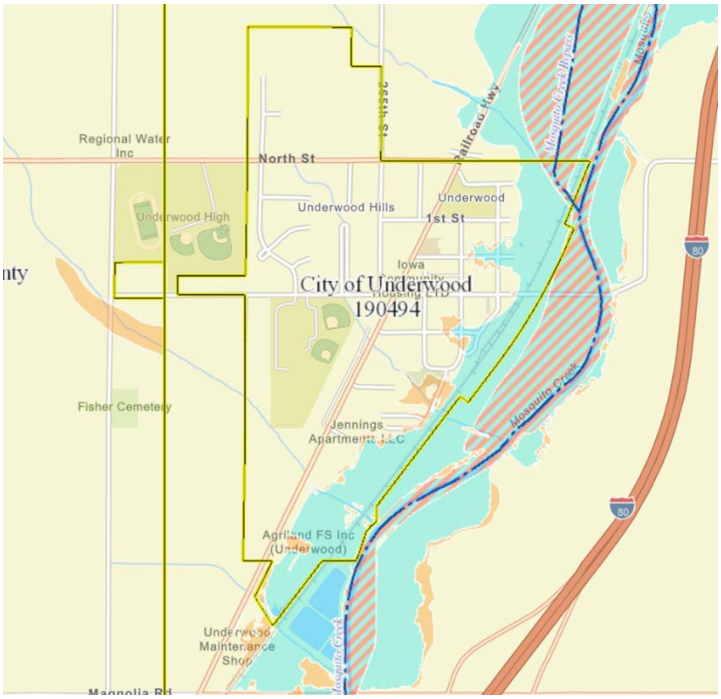
OAKLAND



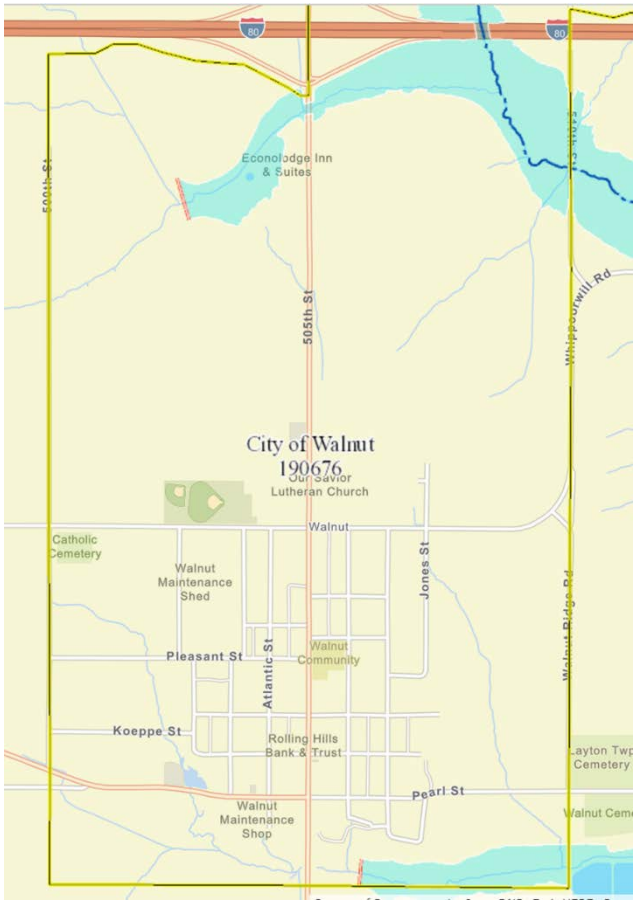
TREYNOR



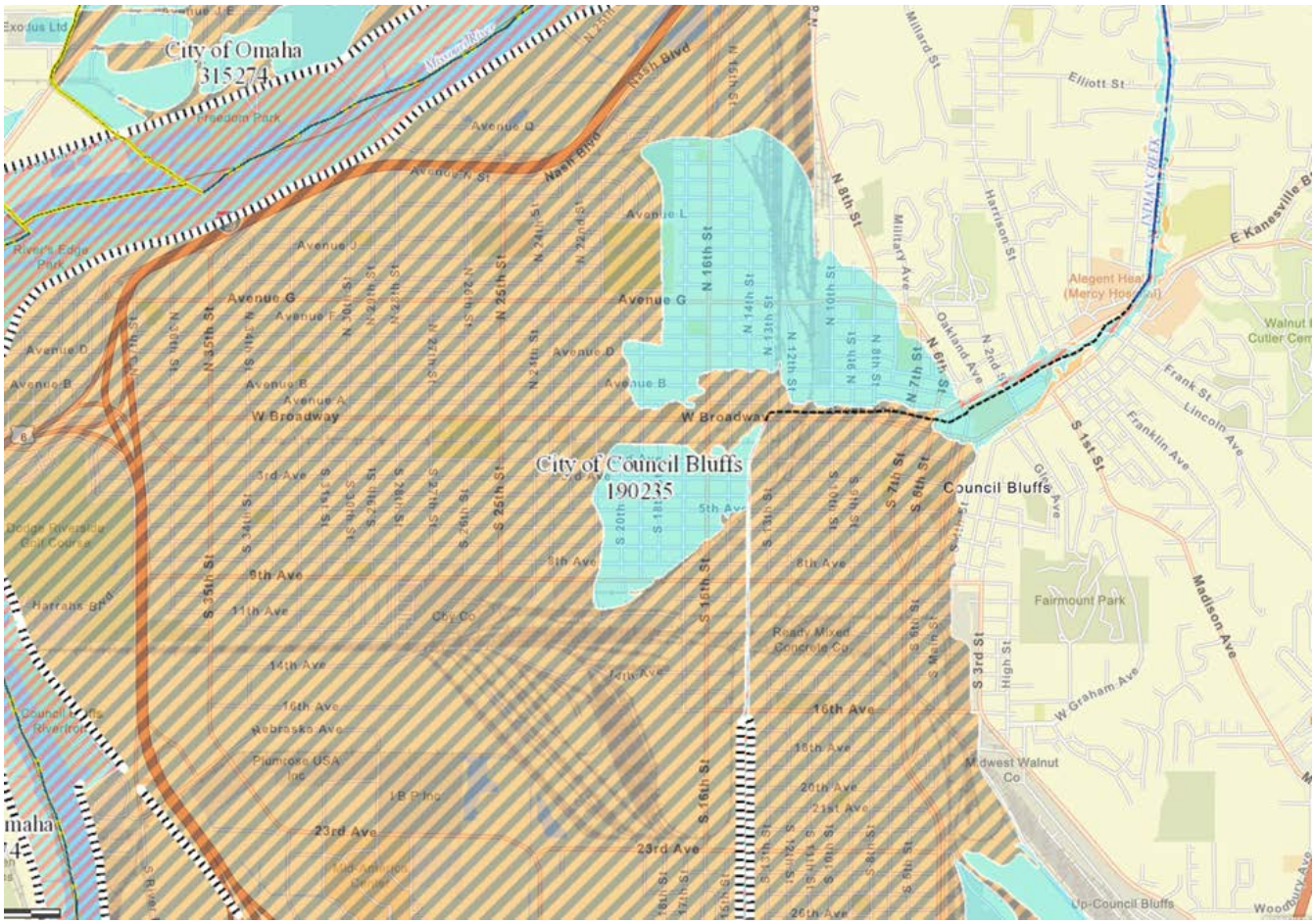
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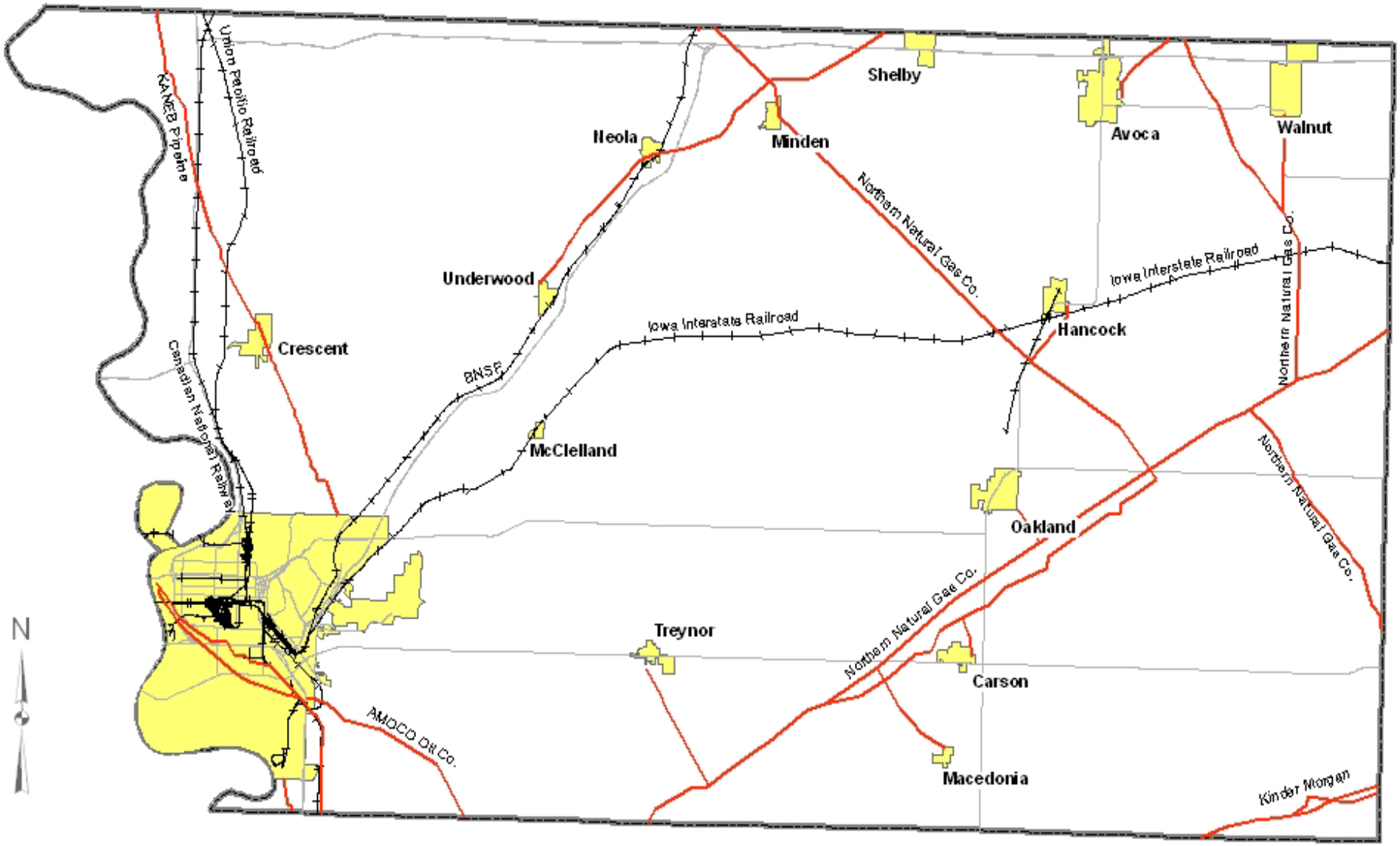
WALNUT



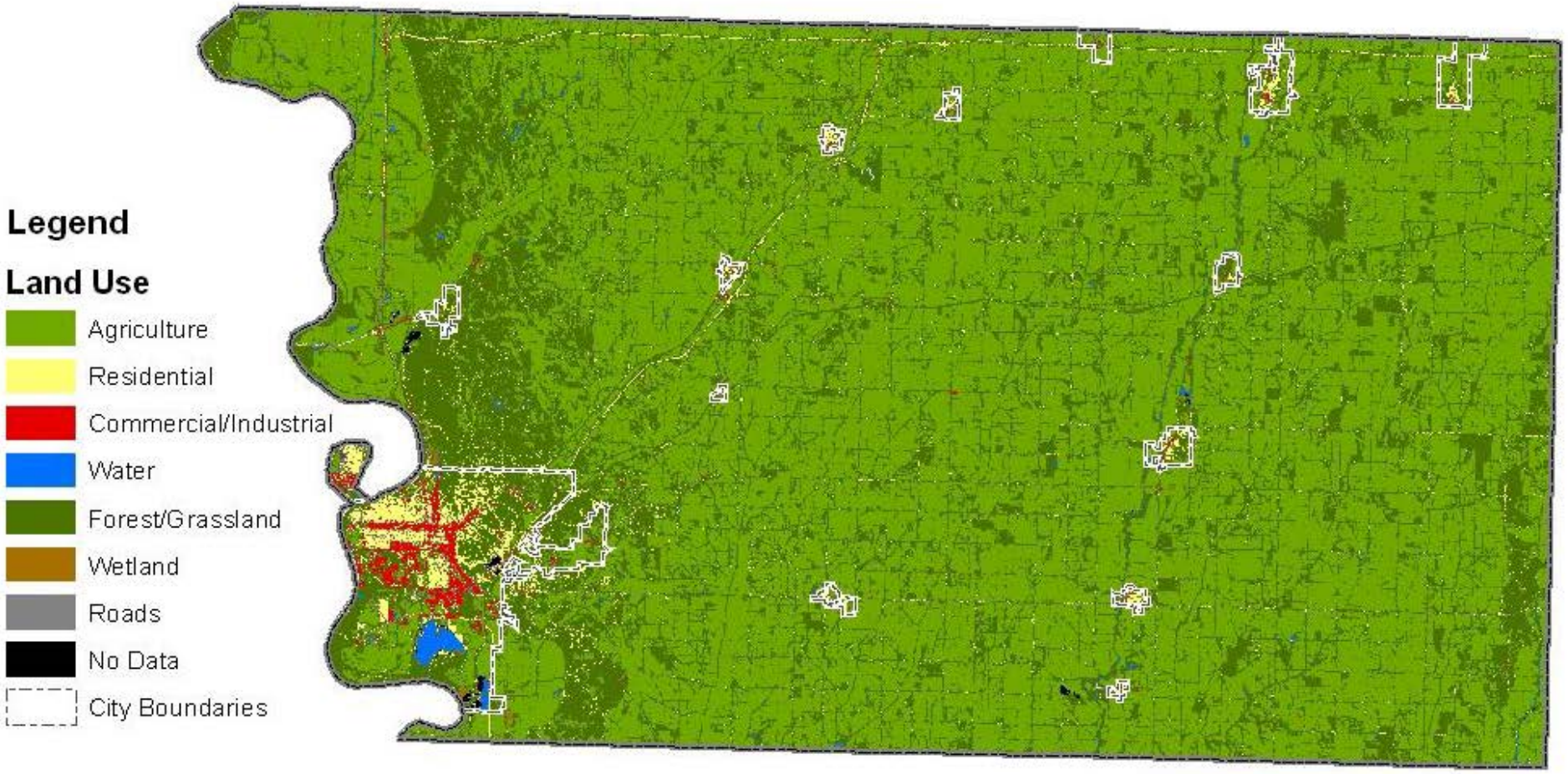
COUNCIL BLUFFS



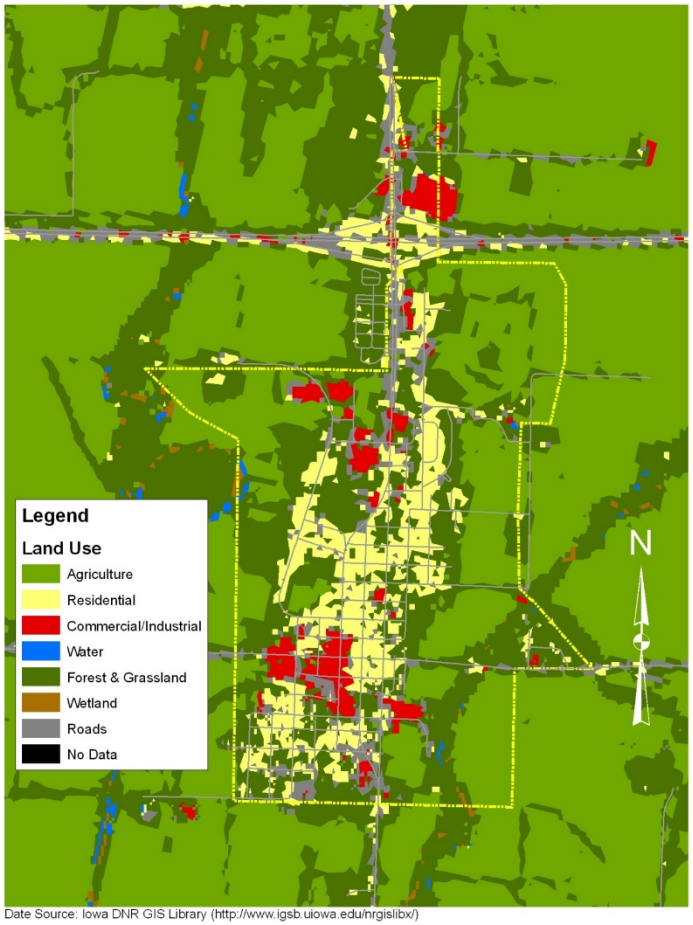
APPENDIX E
PIPELINE AND RAIL MAP



APPENDIX F
LAND USE MAPS

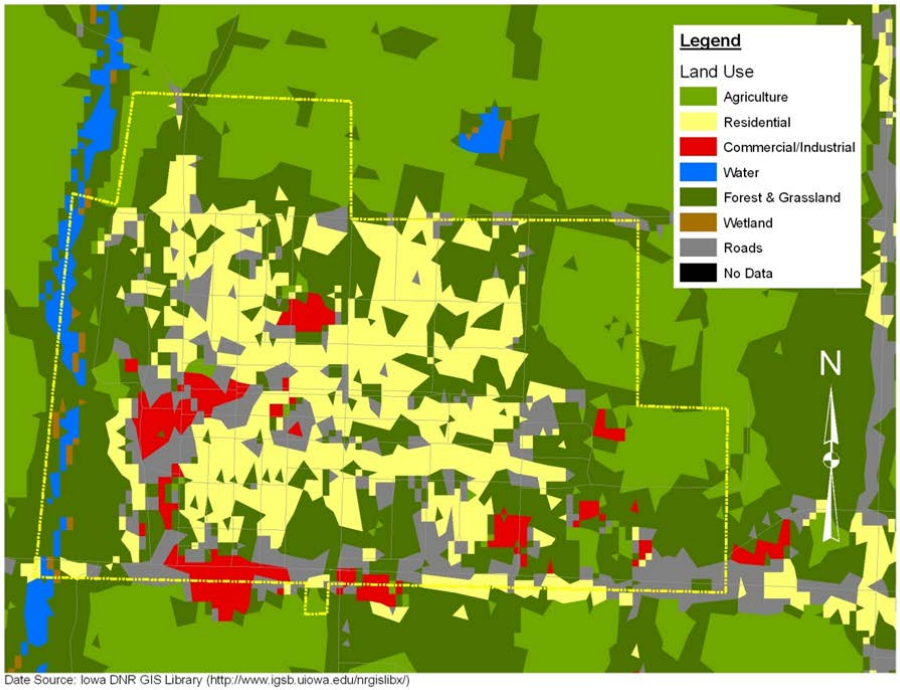


AVOCA



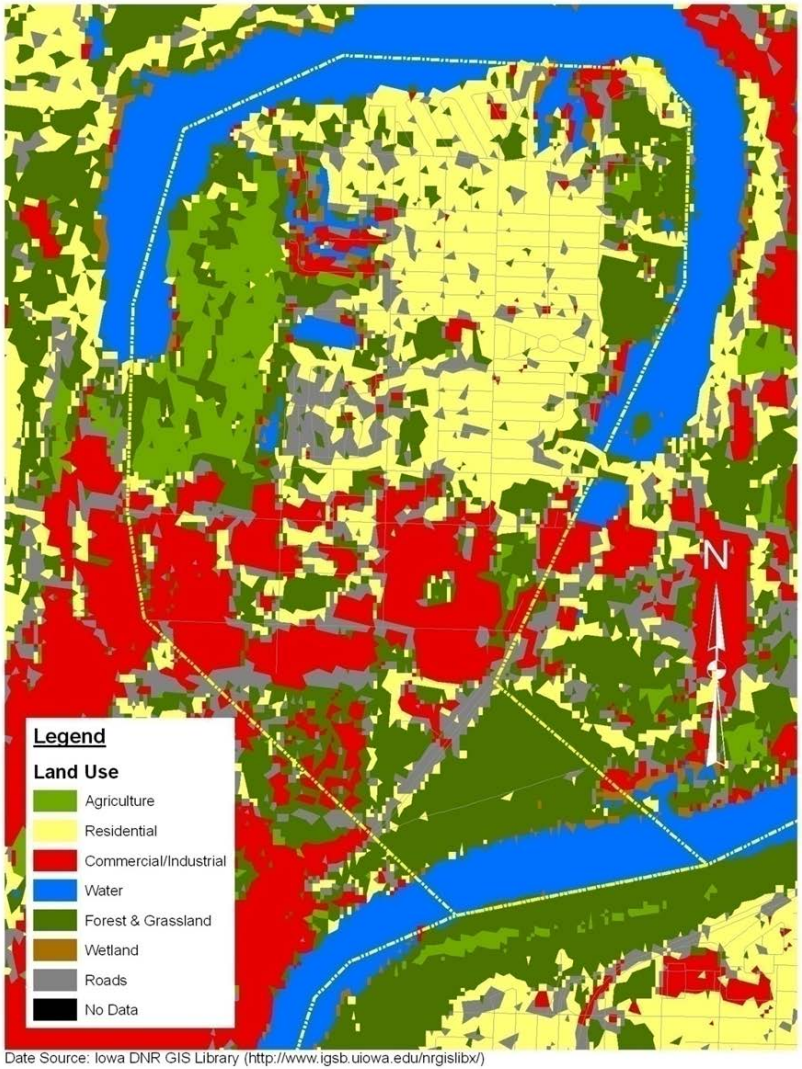
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CARSON



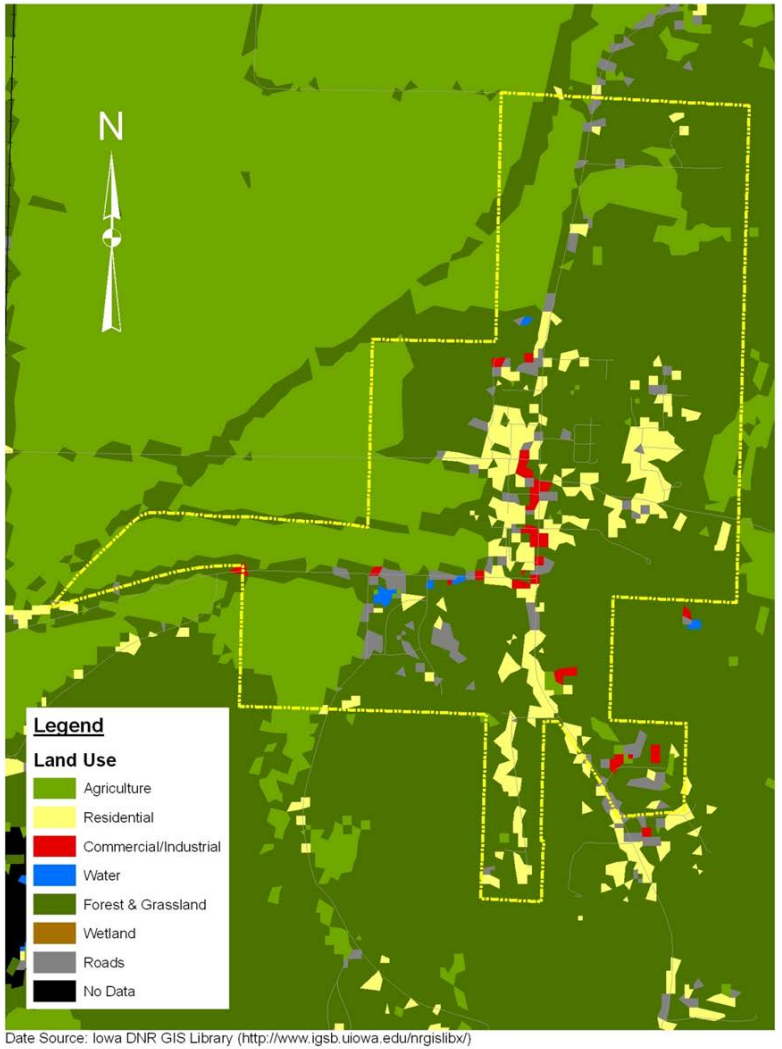
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CARTER LAKE



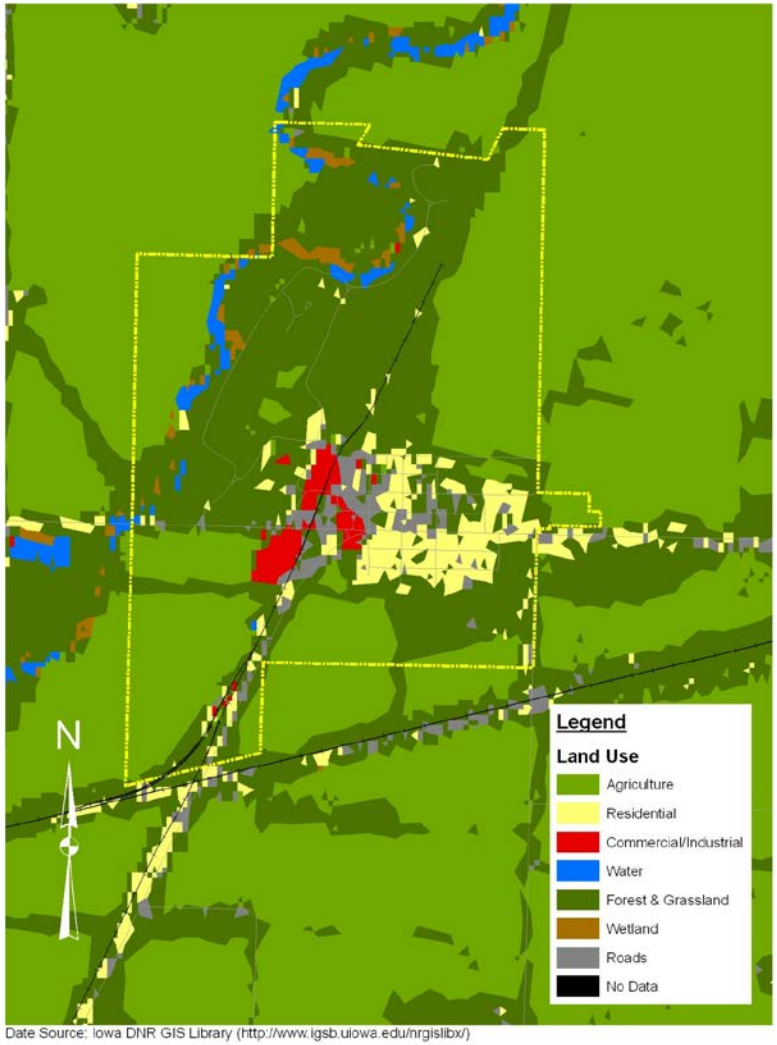
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CRESCENT



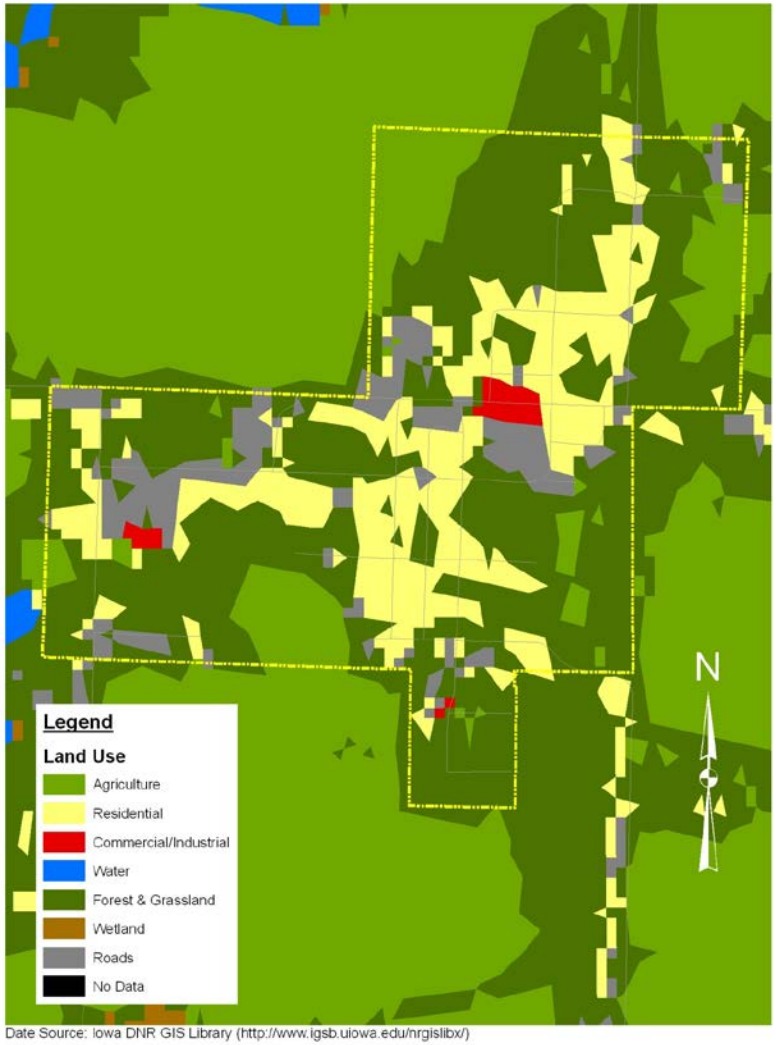
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HANCOCK



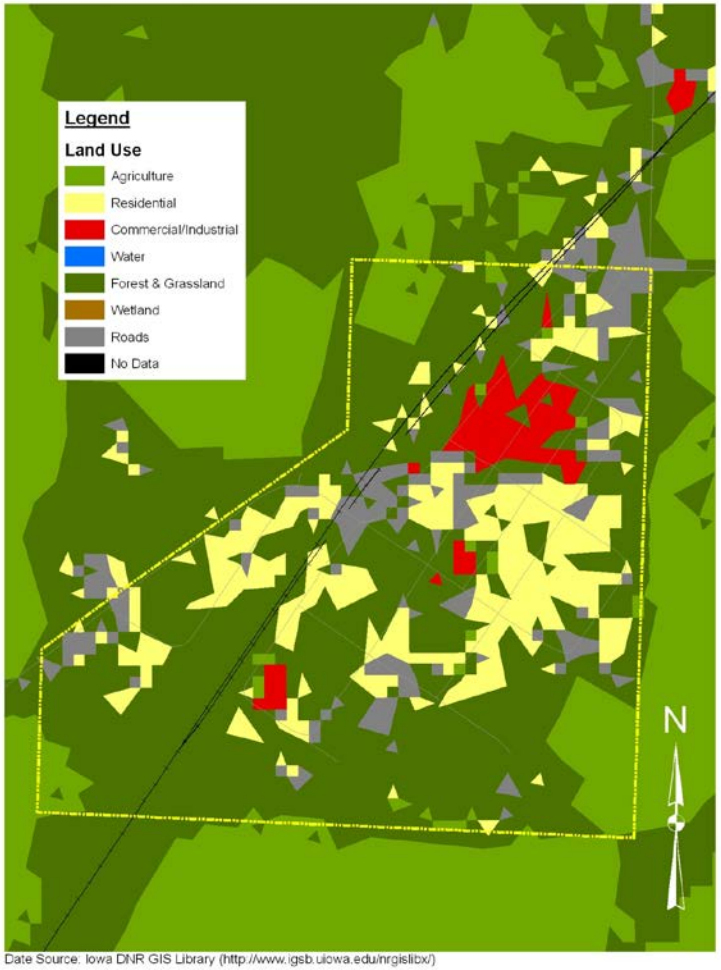
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MACEDONIA



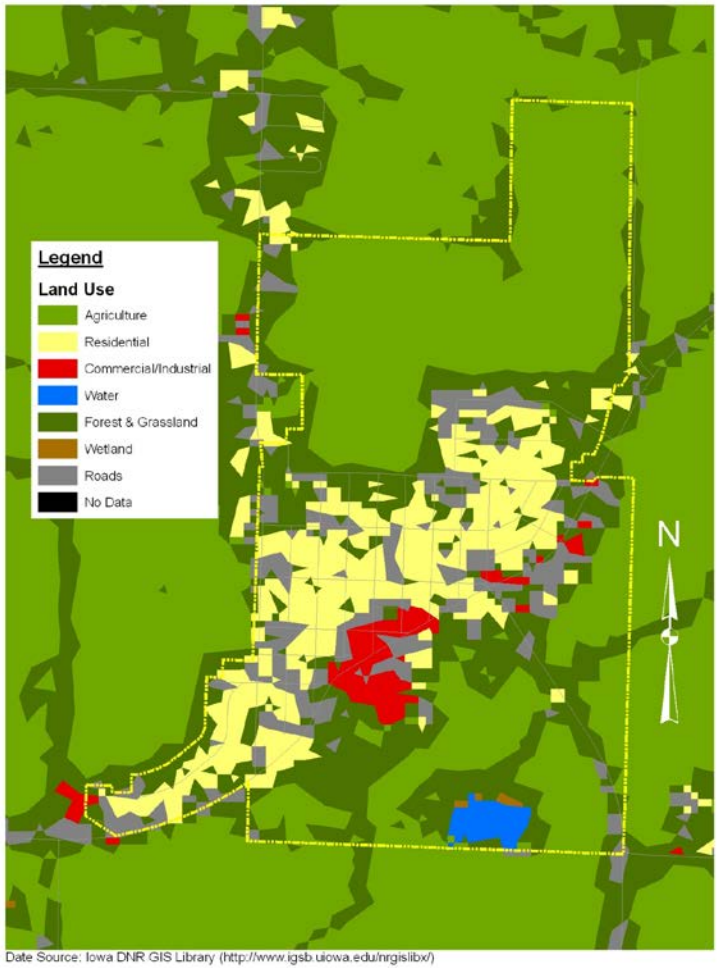
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McCLELLAND



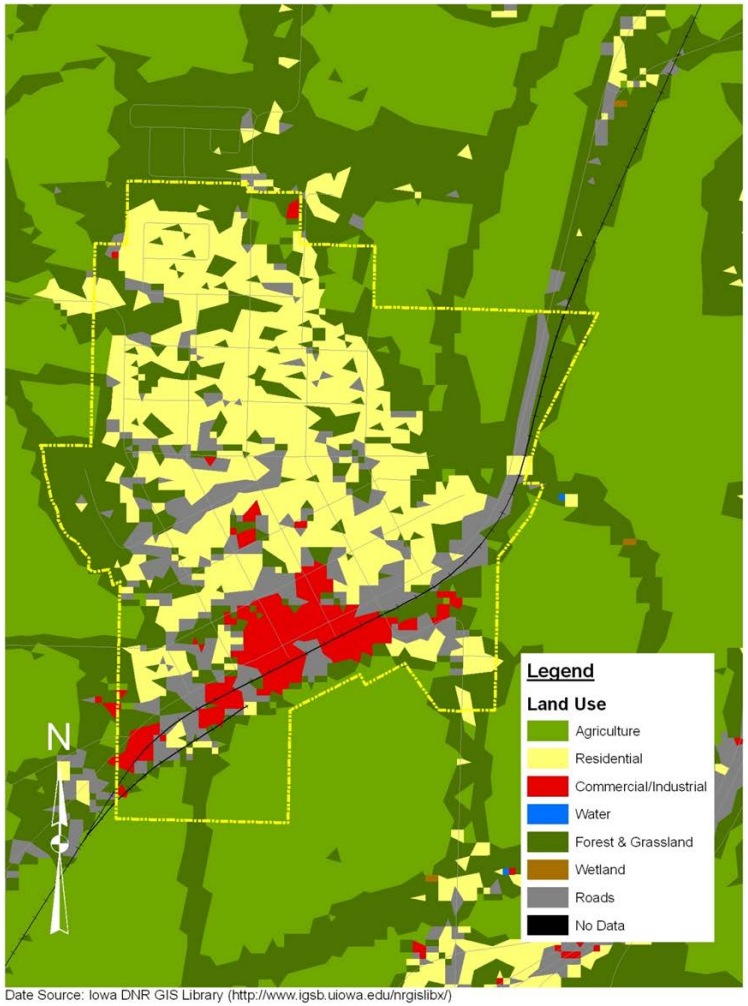
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MINDEN



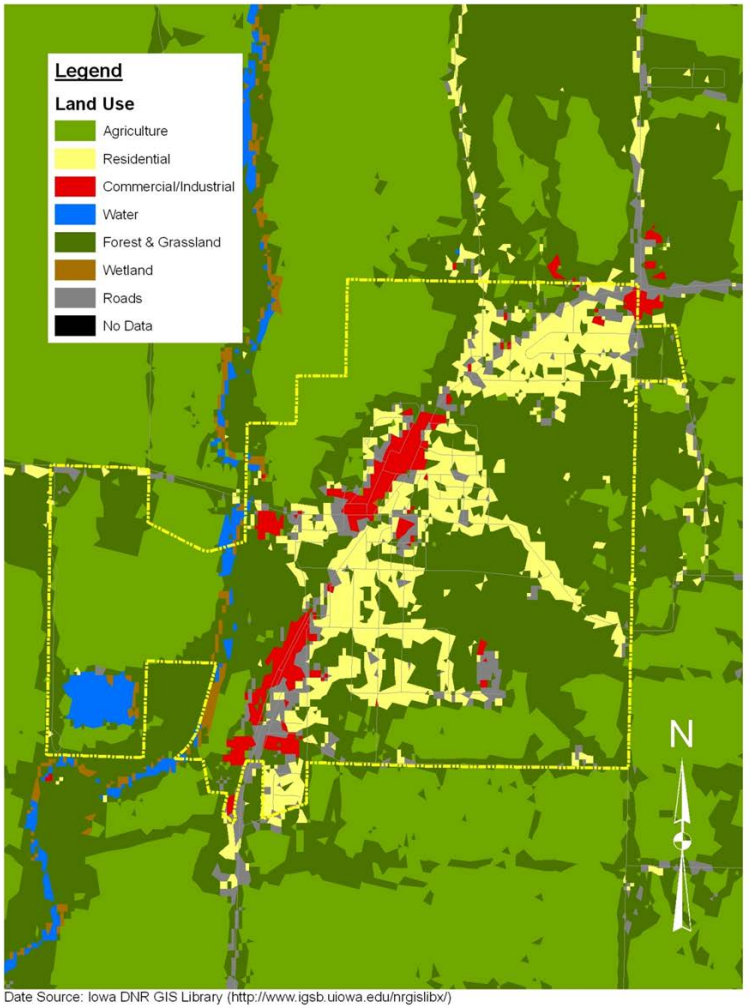
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NEOLA



Date Source: Iowa DNR GIS Library (http://www.igsb.uiowa.edu/nrgislibx/)

OAKLAND

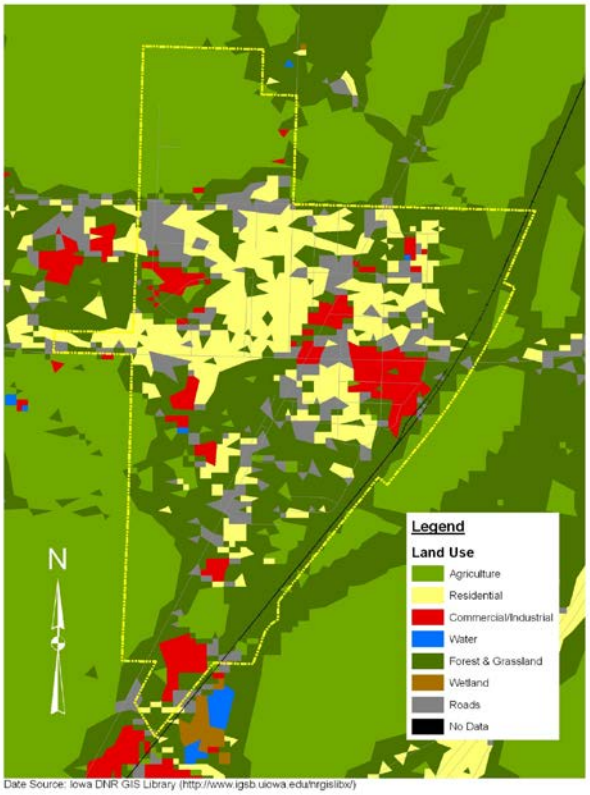


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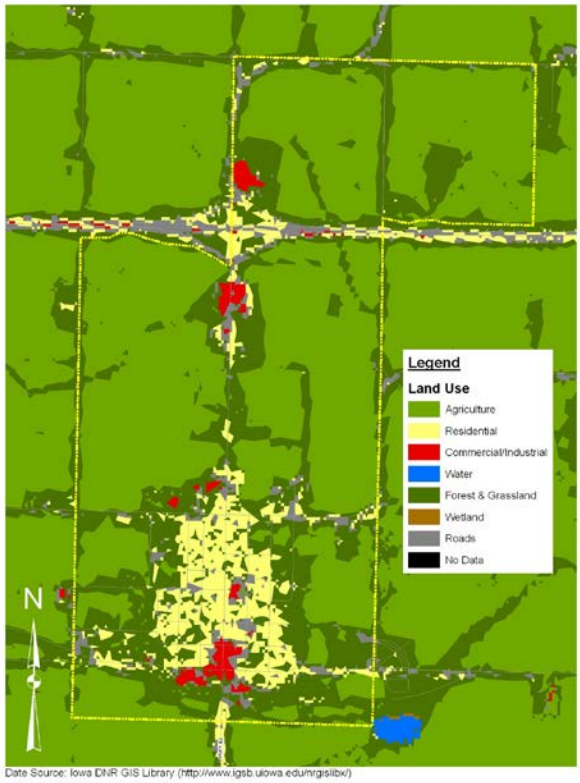
TREYNOR



UNDERWOOD



WALNUT



BLUFFS TOMORROW 2030
LAND USE PLAN

The Land Use Plan is one of the most important elements of the Bluffs Tomorrow 2030 Comprehensive Plan. It outlines how properties in different parts of the planning area should be used, and identifies the type, character, and intensity of use for all areas of the community. The intent of the Land Use Plan is to ensure that future development takes into account land use compatibility, access, market viability, environmental features, and community services. In that light, the recommendations of this chapter should be implemented in coordination with the recommendations of subsequent chapters.

The Land Use Plan sets forth policies for land use and development at the City-wide level. The Plan also includes specific policies and strategies for the City's residential, commercial, and industrial areas. Subsequent chapters provide additional detail regarding open space, environmental areas, and community facilities.

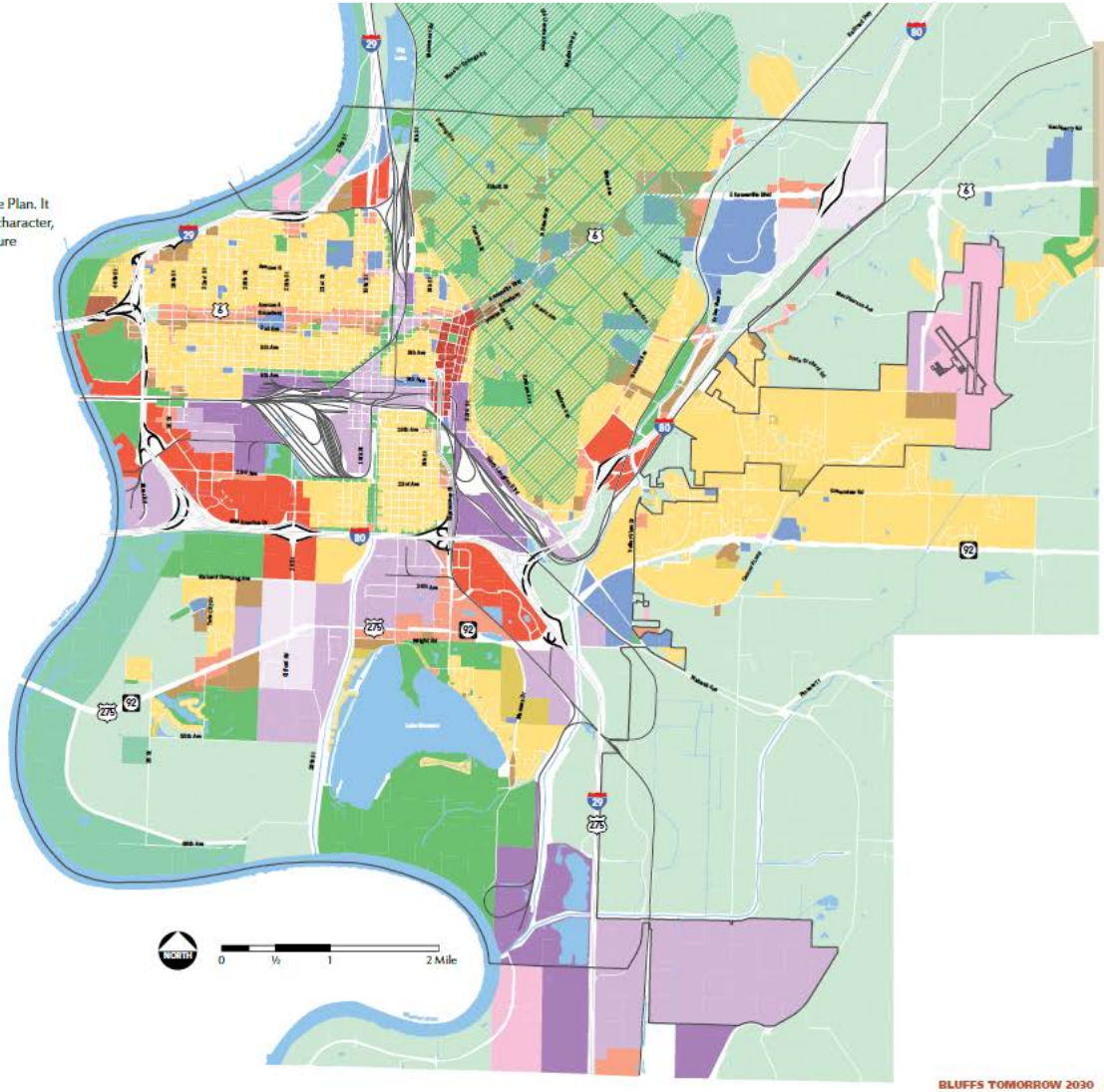
Land Use Legend

Residential
- Rural Residential/Agriculture
- Low-Density Residential
- Medium-Density Residential
- High-Density Residential
- Multi-family/Mixed-use

Commercial
- Local Commercial
- Regional Commercial
- Downtown/Mixed-use

Industrial
- Office/Industrial
- Light Industrial
- Heavy Industrial

Public Land Uses
- Natural Areas
- Public Park
- Public/Semi-public
- Transportation/Utility
- Loess Hills Preservation Area



APPENDIX G
JURISDICTIONAL ASSESSED VALUES

AVOCA				
Class	Number	%	Total Value	%
	964	100%	$91,214,063	100%
Ag Dwelling	1	0.1%	$114,509	0.1%
Agriculture	42	4.4%	$1,346,700	1.5%
Commercial	147	15.3%	$20,819,300	22.8%
Industrial	2	0.2%	$547,400	0.6%
Multi-Res	10	1.0%	$4,076,900	4.5%
Residential	762	79.0%	$64,309,254	70.5%

CARSON				
Class	Number	%	Total Value	%
	467	100%	39,842,698	100%
Ag Dwelling	3	0.6%	$467,900	1.2%
Agriculture	15	3.2%	$195,700	0.5%
Commercial	46	9.9%	$2,627,200	6.6%
Industrial	1	0.2%	$156,000	0.4%
Multi-Res	4	0.9%	$674,700	1.7%
Residential	398	85.2%	$35,721,198	89.7%

CARTER LAKE				
Class	Number	%	Total Value	%
	1,523	100%	$238,182,290	100%
Commercial	106	7.0%	$64,726,900	27.2%
Industrial	4	0.3%	$16,993,200	7.1%
Multi-Res	3	0.2%	$5,730,400	2.4%
Residential	1,410	92.6%	$150,731,790	63.3%

COUNCIL BLUFFS				
Class	Number	%	Total Value	%
	24805	100%	$3,810,945,041	100%
Ag Dwelling	22	0.1%	$6,033,976	0.2%
Agriculture	358	1.4%	$18,504,500	0.5%
Commercial	2240	9.0%	$1,152,517,281	30.2%
Industrial	56	0.2%	$103,597,300	2.7%
Multi-Res	359	1.4%	$196,721,500	5.2%
Residential	21770	87.8%	$2,333,570,484	61.2%

CRESCENT				
Class	Number	%	Total Value	%
	371	100%	$42,631,515	100%
Ag Dwelling	2	0.5%	$365,688	0.9%
Agriculture	15	4.0%	$405,300	1.0%
Commercial	22	5.9%	$2,707,100	6.3%
Industrial	1	0.3%	$167,100	0.4%
Residential	331	89.2%	$38,986,327	91.4%

HANCOCK				
Class	Number	%	Total Value	%
	160	100%	$11,844,653	100%
Agriculture	14	8.8%	$502,800	4.2%
Commercial	17	10.6%	$4,178,000	35.3%
Industrial	1	0.6%	$749,700	6.3%
Residential	128	80.0%	$6,414,153	54.2%

MACEDONIA				
Class	Number	%	Total Value	%
	196	100%	9,794,955	100%
Ag Dwelling	2	1.0%	$236,675	2.4%
Agriculture	3	1.5%	$261,800	2.7%
Commercial	18	9.2%	$343,600	3.5%
Multi-Res	2	1.0%	$312,400	3.2%
Residential	171	87.2%	$8,640,480	88.2%

MCCLELLAND				
Class	Number	%	Total Value	%
	95	100%	$7,790,526	100%
Agriculture	2	2.1%	$18,600	0.2%
Commercial	15	15.8%	$837,000	10.7%
Residential	78	82.1%	$6,934,926	89.0%

MINDEN				
Class	Number	%	Total Value	%
	302	100%	$29,000,101	100%
Agriculture	8	2.6%	$382,300	1.3%
Commercial	46	15.2%	$1,768,800	6.1%
Multi-Res	2	0.7%	$138,500	0.5%
Residential	246	81.5%	$26,710,501	92.1%

NEOLA				
Class	Number	%	Total Value	%
	464	100%	$49,907,917	100%
Agriculture	11	2.4%	$283,300	0.6%
Commercial	62	13.4%	$3,650,900	7.3%
Industrial	2	0.4%	$1,808,100	3.6%
Multi-Res	6	1.3%	$811,400	1.6%
Residential	383	82.5%	$43,354,217	86.9%

OAKLAND				
Class	Number	%	Total Value	%
	886	100%	$79,632,538	100%
Ag Dwelling	1	0.1%	$87,200	0.1%
Agriculture	38	4.3%	$649,800	0.8%
Commercial	129	14.6%	$8,972,834	11.3%
Industrial	3	0.3%	$10,142,000	12.7%
Multi-Res	7	0.8%	$2,995,100	3.8%
Residential	708	79.9%	$56,785,604	71.3%

TREYNOR				
Class	Number	%	Total Value	%
	448	100%	$61,502,681	100%
Agriculture	4	0.9%	$158,900	0.3%
Commercial	37	8.3%	$4,595,800	7.5%
Industrial	1	0.2%	$182,600	0.3%
Multi-Res	9	2.0%	$1,199,400	2.0%
Residential	397	88.6%	$55,365,981	90.0%

UNDERWOOD				
Class	Number	%	Total Value	%
	396	100%	$58,434,296	100%
Agriculture	14	3.5%	$497,300	0.9%
Commercial	52	13.1%	$10,502,600	18.0%
Industrial	1	0.3%	$34,300	0.1%
Multi-Res	5	1.3%	$1,398,700	2.4%
Residential	324	81.8%	$46,001,396	78.7%

WALNUT				
Class	Number	%	Total Value	%
	529	100%	$36,485,294	100%
Ag Dwelling	4	0.8%	$568,866	1.6%
Agriculture	41	7.8%	$2,086,300	5.7%
Commercial	85	16.1%	$5,106,000	14.0%
Industrial	3	0.6%	$299,565	0.8%
Multi-Res	5	0.9%	$291,300	0.8%
Residential	391	73.9%	$28,133,263	77.1%

Unincorporated				
Class	Number	%	Total Value	%
Ag Dwelling	1,745	7.6%	$366,636,568	13.4%
Agriculture	15,016	65.1%	$1,033,717,381	37.8%
Commercial	319	1.4%	$30,266,600	1.1%
Industrial	246	1.1%	$134,691,789	4.9%
Multi-Res	13	0.1%	$12,321,800	0.5%
Residential	5,719	24.8%	$1,158,334,975	42.3%
TOTAL	23,058	100%	$2,735,969,113	100%

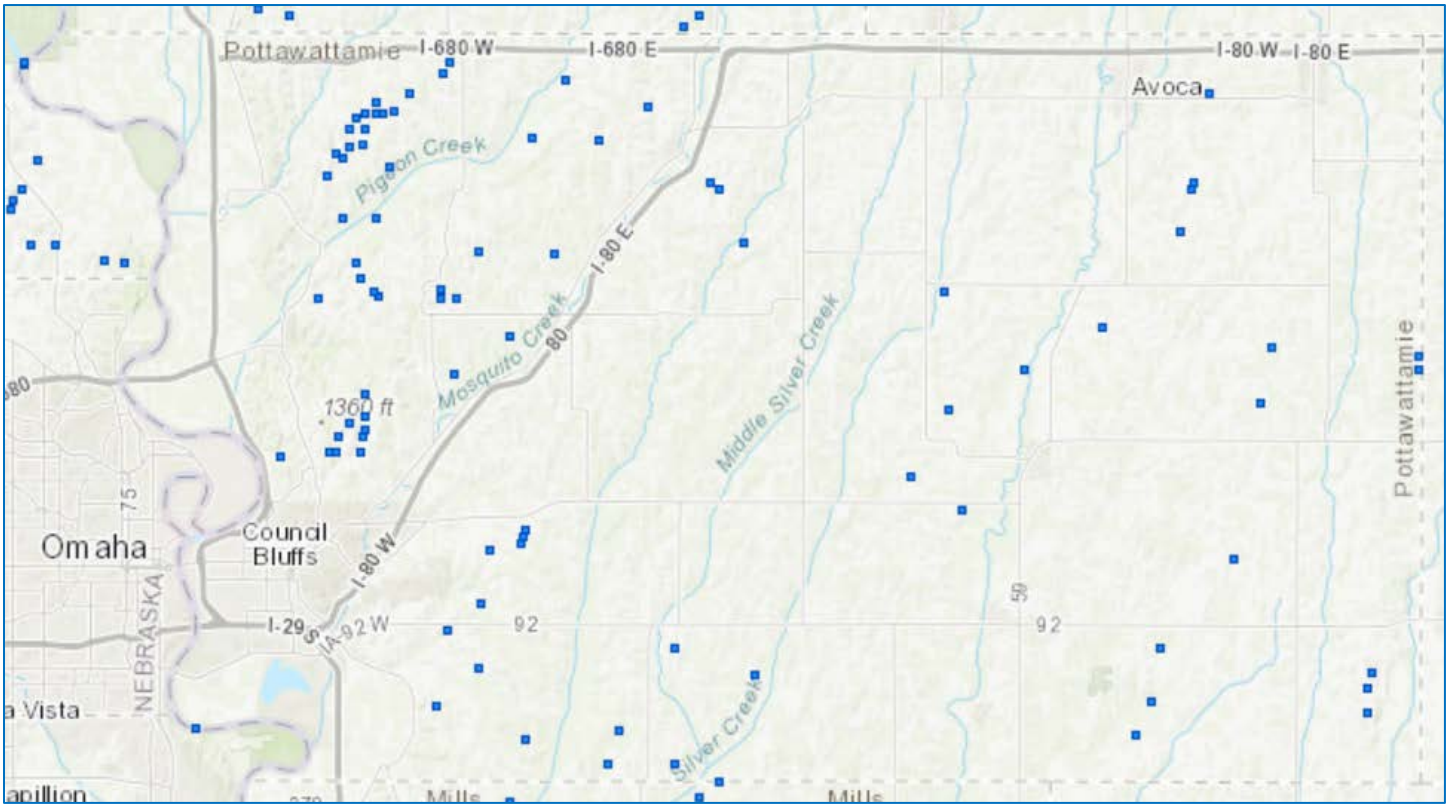
APPENDIX H
COUNTYWIDE DAM INVENTORY

(Red text indicates identified High-Hazard Dam)

NIDID	Dam Name	Owner Name	Owner Type	Year Built	Volume	Length	Height
IA01664	INDIAN CREEK WATERSHED SITE 2	WEST POTTAWATTAMIE COUNTY SWCD	Local Government	1975	243000	2000	65
IA04081	MONUMENT ROAD DAM	ROBERT SCHLOTT	Private	2011	0	0	32
IA02004	NORTH PIGEON CR WATERSHED SITE 16	WEST POTTAWATTAMIE CO SWCD	Local Government	1978	0	730	50
IA02385	SIMON RUN WATERSHED SITE 9-3W	WEST POTTAWATTAMIE CO SWCD	Local Government	1985	31100	386	39
IA02166	THOMPSON DAM	J. THOMPSON	Private	1955	12814	240	40
IA02383	NORTH PIGEON CR WATERSHED SITE M-3	WEST POTTAWATTAMIE CO SWCD	Local Government	1985	67900	466	58
IA02747	INDIAN CREEK WATERSHED SITE 6	WEST POTTAWATTAMIE COUNTY SWCD	Local Government	1967	19800	450	32
IA02691	BEE JAY WATERSHED SITE 4	EAST POTTAWATTAMIE CO SWCD	Local Government	1977	30500	0	31
IA02662	NORTH PIGEON CR WARERSHED SITE M-1	WEST POTTAWATTAMIE CO SWCD	Local Government	1993	97800	750	62
IA02898	NORTH PIGEON CR WATERSHED SITE 17	WEST POTTAWATTAMIE COUNTY SWCD	Local Government	1973	34700	0	66
IA02007	NORTH PIGEON CR WATERSHED SITE 12-1	WEST POTTAWATTAMIE CO SWCD	Local Government	1978	0	525	56
IA02661	NORTH PIGEON CR WATERSHED SITE 10-1	WEST POTTAWATTAMIE CO SWCD	Local Government	1990	71000	402	59
IA02315	WAVELAND BIGHOLE 3	D. RUSH	Private	1985	10000	290	26
IA02663	TWIN PONIES WATERSHED SITE 8	WEST POTTAWATTAMIE CO SWCD	Local Government	1990	20600	870	36
IA02006	NORTH PIGEON CR WATERSHED SITE 11-1	WEST POTTAWATTAMIE CO SWCD	Local Government	1978	0	500	81
IA02049	BEEDLE DAM	THEODORE BEEDLE	Private	1960	0	350	25
IA03163	DESOTO DAM	US FISH AND WILDLIFE SERVICE	Federal	1960	176900	2950	24.7
IA02622	HENRY DAM	JAMES W. HENRY	Private	1990	21400	600	27
IA02008	NORTH PIGEON CR WATERSHED SITE 13	WEST POTTAWATTAMIE CO SWCD	Local Government	1978	0	570	64
IA02005	NORTH PIGEON CR WATERSHED SITE 9	WEST POTTAWATTAMIE CO SWCD	Local Government	1978	0	620	60
IA02010	NORTH PIGEON CR WATERSHED SITE 16-1	WEST POTTAWATTAMIE CO SWCD	Local Government	1978	0	655	33
IA02384	SIMON RUN WATERSHED SITE 9-3E	WEST POTTAWATTAMIE CO SWCD	Local Government	1985	34400	525	35
IA02009	NORTH PIGEON CR WATERSHED SITE 15	WEST POTTAWATTAMIE CO SWCD	Local Government	1978	0	500	65
IA01866	INDIAN CREEK WATERSHED SITE 25	WEST POTTAWATTAMIE CO SWCD	Local Government	1976	14822	350	37
IA01670	INDIAN CREEK WATERSHED SITE 39	WEST POTTAWATTAMIE CO SWCD	Local Government	1975	31318	380	53
IA00953	CARLSON/WALSH DAM	R&R CARLSON & A WALSH	Private	1969	31715	616	45
IA00958	RODENBURG/PORTER DAM	G RODENBURG & P PORTER	Private	1959	24079	605	39
IA00945	NILAN DAM	WILBERT NILAN	Private	1962	9836	498	30
IA00939	RYAN HENSCHAL WATERSHED SITE F-3	WEST POTTAWATTAMIE CO SWCD	Local Government	1964	0	300	32

IA00925	NORTH PIGEON CR WATERSHED SITE 4-1	WEST POTTAWATTAMIE CO SWCD	Local Government	1971	101777	1104	57
IA00934	SPENCER DAM	RUSSELL M SPENCER	Private	1966	11236	458	33
IA00950	BINGHAM DAM	RAYMOND BINGHAM	Private	1961	7374	486	23
IA00926	NORTH PIGEON CR WATERSHED SITE 7-1	WEST POTTAWATTAMIE CO SWCD	Local Government	1971	41489	563	42
IA00940	RYAN HENSCHAL WATERSHED SITE F-2	WEST POTTAWATTAMIE CO SWCD	Local Government	1964	42447	776	41
IA00960	MC KENZIE/CHILD DAM	MRS MC KENZIE & MRS CHILD	Private	1959	17735	652	31
IA00957	LARSEN DAM	HAROLD LARSEN	Private	1959	24837	816	38
IA00933	POTTAWATTAMIE CO ROADGRADE DAM 8-76-42	POTTAWATTAMIE CO BOARD OF SUPERVISORS	Local Government	1968	20158	410	43
IA00955	ARROWHEAD LAKE DAM	POTTAWATTAMIE CO CONSERVATION BOARD	Local Government	1959	43251	615	47
IA01666	INDIAN CREEK WATERSHED SITE 12	WEST POTTAWATTAMIE CO SWCD	Local Government	1975	68524	560	63
IA00956	JOHNSON DAM	RONALD C JOHNSON	Private	1959	11615	472	27
IA00930	IOWA NONAME40	POTTAWATTAMIE CO BOARD OF SUPERVISORS	Local Government	1972	9855	676	42
IA00946	ROHWER DAM	HERBERT ROHWER	Private	1962	14458	670	22
IA00952	GOOS/BRANDT DAM	ALFRED GOOS & C H BRANDT	Private	1960	24240	778	36
IA00944	PETERS/FISCHER DAM	D PETERS & MRS J FISCHER	Private	1963	17590	443	37
IA01867	RYAN HENSCHAL WATERSHED SITE A-2	WEST POTTAWATTAMIE CO SWCD	Local Government	1976	68517	1000	39
IA01868	BEE JAY WATERSHED SITE 16	EAST POTTAWATTAMIE CO SWCD	Local Government	1977	31063	720	32
IA01680	SIMON RUN WATERSHED SITE 5-2	WEST POTTAWATTAMIE CO SWCD	Local Government	1976	38563	510	30
IA00927	NORTH PIGEON CR WATERSHED SITE M-4	WEST POTTAWATTAMIE CO SWCD	Local Government	1971	62226	690	51
IA00948	WOHLERS DAM	O NEILL WOHLERS & POTTAWATTAMIE CO	Private	1961	27469	600	42
IA00942	RYAN HENSCHAL WATERSHED SITE E-2	WEST POTTAWATTAMIE CO SWCD	Local Government	1963	51656	850	49
IA00932	IOWA NONAME41	POTTAWATTAMIE CO CONSERVATION BOARD	Local Government	1970	16547	402	33
IA00947	RYAN HENSCHAL WATERSHED SITE H-1	WEST POTTAWATTAMIE CO SWCD	Local Government	1962	25700	451	39
IA01662	IOWA NONAME79	MIDWESTERN PORK CO	Private	1973	17190	685	19
IA00931	MORAN DAM	JOE MORAN	Private	1970	13262	544	22
IA00961	WOHLERS DAM	W H WOHLERS	Private	1959	30600	810	40
IA00936	INDIAN CREEK WATERSHED SITE 5	WEST POTTAWATTAMIE CO SWCD	Local Government	1965	21084	489	36
IA00954	IOWA NONAME43	GRAALFS HILDEBRAND WILLI	Private	1959	15509	585	40
IA00935	INDIAN CREEK WATERSHED SITE 13	WEST POTTAWATTAMIE CO SWCD	Local Government	1967	26684	796	36
IA00937	INDIAN CREEK WATERSHED SITE 4	WEST POTTAWATTAMIE CO SWCD	Local Government	1965	59597	923	52
IA00938	BEE JAY WATERSHED SITE 12	EAST POTTAWATTAMIE CO SWCD	Local Government	1964	8249	512	26
IA00941	RYAN HENSCHAL WATERSHED SITE F-1	WEST POTTAWATTAMIE CO SWCD	Local Government	1965	30690	740	27
IA00949	ARTERBURN/KENEALY DAM	J ARTERBURN & J KENEALY	Private	1961	24137	617	37
IA00959	SCHOOR DAM	BERNARD SCHOOR	Private	1959	32286	950	35

IA01678	SIMON RUN WATERSHED SITE 4-2	WEST POTTAWATTAMIE CO SWCD	Local Government	1976	47578	475	41
IA01668	INDIAN CREEK WATERSHED SITE 26	WEST POTTAWATTAMIE CO SWCD	Local Government	1975	46641	360	54
IA00951	SCHULTZ/BLUMER DAM	E SCHULTZ & M BLUMER	Private	1961	16516	590	30
IA00943	TIMBERMAN DAM	EARL TIMBERMAN	Private	1963	17940	530	30
IA00929	IOWA NONAME39	POTTAWATTAMIE CO BOARD OF SUPERVISORS	Local Government	1971	26102	425	30
IA00928	ANDERSON DAM	VIRGIL ANDERSON	Private	1971	9100	338	31
IA03762	SAINT PATRICK CHURCH DAM	SAINT PATRICK CHURCH	Private	2002	23600	537	29
IA03766	WALLACE DAM	ALLICA WALLACE	Private	2004	15300	460	33
IA03765	TREYNOR FARM SUPPLY DAM	TREYNOR FARM SUPPLY	Private	2004	20200	550	31
IA03351	SERAN DAM	GENE SERAN	Private	2000	31200	668	32
IA03041	NORTH PIGEON CR WATERSHED SITE M	WEST POTTAWATTAMIE COUNTY SWCD	Local Government	1996	5500	1160	17
IA02939	WILLIAMS DAM	BRYAN K. WILLIAMS	Private	1994	24100	640	21
IA03759	FARM CREEK PUBLIC WILDLIFE AREA DAM	POTTAWATTAMIE CONSERVATION FOUNDATION	Local Government	2001	57300	923	37
IA03981	SULENTIC DAM	JIM SULENTIC	Private	2002	23908	570	38
IA03274	PERDUE DAM	MIKE PERDUE	Private	1998	9800	320	28
IA03232	TWIN PONIES WATERSHED SITE 17A	WEST POTTAWATTAMIE COUNTY SWCD	Local Government	1998	114000	1030	54
IA04045	BREHMER DAM	LESTER BREHMER	Private	2004	0	750	26
IA03763	SIEVERS DAM	KENT SIEVERS	Private	2003	14200	510	28
IA03761	PILLING DAM	ROCKY D. PILLING	Private	2003	19800	555	33
IA03764	STAMP DAM	DARRELL STAMP	Private	2005	26900	794	35
IA03760	BERNDT DAM	ROBERT BERNDT	Private	2007	17300	524	33



APPENDIX I
PLANNING AREA MEDIA OUTLETS

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
- The Gazette, weekly
- Avoca Journal- Herald, weekly
- Walnut Bureau, weekly
- Botna Valley Reporter, weekly

APPENDIX J
SAMPLE ADOPTING RESOLUTION

(All jurisdictions party to this plan will formally adopt the plan upon its approval by Iowa Homeland Security and Emergency Management and the Federal Emergency Management Agency)

RESOLUTION #_____

PURPOSE: *A Resolution to approve and adopt the Pottawattamie Countywide Multi-Jurisdictional Hazard Mitigation Plan.*

WHEREAS, *the Pottawattamie Countywide Multi-Jurisdictional Hazard Mitigation Plan was presented and recommended for adoption by the Emergency Management Agency; and*

WHEREAS, *the Pottawattamie Countywide Multi-Jurisdictional Hazard Mitigation Plan was prepared in compliance with Iowa Administrative Code 605—7.2, Code of Iowa 29C.9 and the Disaster Mitigation Act of 2000 established by the Iowa Department of Homeland Security and Emergency Management and the Federal Emergency Management Agency, respectively; and*

WHEREAS, *the Pottawattamie Countywide Multi-Jurisdictional Hazard Mitigation Plan identifies the potential hazards throughout Pottawattamie County; and*

WHEREAS, *the Pottawattamie 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 _____
(County of, City of, School or School District of)

hereby approves and adopts the Pottawattamie County Multi-Jurisdictional Hazard

Mitigation Plan this _____ day of _____, 20_____.

_____ _____
Authorized Executive *Date*

_____ _____
Attest *Date*