

Kansas Homeland Security Region J Hazard Mitigation Plan

Prepared for, and developed with,
the jurisdictions within and including:

Anderson County, Coffey County, Franklin
County, Linn County, Miami County, Osage
County, and Shawnee County

July 2019

Prepared By:



Blue Umbrella Solutions, LLC

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- B Critical Facilities (Restricted)





List of Commonly Used Acronyms

Acronym	Meaning
CPRI	Calculated Priority Risk Index
CDC	Centers for Disease Control and Prevention
CWD	Chronic Wasting Disease
CFR	Code of Federal Regulations
CRS	Community Rating System
CWPP	Community Wildfire Protection Plans
EAB	Emerald Ash Borer
EAP	Emergency Action Plan
EMAP	Emergency Management Accreditation Program
EPZ	Emergency Planning Zone
EF	Enhanced Fujita
EPA	Environmental Protection Agency
°F	Fahrenheit
FEMA	Federal Emergency Management Agency
HAZUS	FEMA Loss Estimation Software
FIRM	Flood Insurance Rate Map
GIS	Geographic Information System
GDP	Gross Domestic Product
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Planning
HazMat	Hazardous Materials
ISO	Insurance Service Office
KDA	Kansas Department of Agriculture
KDHE	Kansas Department of Health and Environment
KDOT	Kansas Department of Transportation
KDEM	Kansas Division of Emergency Management
KFS	Kansas Fire Service
KGS	Kansas Geological Survey
KSFM	Kansas State Fire Marshall
K.S.A	Kansas Statutes Annotated
KWO	Kansas Water Office
LEPC	Local Emergency Planning Committee
MPC	Mitigation Planning Committee
NCEI	National Centers for Environmental Information
NFIP	National Flood Insurance Program
NLCD	National Land Cover Database
NLD	National Levee Database
NLIR	National Levee Inventory Report
NLSP	National Levee Safety Program
NOAA	National Oceanic and Atmospheric Administration
NRCS	National Resource Conservation Service
NWS	National Weather Service
NSFHA	No Special Flood Hazard Area





Acronym	Meaning
NGO	Non-Governmental Organization
NRC	Nuclear Regulatory Commission
OHMS	Office of Hazardous Materials Safety
PDSI	Palmer Drought Severity Index
PHMSA	Pipeline and Hazardous Materials Safety Administration
PDM	Pre-Disaster Mitigation
PAL	Provisionally Accredited Levee
RL	Repetitive Loss
Risk MAP	Risk Mapping, Assessment and Planning
REC	Rural Electric Cooperative
SRL	Severe Repetitive Loss
SFHA	Special Flood Hazard Area
USD	Unified School District
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WUI	Wildland Urban Interface



1.0 Introduction, Assurances and Adoption

1.1 – Introduction

Mitigation is commonly defined as sustained action taken to reduce or eliminate long-term risk to people and their property from hazards and their effects. Hazard mitigation planning provides communities with a roadmap to aid in the creation and revision of policies and procedures, and the use of available resources, to provide long-term, tangible benefits to the community. A well-designed hazard mitigation plan provides communities with realistic actions that can be taken to reduce potential vulnerability and exposure to identified hazards.

This Hazard Mitigation Plan (HMP) was prepared to provide sustained actions to eliminate or reduce risk to people and property from the effects of natural and man-made hazards. This plan documents the State of Kansas Homeland Security Region J (hereafter referred to as Kansas Region J) and its participating jurisdictions planning process and identifies applicable hazards, vulnerabilities, and hazard mitigation strategies. This plan will serve to direct available community and regional resources towards creating policies and actions that provide long-term benefits to the community. Local and regional officials can refer to the plan when making decisions regarding regulations and ordinances, granting permits, and in funding capital improvements and other community initiatives.

Specifically, this hazard mitigation plan was developed to:

- Update the Kansas Region J 2014 Hazard Mitigation Plan
- Build for a safer future for all citizens
- Foster cooperation for planning and resiliency
- Identify, prioritize and mitigate against hazards
- Assist with sensible and effective planning and budgeting
- Educate citizens about hazards, mitigation and preparedness
- Comply with federal requirements

As stipulated in the Disaster Mitigation Act of 2000 (DMA 2000) Section 322, federally approved mitigation plans are a prerequisite for mitigation project grants. Development and Federal Emergency Management Agency (FEMA) approval this plan will ensure future eligibility for federal disaster mitigation funds through the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation Grant Program (PDM), Repetitive Flood Claims, and a variety of other state and federal programs. This Plan was prepared to meet the requirements of the DMA 2000, as defined in regulations set forth by the Interim Final Rule (44 CFR Part 201.6).

This plan has been designed to be a living document, a document that will evolve to reflect changes, correct any omissions, and constantly strive to ensure the safety of Kansas Region J.





1.2 – Participating Jurisdictions

44 CFR 201.6(a)(4): Multi-jurisdictional plans may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.

All eligible jurisdictions were invited to participate in the organization, drafting, completion and adoption of this plan. Invited jurisdictions included, but were not limited to, elected officials, relevant State of Kansas agencies, counties, cities, school districts, non-profit agencies, and businesses.

In order to have an approved hazard mitigation plan, DMA 2000 requires that each jurisdiction participate in the planning process. Each jurisdiction choosing to participate in the development of the plan were required to meet detailed participation requirements, which included the following:

- When practical and affordable, participation in planning meetings
- Provision of information to support the plan development
- Identification of relevant mitigation actions
- Review and comment on plan drafts
- Formal adoption of the plan

Based on the above criteria, the following jurisdictions participated in the planning process, and will individually as a jurisdiction adopt the approved hazard mitigation plan:

Table 1.1: Anderson County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Anderson County	x	x
City of Colony	x	x
City of Garnett	x	x
City of Greeley	x	x
City of Kincaid	x	x
City of Westphalia	x	x
USD #365 - Garnett	x	x
USD #479 - Crest	x	x

Table 1.2: Coffey County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Coffey County	x	x
City of Burlington	x	x
City of Gridley	x	x
City of Lebo	x	x
City of LeRoy	x	x
City of New Strawn	x	x
City of Waverly	x	x
USD #243 - Lebo /Waverly	x	x
USD #244 - Burlington	x	x





Table 1.2: Coffey County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
USD #245 - LeRoy / Gridley	x	x

Table 1.3: Franklin County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Franklin County	x	x
City of Lane	x	x
City of Ottawa	x	x
City of Pomona	x	x
City of Princeton	x	x
City of Rantoul	x	x
City of Richmond	x	x
City of Wellsville	x	x
City of Williamsburg	x	x
USD #287 - West Franklin	x	x
USD #288 - Central Heights	x	x
USD #289 - Wellsville	x	x
USD #290 - Ottawa	x	x
Rural Water District #6	x	x

Table 1.4: Linn County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Linn County	x	x
City of Blue Mound	x	x
City of La Cygne	x	x
City of Linn Valley	x	x
City of Mound City	x	x
City of Parker	x	x
City of Pleasanton	x	x
City of Prescott	x	x
USD #344 - Pleasanton	x	x
USD #346 - Mound City	x	x
USD #362 - Prairie View	x	x
Rural Water District #1	x	x
Rural Water District #2	x	x
Rural Water District #3	x	x
Water Supply District #13	x	x

Table 1.5: Miami County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Miami County	x	x
City of Fontana	x	x
City of Louisburg	x	x
City of Osawatomie	x	x
City of Paola	x	x





Table 1.5: Miami County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
USD #230 – Spring Hill		X
USD #367 - Osawatomie	X	X
USD #368 - Paola	X	X
USD #416 - Louisburg	X	X
Rural Water District #3	X	X

Table 1.6: Osage County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Osage County	X	X
City of Burlingame	X	X
City of Carbondale	X	X
City of Lyndon	X	X
City of Melvern	X	X
City of Osage	X	X
City of Overbrook	X	X
City of Quenemo	X	X
City of Scranton	X	X
Three Lakes Educational Cooperative	X	X
USD #420 - Osage City	X	X
USD #421 - Lyndon	X	X
USD #434 - Santa Fe Trail	X	X
USD #454 - Burlingame	X	X
USD #456 - Marias Des Cygnes Valley	X	X
Fire District #6	X	X
Frontier Extension District		X
Osage Water District #3	X	X
Lyon-Coffey Electric Coop	X	X

Table 1.7: Shawnee County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Shawnee County	X	X
City of Auburn	X	X
Auburn Township		X
City of Rossville	X	X
City of Silver Lake	X	X
City of Topeka	X	X
City of Willard	X	X
Washburn University	X	X
USD #321 - Kaw Valley	X	X
USD #345 - Seaman	X	X
USD #372 - Silver Lake	X	X
USD #437 - Auburn / Washburn	X	X
USD #450 - Shawnee Heights	X	X
USD #501 - Topeka	X	X





Table 1.7: Shawnee County Participating Jurisdictions

Jurisdiction	2014 HMP Participant	2019 HMP Participant
Consolidated Rural Water District #3		X
Consolidated Rural Water District #4		X
Kaw Valley Drainage District		X
North Topeka Drainage District		X
Shawnee County Rural Water District #8		X
Tri-County Drainage District		X

Any Kansas Region J jurisdiction not covered in this HMP is either covered under another plan or declined to participate.

1.3 – Assurances

Kansas Region J and all participating jurisdictions certify that they will comply with all applicable Federal statutes and regulations during the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c), and will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes as required in 44 CFR 13.11(d).

This hazard mitigation plan was prepared to comply with all relevant the requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, as amended by the DMA 2000. This plan complies with all the relevant requirements of:

- Code of Federal Regulation (44 CFR) pertaining to hazard mitigation planning
- FEMA planning directives and guidelines
- Interim final, and final rules pertaining to hazard mitigation planning and grant funding
- Relevant presidential directives
- Office of Management and Budget circulars
- Any additional and relevant federal government documents, guidelines, and rules.

1.4 – Authorities

For all jurisdictions within Kansas Region J all authority is subject to prescribed constraints, as all of Kansas political subdivisions must not act without proper delegation from the State. However, cities and counties in Kansas have broad home rule powers. Local governments in Kansas have a wide range of tools available to them for implementing mitigation programs, policies, and actions. A local jurisdiction may utilize any or all of the following broad authorities granted by the State of Kansas:

- Regulation
- Acquisition
- Taxation
- Spending





In addition, Kansas local governments have been granted broad regulatory authority in their jurisdictions. Kansas Administrative Regulations bestow the general police power on local governments, allowing them to enact and enforce ordinances which define, prohibit, regulate or abate acts, omissions, or conditions detrimental to the health, safety, and welfare of the people, and to define and abate nuisances. Since hazard mitigation can be included under the police power (as protection of public health, safety, and welfare), towns, cities, and counties may include requirements for hazard mitigation in local ordinances. Local governments may also use their ordinance-making power to abate “nuisances”, which could include, by local definition, any activity or condition making people or property more vulnerable to any hazard.

The Kansas Region J HMP relies on the authorities given to it by the State of Kansas and its citizens as encoded in state law. This plan is intended to be consistent with all policies and procedures that govern activities related to the mitigation programming and planning. In all cases of primacy, State of Kansas laws, statutes, and policies will supersede the provisions of the plan. This HMP attempts to be consistent following:

- Kansas Constitution, Article 12 Section 5: Home rule powers
- Kansas Administrative Regulation 56-2: Standards for local disaster agencies
- 2016 Kansas Statutes, Chapter 12, Article 7: Allows cities and municipalities to designate flood zones and restrict the use of land within these zones
- 2016 Kansas Statutes Chapter 24, Article 12: Establishes watershed districts
- 2016 Kansas Statutes, Chapter 48, Article 9: Promulgating the Kansas Emergency Management Act, requiring counties to establish and maintain a disaster agency responsible for emergency management and to prepare a county emergency response plan
- 2016 Kansas Statutes, Chapter 65, Article 57: Promulgating the Kansas Emergency Planning and Community Right-to-Know Act
- The Robert T. Stafford Disaster Relief and Emergency Assistance Act as amended by the Disaster Mitigation Act of 2000 (Public Law 106-390 – October 30, 2000)
- 44 CFR Part 201.6: Local mitigation plans

In addition, this plan will be consistent with all relevant federal authorities as well as Emergency Management Accreditation Program (EMAP) mitigation standards.

1.5 – Adoption Resolutions

44 CFR Requirement 201.6(c)(5): Documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council). For multi-jurisdictional plans, each jurisdiction requesting approval of the plan must document that it has been formally adopted.

Upon review and approved pending adoption status by FEMA Region VII adoption resolutions will be signed by the participating jurisdictions and tracked by the Regional Mitigation Plan Project Manager with KDEM.





While not required, private, non-profit and charitable organizations that independently participated in this planning effort are encouraged to adopt the plan.

Adoption resolutions may be found in Appendix A.



2.0 Planning Process

2.1 – Documentation of the Planning Process

44 CFR 201.6(c)(1): Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

In September of 2018, Kansas Region J and its participating jurisdictions began the process to update the Kansas Region J 2014 HMP. It was determined that Jeanne Bunting, the State of Kansas Hazard Mitigation Planner would serve as the project manager, directing this plan update, and would act as the primary point-of-contact throughout the project.

The State of Kansas contracted with Blue Umbrella Solutions to assist in updating the 2014 Kansas Region J HMP. Blue Umbrella's roles included:

- Ensure that the hazard mitigation plan meets all regulatory requirements
- Assist with the determination and ranking of hazards
- Assist with the assessment of vulnerabilities to identified hazards
- Assist with capability assessments
- Identify and determine all data needs and solicit the information from relevant sources
- Assist with the revision and development of the mitigation actions
- Development of draft and final planning documents

Kansas Region J and its participating jurisdiction undertook the following steps to update and create a robust HMP:

- Review of the 2014 Kansas Region J HMP
- Review of current related planning documents
- Delivery of organizational and planning meetings
- Solicitation of public input as to plan development
- Assessment of potential risks
- Assessment of vulnerabilities and assets
- Development of the mitigation actions
- Development of a draft multi-hazard mitigation plan
- Implementation, adoption, and maintenance of the plan

The process established for this planning effort is based on DMA 2000 planning and update requirements and the FEMA associated guidance for hazard mitigation plans. The FEMA four step recommended mitigation planning process, as detailed below, was followed:

1. Organize resources
2. Assess risks
3. Develop a mitigation plan
4. Implement plan and monitor progress





To accomplish this, the following planning process methodology was followed:

- Inform, invite, and involve other mitigation plan stakeholders throughout the state, including federal agencies, state agencies, regional groups, businesses, non-profits, and local emergency management organizations.
- Conduct a thorough review of all relevant current and historic planning efforts
- Collect data on all related state and local plans and initiatives. Additionally, all related and relevant local plans were reviewed for integration and incorporation.
- Develop the planning and project management process, including methodology, review procedures, details about plan development changes, interagency coordination, planning integration, and the organization and contribution of stakeholders.
- Develop the profile of the county and participating jurisdictions.
- Complete a risk and vulnerability assessment using a Geographic Information System (GIS) driven approach using data from various local, state and federal agency resources.
- Develop a comprehensive mitigation strategy effectively addressing their hazards and mitigation program objectives. This included identifying capabilities, reviewing pre and post disaster policies and programs, identifying objectives and goals, identifying mitigation actions and projects, and assessing mitigation actions and projects.
- Determination and implementation of a plan maintenance cycle, including a timeline for plan upgrades and improvements.
- Submission of the plan to FEMA Region VII for review and approval and the petition all participating jurisdictional governments for a letter of formal plan adoption.

2.2 – 2019 Plan Changes

44 CFR 201.6(d)(3): A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit it for approval within 5 years in order to continue to be eligible for mitigation project grant funding

The Kansas Region J HMP has undergone significant revision and upgrading since its last edition. Not only has the region made significant efforts to improve the functionality and effectiveness of the plan itself but it has significantly improved its hazard mitigation program. This grants the region's improved and robust hazard mitigation program a better base to further mold and improve its mitigation strategy over the next five years.

As part of this planning effort, each section of the previous mitigation plan was reviewed and completely revised. The sections were reviewed and revised against the following elements:

- Compliance with the current regulatory environment
- Completeness of data
- Correctness of data
- Capability differentials
- Current state environment





In addition to data revisions, the format and sequencing of the previous plan was updated for ease of use and plan clarity.

During this process, and after a thorough review and discussion with all participating jurisdictions and stakeholders, it was determined that the priorities of the overall community in relation to hazard mitigation planning have not changed during the five years of the previous planning cycle.

2.3 – Mitigation Planning Committee

Upon project initiation a mitigation planning committee (MPC), generally consisting of participating county emergency managers, was formed. From project inception to completion, the MPC was involved in each major plan development milestone, and fully informed through on-site meetings and electronic communication. Prior to the plan's submission to FEMA, the MPC was invited to review the plan and provide input.

In general, all MPC members were asked to participate in the following ways:

- Provide local engagement with all participating jurisdictions
- Attend and participate in meetings
- Assist with the collection of data and information
- Review planning elements and drafts
- Integrate hazard mitigation planning elements with other planning mechanisms
- Facilitate jurisdictional coordination and cooperation
- Assist with the revision and development of mitigation actions

MPC members who were unable to attend meetings due to budgetary or personnel constraints were contacted via email or phone to discuss hazard mitigation planning, including the process, goals, mitigation actions, local planning concerns and plan review.

Each MPC member was thoroughly interviewed regarding their jurisdiction's and sub-jurisdiction's mitigation related activities. These interviews were invaluable in fully integrating the resources necessary to produce this plan, document mitigation activities, and document the mitigation resources available to better increase resiliency.

Additionally, the MPC was used as a conduit to solicit input from all participating jurisdictions under the county. Where appropriate, the MPC solicited the assistance of technical experts from various agencies and groups. When the MPC updated and improved the plan's mitigation strategy, personnel from strategically selected agencies were interviewed to provide input on their mitigation capabilities.

The following participants were selected for the MPC.





Table 2.1: Kansas Region J Mitigation Planning Committee

Participant	Title	Organization
JD Mersman	Emergency Manager	Anderson County
Mick Brinkmeyer	Assistant Director	Anderson County
Russel Stukey	Emergency Manager	Coffey County
Amber Presley	Assistant Director	Coffey County
Alan Radcliffe	Emergency Manager	Franklin County
Thomas Winter	Assistant Director	Franklin County
Doug Barlet	Emergency Manager	Linn County
Frank Kelly	Emergency Manager	Miami County
Bryce Romine	Emergency Manager	Osage County
Bret Lewis	Assistant Director	Osage County
Dusty Nichols	Emergency Manager	Shawnee County
Nelson Casteel	Assistant Director	Shawnee County
Jeanne Bunting	Mitigation Planner	State of Kansas
Matt Eyer	Plan Author	Blue Umbrella Solutions

2.4 – Local and Regional Stakeholder Participation

44 CFR Requirement 201.6(b)(2): An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process

Within Kansas Region J there are many jurisdictions and organizations who have a vested interest in participating in the creation and adoption of the hazard mitigation plan. An integral part of the planning process included the identification, development, and coordination of these entities. The Kansas Region J MPC provided the opportunity for neighboring communities, counties, and local and regional development agencies to be involved in the planning process. Where applicable, these entities were kept informed of the hazard mitigation process during state, regional and local emergency management meetings, gatherings and conferences, in person by MPC members, or were solicited for planning information.

It is worth noting that all neighboring Kansas counties are undergoing a similar mitigation planning effort, and as part of this statewide process all county and state planners are working together toward common mitigation goals. During the creation and adoption of this plan communication channels were opened to facilitate the cross pollination of ideas, to incorporate neighboring regions concerns, and to ensure the overall preparedness of the State of Kansas.

In addition, relevant federal, regional, state, local governmental, and private and non-profit entities were also invited to provide input and utilized for information and technical expertise, including, but not limited to:

- American Red Cross





- Center for Disease Control
- FEMA
- Kansas Adjutant General's Office
- Kansas Department of Agriculture, the Kansas Department of Health and Environment
- Kansas Department of Transportation
- Kansas Fire Service, Kansas Water Office
- Kansas Geological Survey
- Kansas State Fire Marshall
- Local and county planning and zoning offices (where available).
- Local business and non-profit entities
- National Oceanic and Atmospheric Administration
- National Weather Service
- Nuclear Regulatory Commission
- Pipeline and Hazardous Materials Safety Administration
- Salvation Army
- United States Army Corp of Engineers, National Resource Conservation Service
- United States Department of Agriculture
- United States Geological Survey

2.5 – Public Participation

44 CFR Requirement 201.6(b): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include: (1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval

As part of the overall planning process, the public were provided with numerous opportunities to contribute and comment on the creation and adoption of the plan. These opportunities included:

- Advertised meeting invitations on participating jurisdictional websites
- Open meeting opportunities with Kansas Region J MPC members
- Access to an online survey document to provide feedback
- Comment period upon completion of draft plan

Input from the general public provided the MPC with a clearer understanding of local concerns, increased the likelihood of citizen buy-in concerning proposed mitigation actions, and provided elected officials with a guide and tool to set regional ordinances and regulations. This public outreach effort was also an opportunity for adjacent jurisdictions and entities to be involved in the planning process.

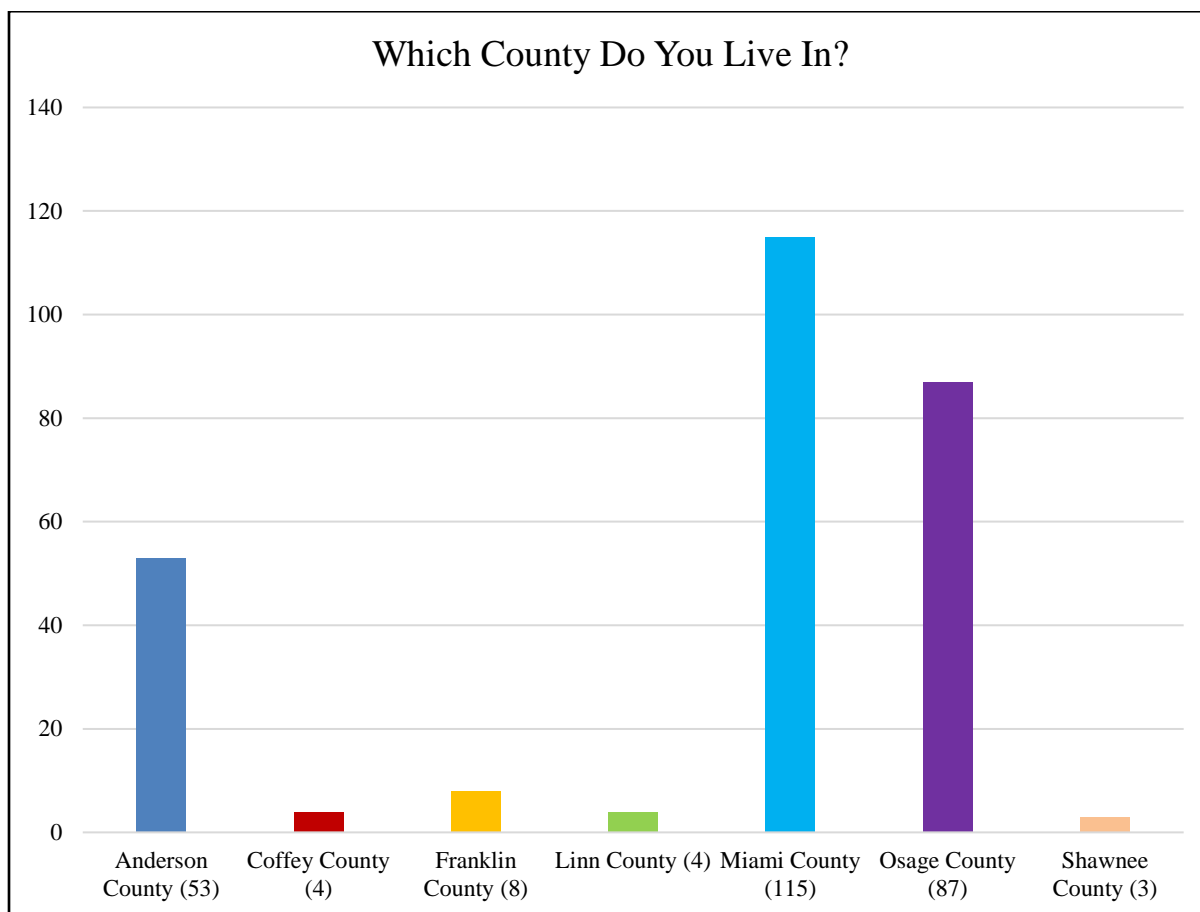
Additionally, as citizens were made more aware of potential hazards and the local process to mitigation against their impacts, it was believed that they would take a stronger role in making their homes, neighborhoods, schools, and businesses safer from the potential effects of natural hazards.





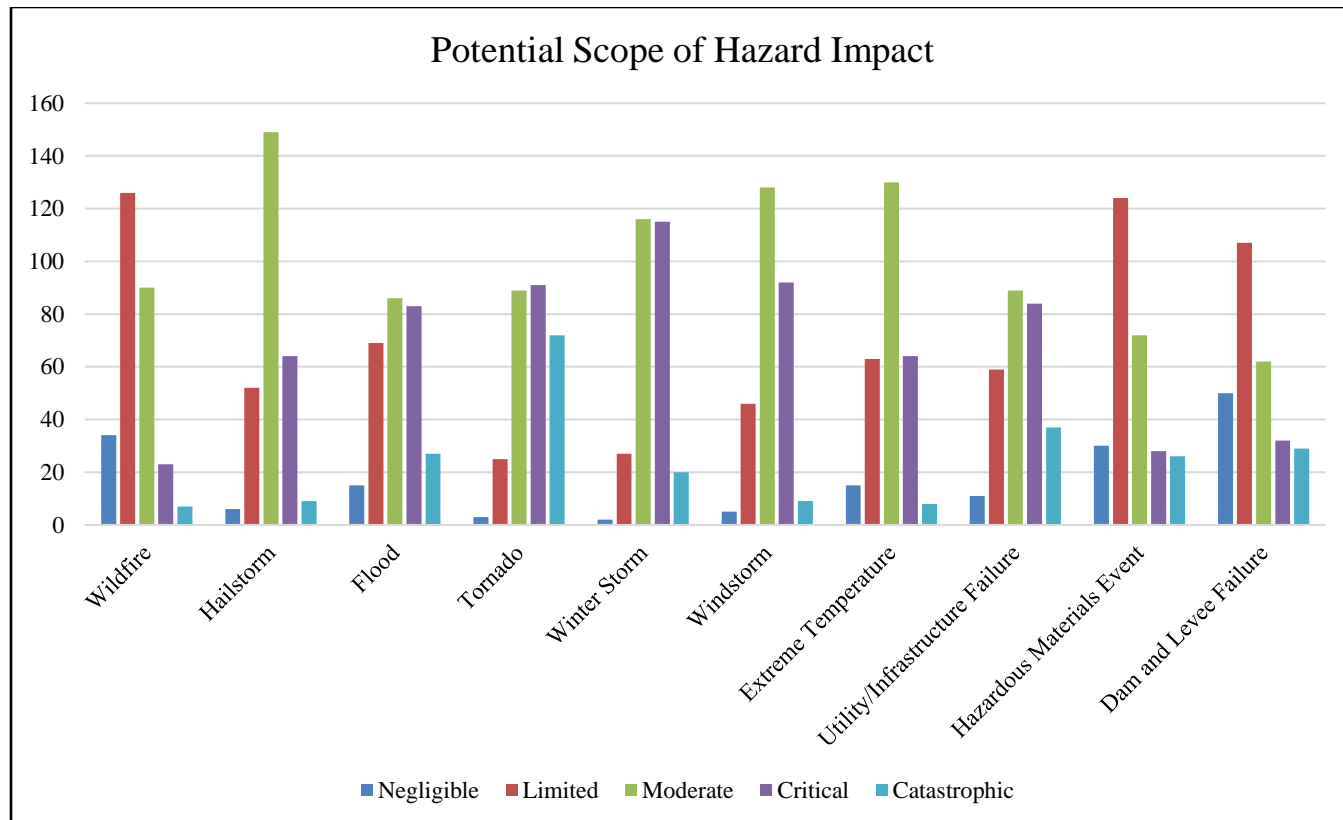
The following graphics represents the feedback received from the public from the online survey document.

Question 1: In which county or jurisdiction do you live?



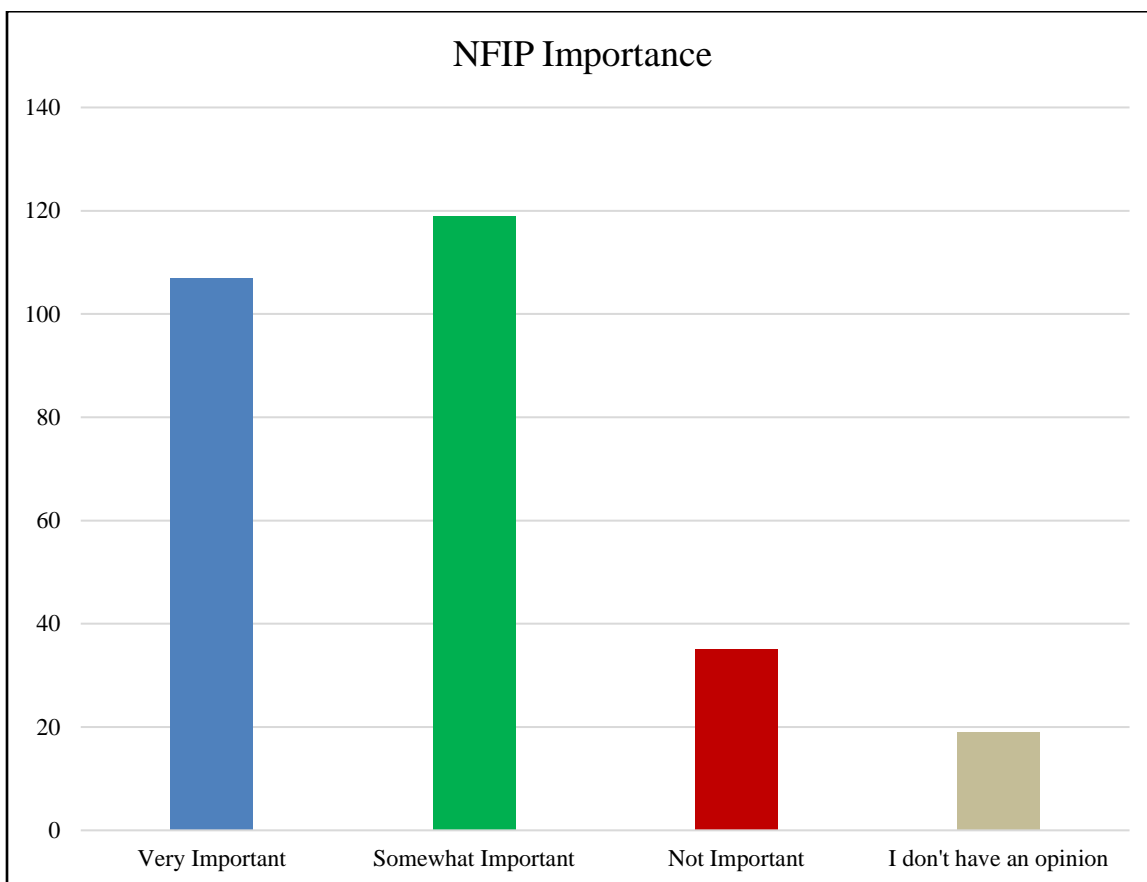


Question 2: In 2014, the Region consisting of Anderson, Coffey, Franklin, Linn, Miami, Osage, and Shawnee counties, the planning committee determined that the hazards listed below are important to the area. Indicate the level of risk, or the scope of potential impacts, in the Region, that you perceive for each hazard:



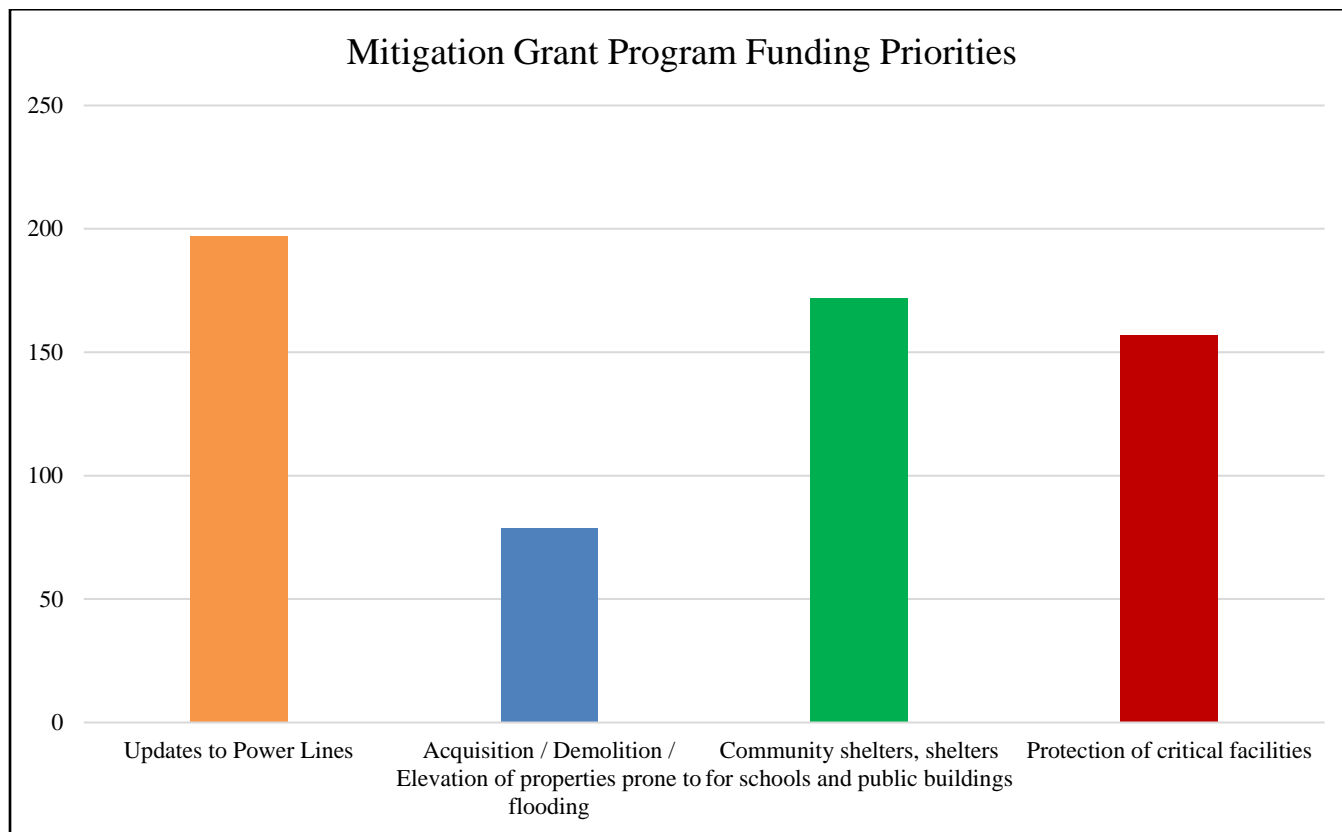


Question 3: In the Region, the planning committee has determined that a flood event is the third most critical hazard. How important is it for you to have your community participate in or continue to participate in the National Flood Insurance Program?



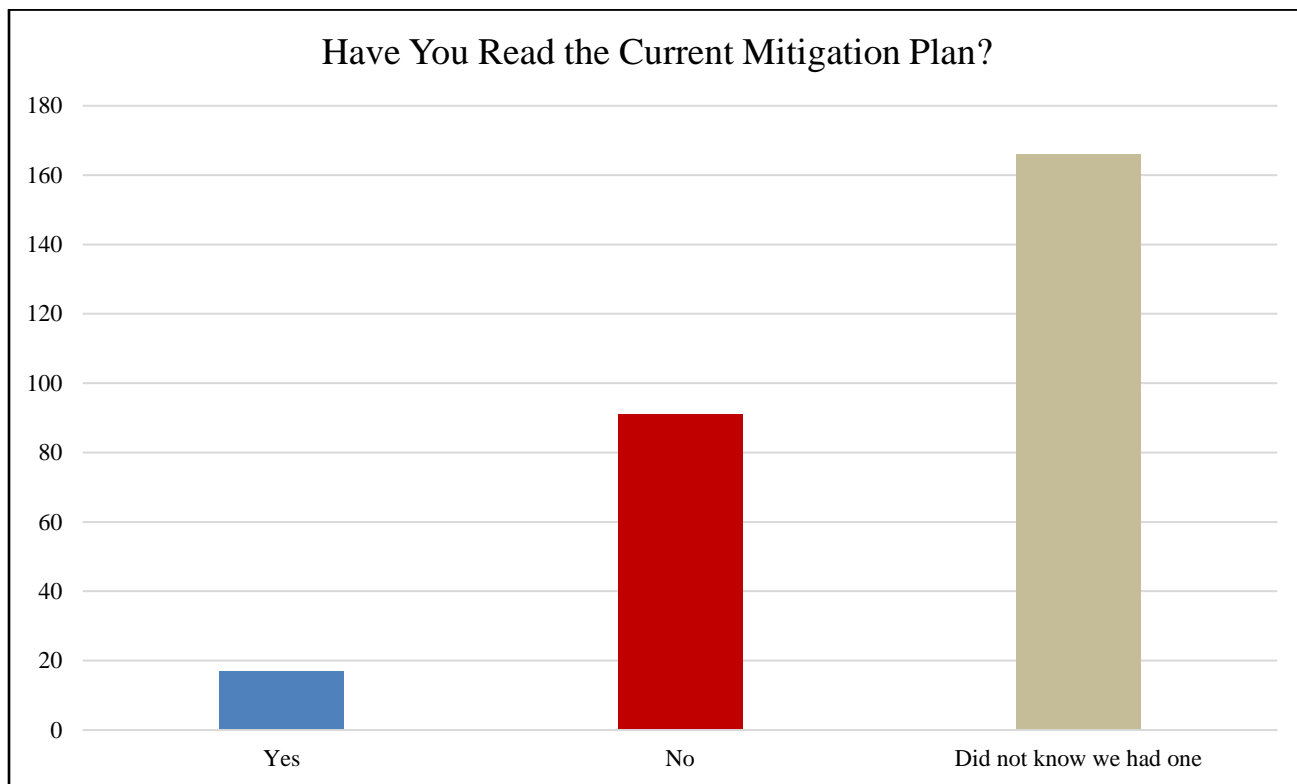


Question 4: The Kansas Division of Emergency Management currently reviews the application for funds for the FEMA Risk Mitigation Grant Program. Your current funding priorities are listed below. Please check those that could benefit your community.

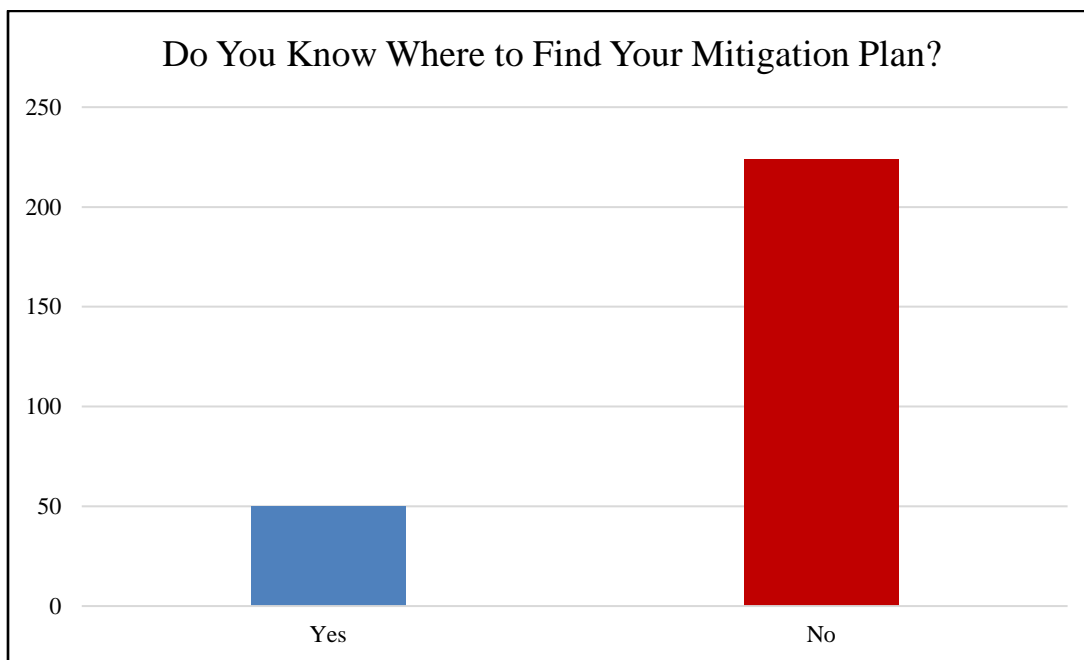




Question 5: Have you had the opportunity to read your current Risk Mitigation Plan?



Question 6: Do you know where you can find the mitigation plan for your county if you would like to see it?





In addition, respondents were given the opportunity to address any local concerns or issues of concern to them.

Question 7: Your opinion is valuable to this planning process. Discuss any other problems that the planning committee should consider when developing a strategy to reduce future losses caused by natural hazard events.

Table 2.2: Kansas Region J Survey Comments, Areas of Concern

Jurisdiction	Comments
Anderson County	List is good.
Anderson County	Fix drainage system, will help prevent flooding. Sewage and rain water shouldn't drain to same system.
Anderson County	A lot of homes do not have basements, we need more places around Garnett that people can get to quickly and know in advance are open in case of tornadoes.
Anderson County	Keeping electric on is very high priority. Keeping electric lines free from tree limbs.
Anderson County	Severe snow storm
Anderson County	Would Garnett or Welda effected by a failure at Wolf Creek Nuclear Plant
Anderson County	Tornado and windstorms are probably the worst threats in our area.
Anderson County	I don't think Anderson County personnel are capable to mitigate anything.
Anderson County	Better drainage, safety shelter
Anderson County	Our local electrical grid suffers too many black out and/or brown outs.
Miami County	Involve the citizens, do not decide without their input.
Miami County	When quick access to homes are cut off by blocked railroad crossings
Miami County	Get the local government entirely out of the process. A private company could handle it more efficiently. Also, question 4 required an answer, but I feel that none of those are priorities.
Miami County	Utilization of volunteer assistance is a resource that has wide reaching abilities that can be used in nearly all situations from storm cleanup to search and rescue. And these resources are generally free to those that can use them. Integration of these groups can help mitigate normally restricted or shorthanded local and state resources. An example of one of these groups would be Lutheran Early Response Team that could be utilized from many locations from within the state as well as across the country. With less time exposed to the elements, also reduces losses caused by hazard events which these teams can assist with.
Miami County	Power restoration and attention to the teal areas are low on the priority lists.
Miami County	More storm shelters
Miami County	Flooding is a huge issue in our area!!! Low water bridges that are constantly being re-worked. Is it really still safe after that many repairs???
Miami County	Bridge improvements in low areas.
Miami County	More attention to the place's residents can go when they have been affected by a natural disaster. A lot of Miami County residents can't afford to rent a hotel room. They need another option.
Miami County	Side note--National Flood Insurance Program is an unconstitutional overreach. The government should not be in the insurance business. If somebody is dumb enough to build in a location that private real insurance companies won't insure, it





Table 2.2: Kansas Region J Survey Comments, Areas of Concern

Jurisdiction	Comments
	should be on them, not the US taxpayer. NFIP is a scam that congressmen put through to protect their own property built in ridiculous locations.
Miami County	Educating the general public with quarterly and annual meets with the Emergency Management risks, lessons learned, and current/future plans for projects.
Miami County	Unfortunately, the majority of the population doesn't take hazards seriously. More effort should be placed on communications, emphasizing potential impacts.
Miami County	Recovery and backup of critical data to maintain continuity of operations at all levels.
Miami County, Osawatomie	Ensure that Rural Fire in Miami County is adequately funded and equipped.
Miami County, Paola	Better emergency communications for first responders
Osage County	Nuclear plans in case of problems at Wolf Creek.
Osage County	Shelters for extreme temperatures. Have someone assigned to check on people who may be handicapped.
Osage County	Look my family and I moved here after Hurricane Michael took our home, and destroyed our lives... So yeah plan plan plan plan... And FEMA is a joke!
Osage County, Osage City	Roads repair, failing power lines and supply
Osage County, Osage City	Washed up brush in creeks and rivers that cause unnecessary flooding issues. Trees grown into utility lines.
Osage County, Osage City	Simulated training, to see where the break downs occur in the plan, develop a better plan from what is learned. Also communicate with other like sized communities that have been through the disasters to see what could have been better.

Question 8: Do you have any mitigation project that you would like to see implemented and what are they?

Table 2.3: Kansas Region J Survey Comments, Requested Projects

Jurisdiction	Comments
Anderson County	A situation I believe is becoming critical is the condition and usage of 169/59 highway between Garnett and Welda. The road continues to deteriorate and is unsafe for the amount of traffic on it. The heavy truck usage is increasing (Intermodal/Ethanol plant, etc.) and the minimal work being done to maintain the road is creating a hazard for all drivers. Anything the local agencies can do to encourage the rework of the road is appreciated. The state chose to close 169 from Iola to Chanute for the rebuilding of that section. The state could do that for this section of the highway, too.
Anderson County	Upgrade kcal feeder lines
Anderson County	Given the limited amount of TV airway coverage in the county, I would like to see more access to high speed broadband, like Google Fiber or Time Warner Cable in the county.
Franklin County	Making the highway between Ottawa and Pomona could benefit from more flood protection. What that is? I don't know. I just recall clearly having flood waters almost do over that road.





Table 2.3: Kansas Region J Survey Comments, Requested Projects

Jurisdiction	Comments
Franklin County	More storm shelters in the small towns
Lyon County (Outside Region)	Rural tornado sirens
Miami County	Rebuild the levees and raise the dykes.
Miami County	Updated water infrastructure
Miami County	No. Stop wasting taxpayer money.
Miami County	Utilizing volunteer organizations that have been trained to assist in times of need. Lutheran Early Response Teams are a great resource.
Miami County	Upgrades to underground power lines
Miami County	Rural road evaluations, and maintenance with flooding and winter storms.
Miami County	landline phone/communication damage/disrepair
Miami County	Another tornado siren west of spring hill off of 223rd st and 169
Miami County	Plan looks good.
Miami County	KCPL placing power lines underground to reduce power outages, notification to individuals that are in an at risk (low/moderate/critical) flood area and place them on a map on the county website. Community groups organized through the county based on township area that can help each other during a catastrophic event. While hail/windstorms haven't been a huge factor in recent years it is still a possibility that they can get worse over time. By continuing to implement/update building codes I feel that the community can benefit from it since technology is advancing. In addition, I've noticed that KCPL has been giving several discount incentives to Missouri residents for going all LED lighting or having solar at their home. Community partnerships with our power provider can help reduce power costs for residents and overall power waste on a large scale. Solar should be a huge push for the county right now since they have technology out there that costs money but saves more on a long term. Should have placed solar on the jail Frank.
Miami County, Osawatomie	Accurate river level gauges
Osage County, Osage City	Clearing brush from creeks and rivers to minimize flooding. Trimming trees near power lines to avoid damage during an ice storm. Public storm shelters
Shawnee County	Auburn TWP experiences flooding in some areas that damages our gravel roads. Need to improve drainage/ditches and/or raise some roadways. Also need back-up generator capability for some facilities.

2.6 – Planning Meetings

Within Kansas Region J there are many jurisdictions and organizations who have a vested interest in participating in the creation and adoption of the hazard mitigation plan. An integral part of the planning process included the identification, development, and coordination of all of these entities. As such, a series of three organizational and planning meetings were scheduled and all past and potential future participants were notified by the State of Kansas as to the dates and locations of the meetings. In addition, communities neighboring the region were invited to participate in the planning process.

It is worth noting that all neighboring Kansas counties are undergoing a similar mitigation planning effort, and as part of this statewide process all county and state planners are working together toward common





mitigation goals. During the creation and adoption of this plan communication channels were opened to facilitate the cross pollination of ideas, to incorporate neighboring regions concerns, and to ensure the overall preparedness of the State of Kansas.

A series of kick-off meetings were held with MPC members, available representatives from jurisdictions within the planning region, local and regional stakeholders, and the public invited. At the kickoff meeting, the planning process, project coordination, scope, participation requirements, strategies for public involvement, and schedule were discussed in detail. During the meeting, participants were led through a guided discussion concerning hazard data sourced from their previous hazard mitigation plans. Additionally, research was conducted prior to the meeting on recent regional hazard events to further inform the discussion. Participants were encouraged to discuss past hazard events, past impacts, and the future probability for all identified hazards. At the conclusion of the meeting, all participants were provided with a data collection forms to solicit information needed to properly complete the HMP. The forms asked for information concerning data on historic hazard events, at risk populations and properties, and available capabilities. Additionally, participating jurisdictions were provided with their mitigation actions from the previous plans for review and comment and asked to identify any additional mitigation actions.

A mid-term planning meeting was held with MPC members. Based upon the initial research, discussions held during the kickoff meetings, information obtained from the data collection forms, additional research, and subsequent discussion with MPC members, the results of the hazard identification, classification, and delineation were discussed in detail. In addition, sections of the HMP were made available for review and comment. Based on the supplied hazard information, participants were asked to assist in the development and review of mitigation goals and actions.

A final planning meeting was held with MPC members, available representatives from jurisdictions within the planning region, local and regional stakeholders, and the public invited. The completed draft HMP was made available for review and comment.

The following table presents the date and location of each planning meeting.

Table 2.4: Kansas Region J Planning Meetings

Meeting Number	Date	Location
1 (Kickoff)	02/11/2019	Miami County
	02/12/2019	Osage County
	02/27/2019	Shawnee County
2 (Mid-Term)	05/21/2019	Shawnee County
3 (Final)	06/25/2019	Coffey County
	06/26/2019	Shawnee County

Both the minutes and sign-in sheets from all meetings may be found in Appendix C.





2.7 – Existing Plan Incorporation

44 CFR 201.6(b)(3): Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

The hazard mitigation plan is an overarching document that is both comprised of, and contributes to, various other jurisdictional plans. In creating this plan, all the planning documents identified below were consulted and reviewed, often extensively. In turn, when each of these other plans is updated, they will be measured against the contents of the hazard mitigation plan.

Below is a list of the various planning efforts, sole or jointly administered programs, and documents reviewed and included in this hazard mitigation plan. While each plan can stand alone, their review and functional understanding was pivotal in the development of this plan and further strengthens and improves Kansas Region J's resilience to disasters.

- All participating jurisdictions Codes and Ordinances
- All participating jurisdictions Comprehensive Plans
- All participating jurisdictions Critical Facilities Plans
- All participating jurisdictions Economic Development Strategic Plans
- All participating jurisdictions Emergency Operations Plans
- All participating jurisdictions Flood Mitigation Assistance Plan
- All participating jurisdiction Land-Use Plans
- Community Wildfire Protection Plans
- Any other newly created or relevant jurisdictional plan

Information from each of these plans and programs is utilized within the applicable hazard sections to provide data and fully inform decision making and prioritization.

State and Federal Level Plan Integration

The following list illustrates local, state and federal programs integrated, where applicable, and referenced in Kansas Region J's mitigation efforts.

- State of Kansas Hazard Mitigation Plan
- Hazard Mitigation Grant Program
- Flood Mitigation Assistance Program
- National Flood Insurance Program
- Pre-Disaster Mitigation Program
- Repetitive Loss & Severe Repetitive Loss Program
- FireWise Communities Program
- Relevant Dam Emergency Action Plans (if document not secured)
- Community Rating System





Integration Challenges

The 2014 plan update successfully integrated approved Kansas Region J local hazard mitigation plans into one regional HMP. This represents a success of our streamlined program of allowing jurisdictions to participate in multi-jurisdictional regional-level plans. This program not only reduces the cost and the burden to local jurisdictions, it also allows for closer collaboration and integration of local communities in all areas of planning and response. However, and as always, challenges exist due to the day to day demands of the working environment, including scheduling conflicts, budget restrictions, and staffing changes and shortages related to both the utilization and incorporation of the HMP and completion of identified hazard mitigation projects.



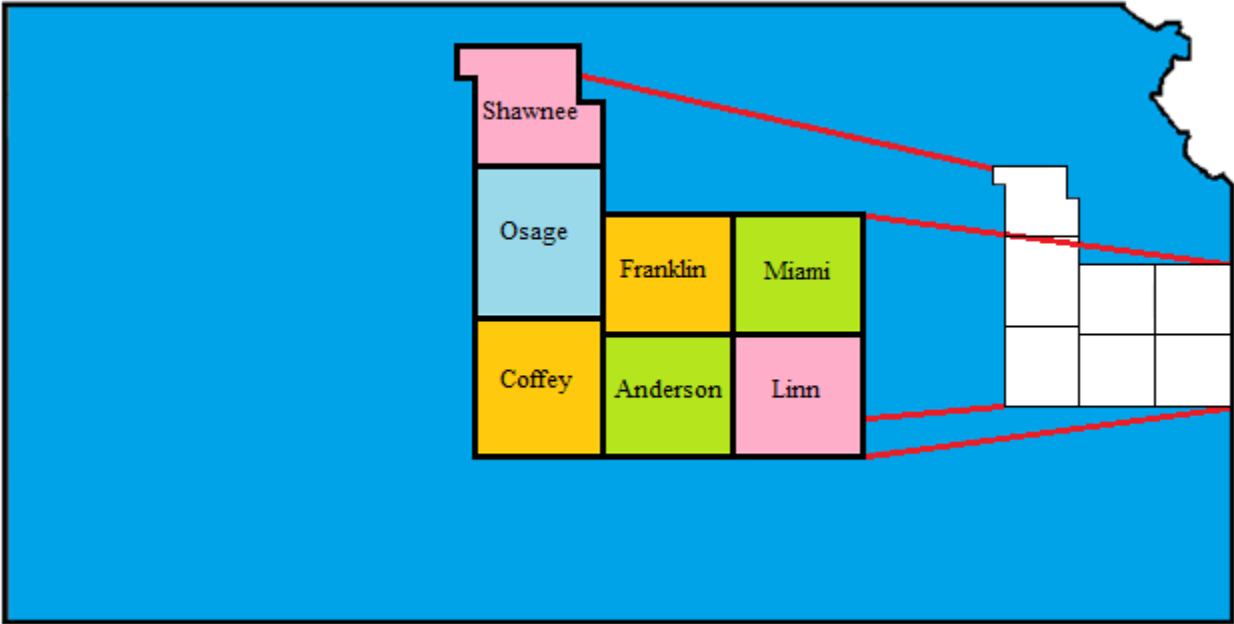
3.0 Planning Area

3.1 – Introduction

Kansas Region J consists of the following seven participating counties and their participating jurisdictions:

- Anderson County
- Coffey County
- Franklin County
- Linn County
- Miami County
- Osage County
- Shawnee County

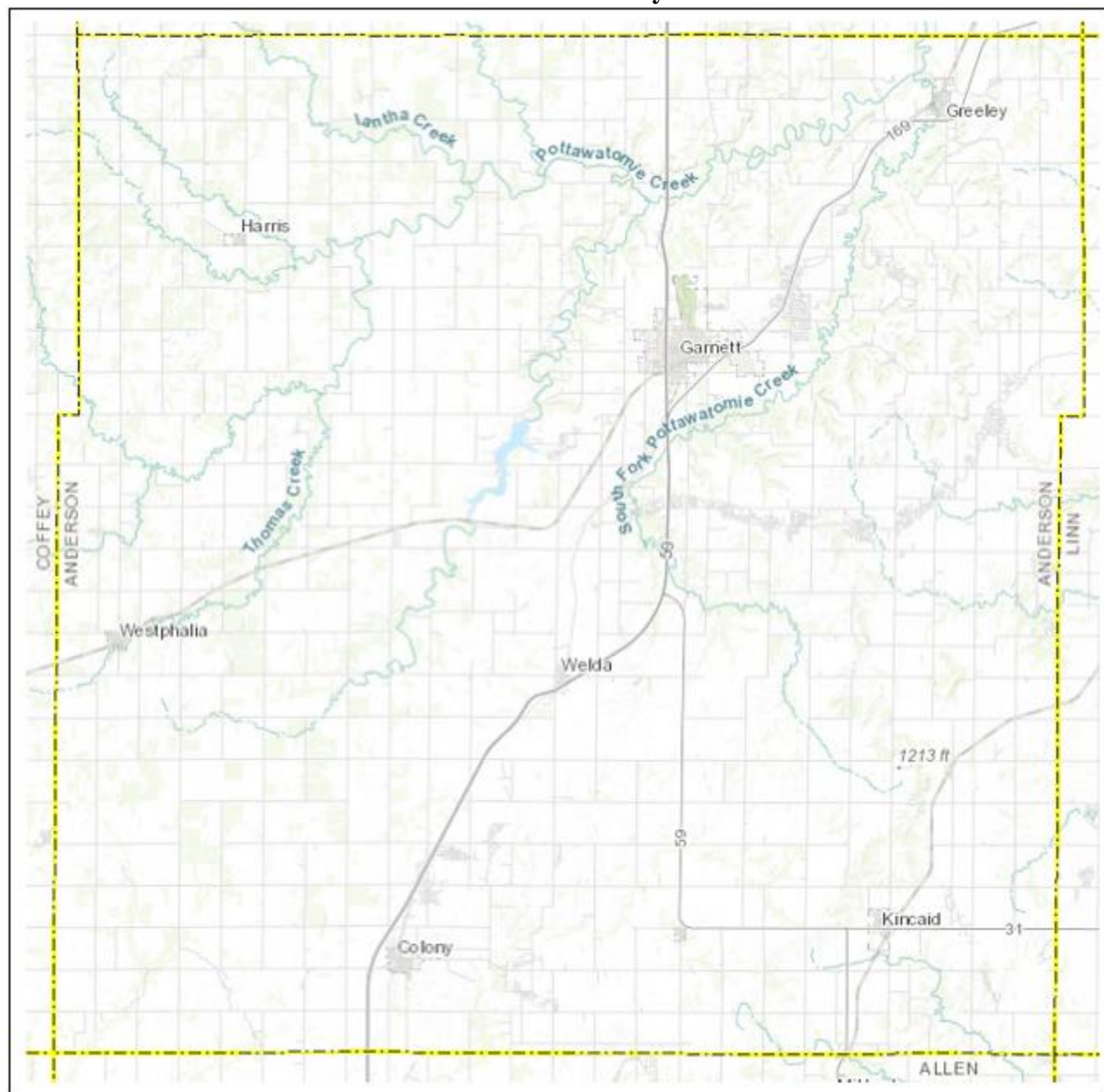
The following map details the locations of these counties.





The map following map, provided by the Kansas Department of Transportation (KDOT), details the locations of participating jurisdictions for Anderson County:

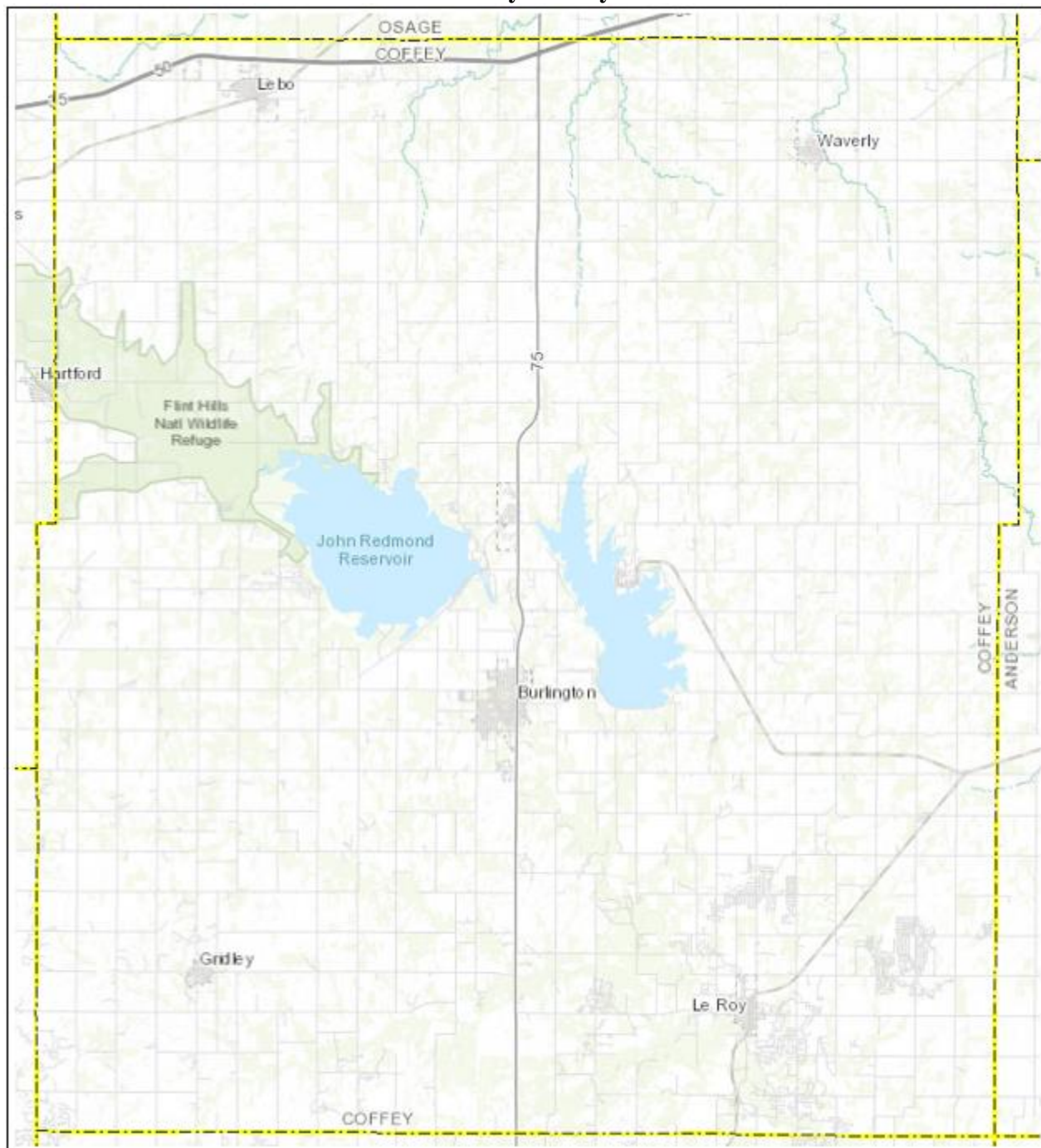
Anderson County





The map following map, provided by KDOT, details the locations of participating jurisdictions for Coffey County:

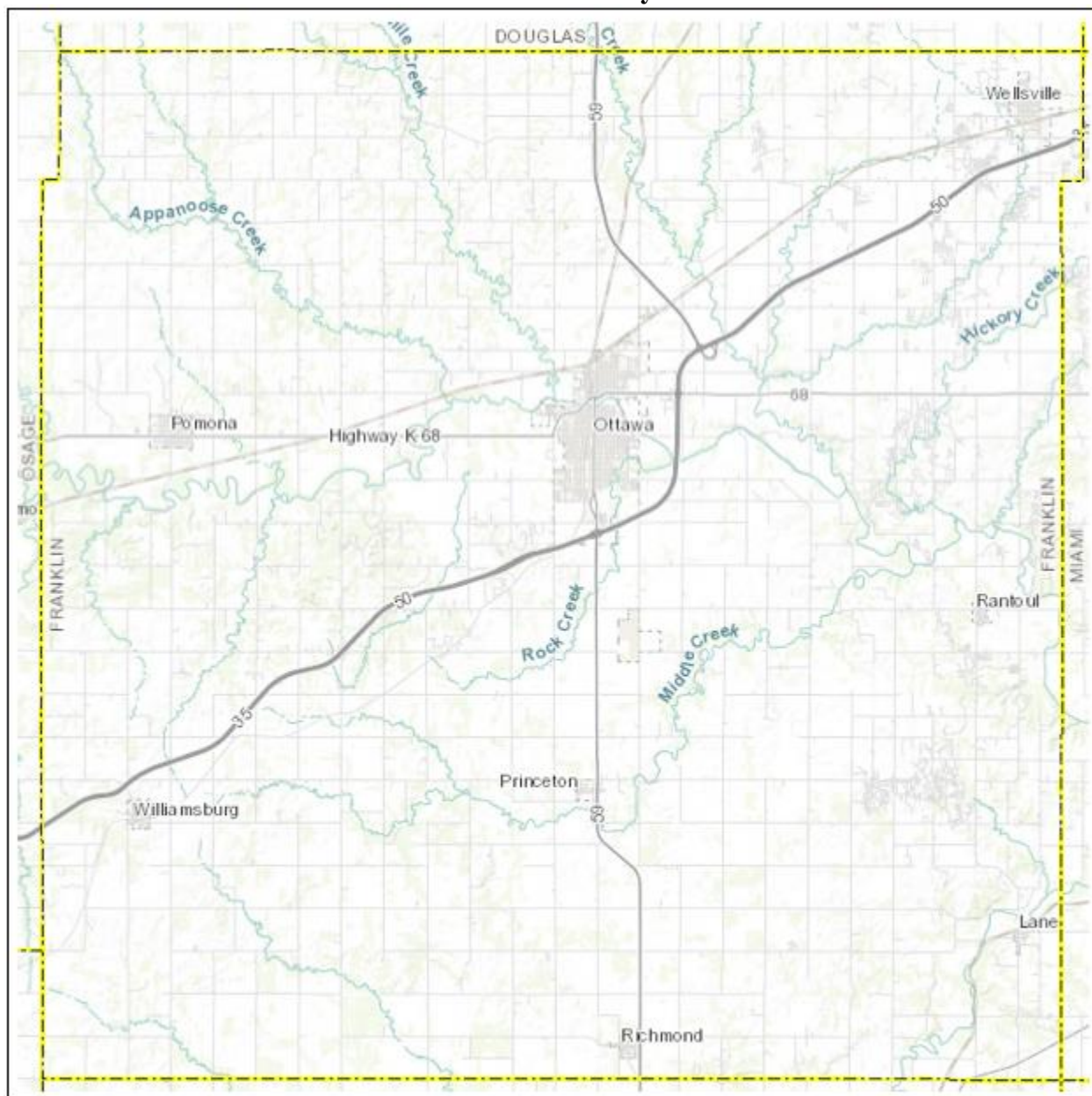
Coffey County





The map following map, provided by KDOT, details the locations of participating jurisdictions for Franklin County:

Franklin County





The map following map, provided by KDOT, details the locations of participating jurisdictions for Linn County:

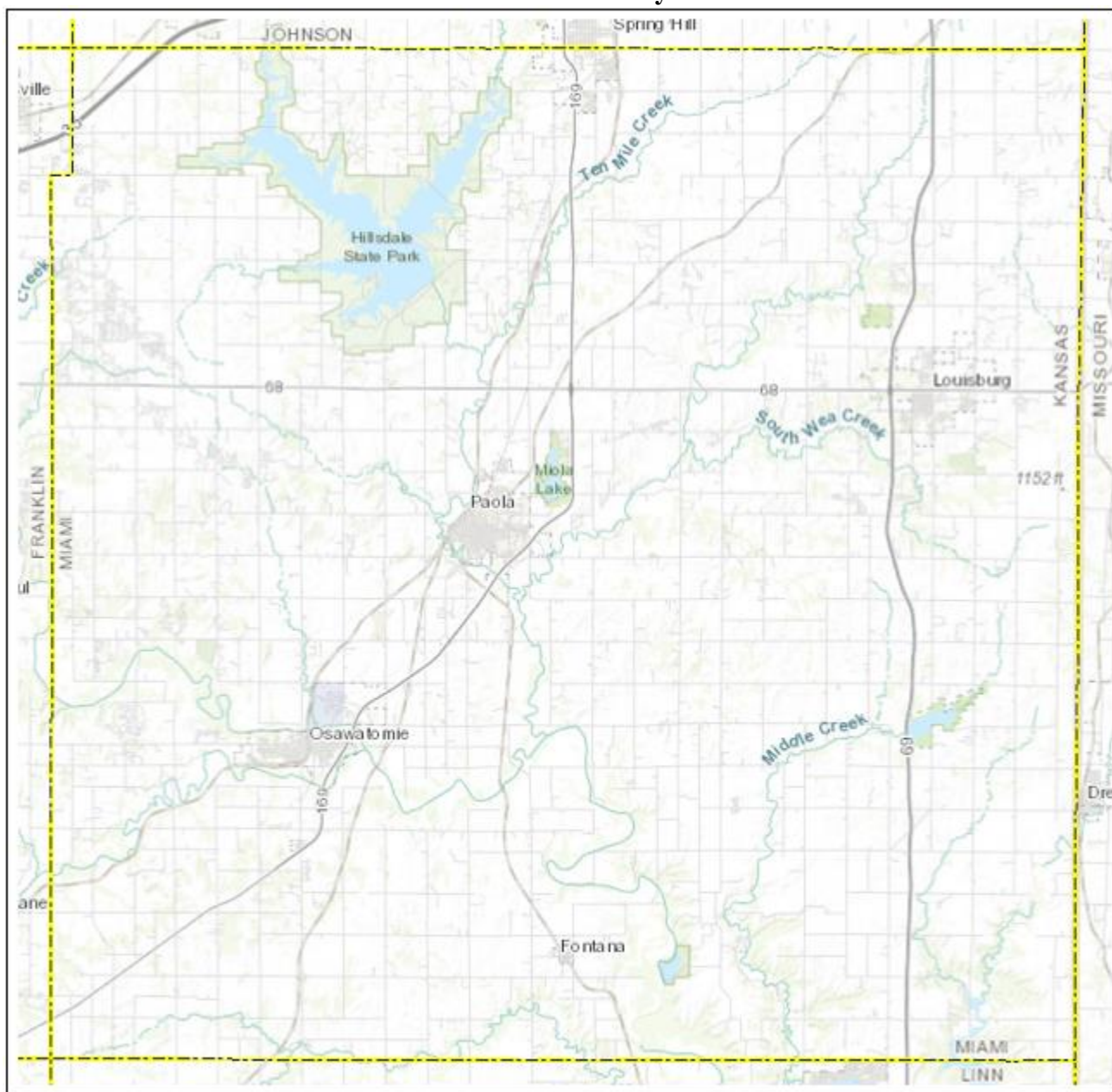
Linn County





The map following map, provided by KDOT, details the locations of participating jurisdictions for Miami County:

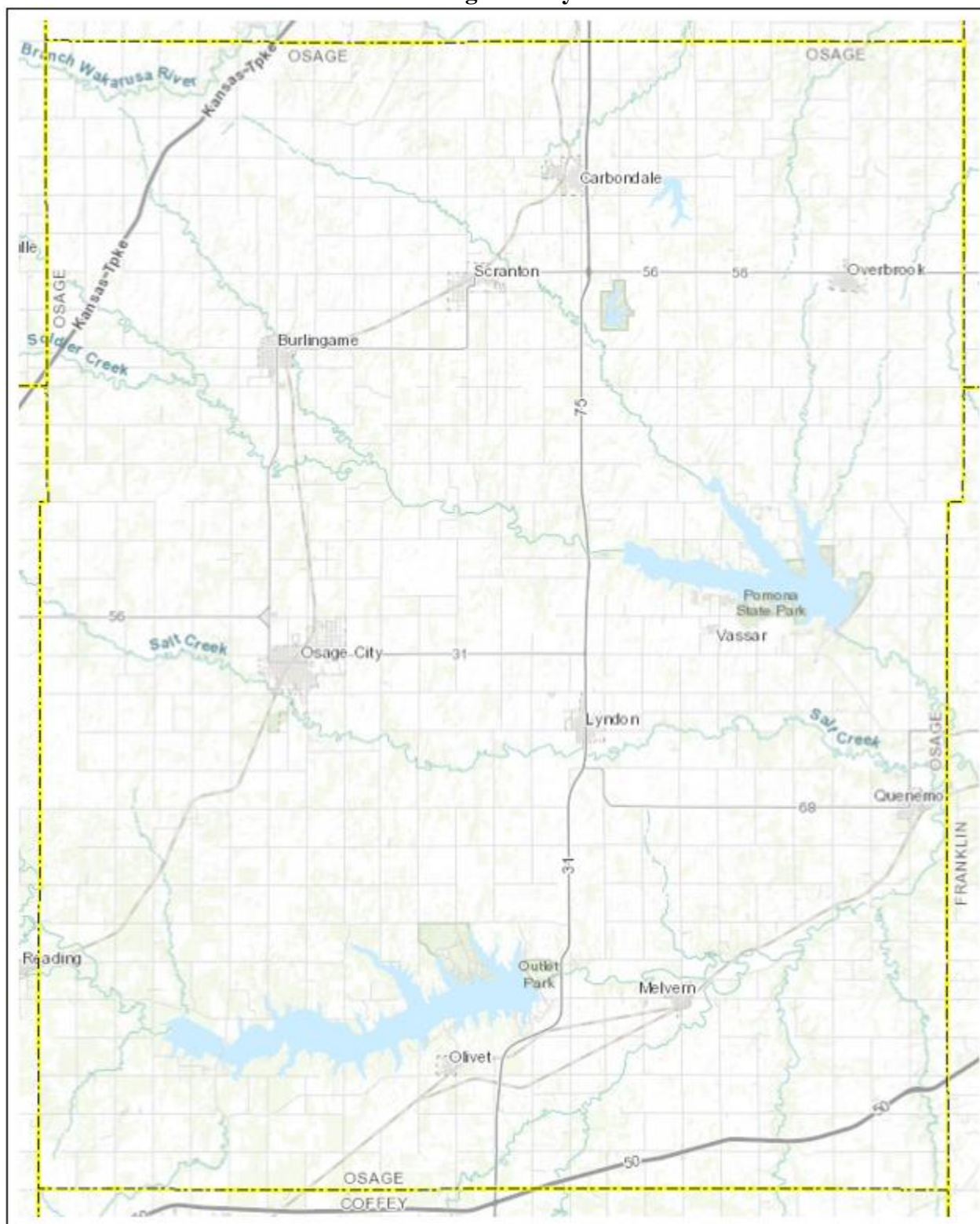
Miami County





The map following map, provided by KDOT, details the locations of participating jurisdictions for Osage County:

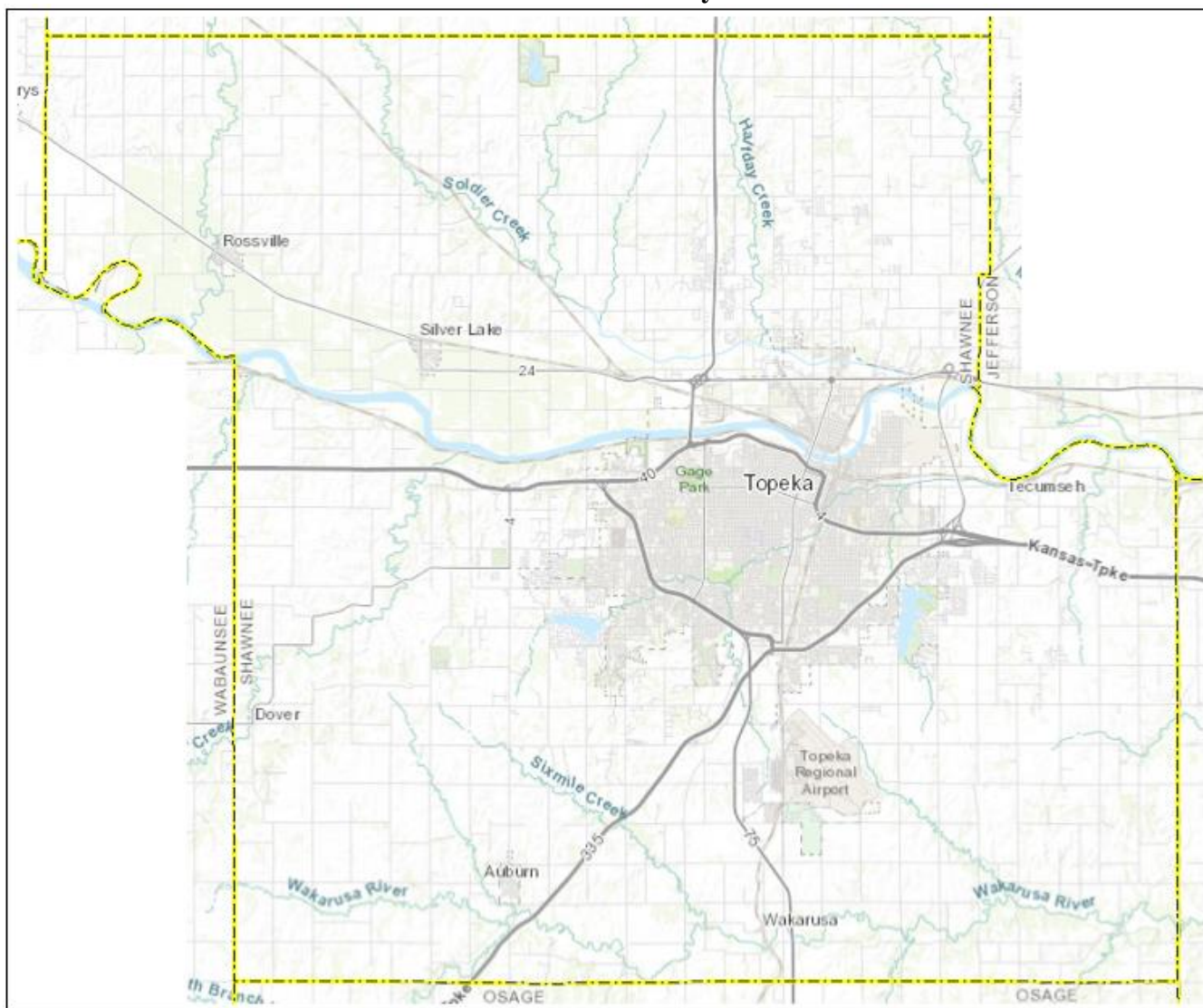
Osage County





The map following map, provided by KDOT, details the locations of participating jurisdictions for Shawnee County:

Shawnee County





3.2 – Regional Population Data

The following tables present population data for counties and participating city jurisdictions in Kansas Region J. In general, the higher a jurisdiction’s population the greater the potential vulnerability of its citizens to identified hazards.

Table 3.1: Anderson County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Anderson County	8,110	8,102	7,840	-270	-3.3%	13
City of Colony	397	408	438	41	10.3%	842
City of Garnett	3,368	3,415	3,251	-117	-3.5%	1,016
City of Greeley	327	302	296	-31	-9.5%	799
City of Kincaid	178	122	112	-66	-37.1%	224
City of Westphalia	165	163	243	78	47.3%	1,285

Source: US Census Bureau

Of note for Anderson County and its participating jurisdictions for the period 2000 to 2017:

- A slight population decline was noted in Anderson County, -3.3% as a whole
- Population gains were noted in three of the five participating cities

Table 3.2: Coffey County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Coffey County	8,865	8,601	8,328	-537	-6.1%	13
City of Burlington	2,790	2,674	2,590	-200	-7.2%	1,177
City of Gridley	372	341	317	-55	-14.8%	674
City of Lebo	961	940	821	-140	-14.6%	746
City of LeRoy	592	561	634	42	7.1%	764
City of New Strawn	425	394	385	-40	-9.4%	469
City of Waverly	589	592	655	66	11.2%	898

Source: US Census Bureau

Of note for Coffey County and its participating jurisdictions for the period 2000 to 2017:

- A population decline was noted in Coffey County, -6.1% as a whole
- Population declines were noted in four of six participating cities





Table 3.3: Franklin County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Franklin County	24,784	25,992	25,599	815	3.3%	44
City of Lane	256	225	244	-12	-4.7%	1,014
City of Ottawa	11,921	12,649	12,321	400	3.4%	1,311
City of Pomona	923	832	1,035	112	12.1%	1,380
City of Princeton	317	277	303	-14	-4.4%	923
City of Rantoul	241	184	171	-70	-29.0%	1,140
City of Richmond	510	464	593	83	16.3%	1,966
City of Wellsville	1,606	1,857	1,958	352	21.9%	1,399
City of Williamsburg	351	397	380	29	8.3%	575

Source: US Census Bureau

Of note for Franklin County and its participating jurisdictions for the period 2000 to 2017:

- A slight population increase was noted in Franklin County, 3.3% as a whole
- Population increases were noted five of seven participating cities

Table 3.4: Linn County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Linn County	9,570	9,656	9,602	32	0.3%	16
City of Blue Mound	277	275	317	40	14.4%	503
City of La Cygne	1,115	1,149	1,083	-32	-2.9%	722
City of Linn Valley	562	804	692	130	23.1%	231
City of Mound City	821	694	925	104	12.7%	712
City of Parker	281	277	585	304	108.2%	2,164
City of Pleasanton	1,387	1,216	1,260	-127	-9.2%	600
City of Prescott	280	264	280	0	0.0%	1,001

Source: US Census Bureau

Of note for Linn County and its participating jurisdictions for the period 2000 to 2017:

- A generally static population was noted in Linn County, with a 0.3% increase as a whole
- Population gains were noted in four out of seven participating cities
- The city of park saw triple digit percentage population growth (108.2%)



**Table 3.5: Miami County Population Data**

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Miami County	28,351	32,787	32,976	4,625	16.3%	56
City of Fontana	149	224	248	99	66.4%	294
City of Louisburg	2,576	4,315	4,347	1,771	68.8%	713
City of Osawatomie	6,645	4,447	4,325	-2,320	-34.9%	848
City of Paola	5,011	5,602	5,583	572	11.4%	1,053

Source: US Census Bureau

Of note for Miami County and its participating jurisdictions for the period 2000 to 2017:

- A population increase was noted in Miami County, 16.3% as a whole
- Population increases were noted in every participating city except Osawatomie

Table 3.6: Osage County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Osage County	16,712	16,295	15,894	-818	-4.9%	22
City of Burlingame	1,017	934	885	-132	-13.0%	994
City of Carbondale	1,478	1,437	1,423	-55	-3.7%	1,847
City of Lyndon	1,038	1,052	975	-63	-6.1%	1,175
City of Melvern	429	385	500	71	16.6%	1,422
City of Osage	3,034	2,943	2,841	-193	-6.4%	861
City of Overbrook	947	1,058	998	51	5.4%	1,815
City of Quenemo	468	388	363	-105	-22.4%	824
City of Scranton	724	710	605	-119	-16.4%	550

Source: US Census Bureau

Of note for Osage County and its participating jurisdictions for the period 2000 to 2017:

- A population decrease was noted in Osage County, -4.9% as a whole
- Population decreases were noted six out of eight participating cities

Table 3.7: Shawnee County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
Shawnee County	169,871	177,934	178,392	8,521	5.0%	321
City of Auburn	1,121	1,227	1,175	54	4.8%	1,834
City of Rossville	1,014	1,151	1,211	197	19.4%	1,987
City of Silver Lake	1,358	1,439	1,537	179	13.2%	2,568
City of Topeka	122,377	127,473	127,139	4,762	3.9%	2,067





Table 3.7: Shawnee County Population Data

Jurisdiction	Population 2000	Population 2010	Population 2017	Numeric Population Change 2000 - 2017	Percent Population Change 2000 to 2017	Population Density, per Square Mile 2017
City of Willard	86	92	90	4	4.7%	818

Source: US Census Bureau

Of note for Shawnee County and its participating jurisdictions for the period 2000 to 2017:

- A population increase was noted in Shawnee County, 5.0% as a whole
- Population increases were noted all participating cities

3.3 – At-Risk Population Data

The National Response Framework defines at-risk populations as "populations whose members may have additional needs before, during, and after an incident in functional areas, including but not limited to: maintaining independence, communication, transportation, supervision, and medical care."

In general, at risk populations may have difficulty with medical issues, poverty, extremes in age, and communications due to language barriers. Several principles may be considered when discussing potentially at-risk populations, including:

- Not all people who are considered at risk are at risk
- Outward appearance does not necessarily mark a person as at risk
- The hazard event will, in many cases, affect at risk population in differing ways

The following tables present information on select potential at risk populations within each participating Region J jurisdiction, by county. This information, from the U.S. Census Bureau QuickFacts, was available for cities and towns with a population greater than 5,000 persons only. In general, the higher a jurisdiction's at-risk population the greater the potential vulnerability to identified hazards.

Table 3.8: Kansas Region J Potentially Vulnerable Population Data, Jurisdictions Over 5,000 Persons

Jurisdiction	Percentage of Population 5 and Under (2017)	Percentage of Population 65+ (2017)	Percentage of Population Speaking Language Other Than English (2017)	Percentage of Population Living Below Poverty Level (2017)	Persons with a Disability, Under the Age of 65 (2017)
Anderson County	6.1%	21.6%	1.9%	13.3%	10.0%
Coffey County	5.3%	20.9%	1.1%	10.2%	10.0%
Franklin County	6.3%	16.4%	1.9%	10.5%	9.0%
City of Ottawa	6.0%	13.2%	2.3%	15.8%	10.3%
Linn County	5.5%	22.1%	0.6%	14.1%	13.9%
Miami County	5.9%	16.5%	1.6%	7.3%	7.6%
City of Paola	7.2%	22.8%	3.1%	12.2%	8.9%





Table 3.8: Kansas Region J Potentially Vulnerable Population Data, Jurisdictions Over 5,000 Persons

Jurisdiction	Percentage of Population 5 and Under (2017)	Percentage of Population 65+ (2017)	Percentage of Population Speaking Language Other Than English (2017)	Percentage of Population Living Below Poverty Level (2017)	Persons with a Disability, Under the Age of 65 (2017)
Osage County	5.6%	19.4%	1.6%	11.7%	11.8%
Shawnee County	6.4%	17.6%	8.2%	11.7%	9.9%
City of Topeka	7.2%	16.3%	10.5%	16.7%	11.4%

Source: US Census Bureau

Of note for Kansas Region J and its participating jurisdictions:

- Regionally, 5.9% of the total population is under the age of 5, below the State of Kansas average of 6.6%.
- Regionally, 19.2% of the total population is over the age of 65, above the State of Kansas average of 15.4%.
- Regionally, 2.4% of the total population speak a language other than English at home, below the State of Kansas average of 11.5%.
- Regionally, 11.3% of the total population live below the poverty line, above the State of Kansas average of 8.8%.
- Regionally, 10.3% of persons under the age of 65 have an identified disability, below the State of Kansas average of 11.9%.

3.4 – Regional Housing Data

Closely tracking population data, but tending to lag population changes, housing data is a good indicator of changing demographics and growth. Over the period 2000 to 2017 the majority of Kansas Region J has been experiencing a yearly increase in housing stock. In general, the higher a jurisdiction’s housing stock, the higher the hazard vulnerability.

Table 3.9: Anderson County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Anderson County	3,596	3,720	3,743	4.1%	6	10.3%
City of Colony	186	192	200	7.5%	384	28.0%
City of Garnett	1,597	1,591	1,700	6.4%	531	6.2%
City of Greeley	144	152	147	2.1%	397	16.3%
City of Kincaid	92	95	77	-16.3%	154	2.6%
City of Westphalia	75	77	103	37.3%	545	15.5%

Source: US Census Bureau

Of note for Anderson County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Anderson County, 4.1% as a whole
- Housing gains were noted in four of the five participating cities





Table 3.10: Coffey County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Coffey County	3,876	3,946	4,056	4.6%	6	10.4%
City of Burlington	1,277	1,296	1,305	2.2%	593	8.4%
City of Gridley	168	174	174	3.6%	370	6.9%
City of Lebo	387	422	408	5.4%	371	10.5%
City of LeRoy	-	269	296	10.0%	357	15.9%
City of New Strawn	164	173	170	3.7%	207	3.5%
City of Waverly	262	274	304	16.0%	417	8.2%

Source: US Census Bureau

-: No Data

Of note for Coffey County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Coffey County, 4.6% as a whole
- Housing gains were noted in all participating cities

Table 3.11: Franklin County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Franklin County	10,229	11,147	11,213	9.6%	19	9.9%
City of Lane	105	112	143	36.2%	594	17.5%
City of Ottawa	5,080	5,518	5,645	11.1%	601	6.7%
City of Pomona	380	383	447	17.6%	596	30.4%
City of Princeton	118	121	127	7.6%	387	25.2%
City of Rantoul	91	82	78	-14.3%	520	32.1%
City of Richmond	187	189	205	9.6%	680	17.6%
City of Wellsville	666	780	765	14.9%	546	2.5%
City of Williamsburg	161	159	187	16.1%	283	16.0%

Source: US Census Bureau

Of note for Franklin County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Franklin County, 9.6% as a whole
- Housing gains were noted in seven of the eight participating cities





Table 3.12: Linn County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Linn County	4,720	5,446	5,558	17.8%	9	16.1%
City of Blue Mound	136	125	209	53.7%	332	10.0%
City of La Cygne	507	517	535	5.5%	357	19.1%
City of Linn Valley	415	697	494	19.0%	165	22.5%
City of Mound City	354	351	473	33.6%	364	7.8%
City of Parker	109	115	223	104.6%	825	22.9%
City of Pleasanton	617	607	797	29.2%	380	15.9%
City of Prescott	124	125	144	16.1%	515	11.8%

Source: US Census Bureau

Of note for Linn County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Linn County, 17.8% as a whole
- Housing gains were noted in all participating cities

Table 3.13: Miami County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Miami County	10,984	13,190	13,473	22.7%	23	4.4%
City of Fontana	67	84	105	56.7%	125	22.9%
City of Louisburg	1,026	1,718	1,781	73.6%	292	1.6%
City of Osawatomie	1,947	1,891	1,769	-9.1%	347	3.4%
City of Paola	2,009	2,344	2,378	18.4%	449	0.0%

Source: US Census Bureau

Of note for Miami County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Miami County, 22.7% as a whole
- Housing gains were noted in three of the four participating cities

Table 3.14: Osage County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Osage County	7,018	7,503	7,553	7.6%	10	10.9%
City of Burlingame	481	501	452	-6.0%	508	11.5%
City of Carbondale	617	637	642	4.1%	833	4.5%
City of Lyndon	453	464	408	-9.9%	492	4.2%
City of Melvern	202	184	217	7.4%	617	14.7%
City of Osage	1,303	1,359	1,429	9.7%	433	6.0%
City of Overbrook	387	448	462	19.4%	840	3.5%
City of Quenemo	192	178	181	-5.7%	411	37.6%
City of Scranton	289	297	267	-7.6%	243	12.4%

Source: US Census Bureau





Of note for Osage County and its participating jurisdictions for the period 2000 to 2017:

- A housing gain was noted in Osage County, 7.6% as a whole
- Housing declines were noted in three participating cities
- Housing gains were noted in four participating cities

Table 3.15: Shawnee County Housing Data

Jurisdiction	Housing Units 2000	Housing Units 2010	Housing Units 2017	Percent Housing Change 2000 - 2017	Housing Density, Per Square Mile, 2017	Percentage Mobile Homes 2017
Shawnee County	73,768	79,140	79,858	8.3%	144	2.6%
City of Auburn	400	492	526	31.5%	821	1.5%
City of Rossville	411	448	422	2.7%	693	2.1%
City of Silver Lake	568	601	582	2.5%	973	0.0%
City of Topeka	56,435	59,582	60,255	6.8%	980	2.9%
City of Willard	50	48	32	-36.0%	291	21.9%

Source: US Census Bureau

Of note for Shawnee County and its participating jurisdictions for the period 2000 to 2017:

- A small housing gain was noted in Shawnee County, 8.3% as a whole
- Housing gains were noted in four of the five participating cities

3.5 – Regional Property Valuations

This section quantifies the built environment exposed to potential hazards in Kansas Region J. The following tables provide monetary value of structures, by category and where available, for each county in Kansas Region J. This information was derived from inventory data associated with FEMA’s loss estimation software HAZUS-4.0. HAZUS classifies building stock types into multiple categories including residential, commercial, industrial, agriculture, government, and education. Values associated with each of these categories reflect 2010 valuations, the latest available HAZUS data.

In addition to the population information presented above, this information forms the basis of the vulnerability and risk assessment presented in this plan. This information was derived from inventory data associated with FEMA’s loss estimation software HAZUS.

Table 3.16: Kansas Region J Property Valuations, Residential, Commercial and Industrial

County	Residential	Commercial	Industrial
Anderson	\$658,316,000	\$124,150,000	\$40,269,000
Coffey	\$761,724,000	\$140,804,000	\$23,877,000
Franklin	\$2,225,978,000	\$343,011,000	\$141,541,000
Linn	\$948,957,000	\$130,801,000	\$34,312,000
Miami	\$3,028,856,000	\$359,699,000	\$129,281,000
Osage	\$1,425,639,000	\$152,698,000	\$17,331,000
Shawnee	\$15,966,710,000	\$2,920,933,000	\$566,856,000





Table 3.17: Kansas Region J Property Valuations, Agriculture, Government and Education

County	Agriculture	Government	Education
Anderson	\$20,567,000	\$8,700,000	\$14,749,000
Coffey	\$23,491,000	\$10,733,000	\$76,067,000
Franklin	\$31,327,000	\$19,070,000	\$37,196,000
Linn	\$14,359,000	\$11,982,000	\$14,101,000
Miami	\$30,922,000	\$12,256,000	\$87,882,000
Osage	\$23,767,000	\$13,191,000	\$28,181,000
Shawnee	\$54,315,000	\$315,624,000	\$261,391,000

Table 3.18: Kansas Region J Total Property Valuations

County	Total
Anderson	\$879,410,000
Coffey	\$1,053,574,000
Franklin	\$2,853,762,000
Linn	\$1,172,469,000
Miami	\$3,706,416,000
Osage	\$1,695,650,000
Shawnee	\$20,465,546,000

3.6 – Critical Facility Data

A critical facility is essential in providing utility or direction either during the response to an emergency or during the recovery operation, with facilities determined from jurisdictional feedback. The following are examples of critical facilities and assets:

- Communications facilities
- Emergency operations centers
- Fire stations
- Government buildings
- Hospitals and other medical facilities
- Police stations

Details concerning critical facilities have been deemed as sensitive information, and as such their specific information is not contained in the body of this HMP, but is included in the restricted from public view Appendix D.

3.7 – Unified School Districts, Colleges and Universities

Each participating county is served by multiple Unified School Districts (USDs), with these USDs providing educational coverage for each participating jurisdiction. The following table presents participating USD enrollment information, the number of school structures, and the insured valuation of these structures and contents within (if information is available).



**Table 3.19: Participating USD Information**

School District	Estimated Enrollment (2018)	Number of Offices and Schools (2018)	Total Insured Valuation of Structures (2018)
Anderson County			
USD #365 - Garnett	1,028	7	\$65,000,000
USD #479 - Crest	215	2	\$2,000,000
Coffey County			
USD #243 - Lebo /Waverly	428	5	\$19,000,000
USD #244 - Burlington	220	5	\$60,000,000
USD #245 - LeRoy / Gridley	221	4	\$13,930,000
Franklin County			
USD #287 - West Franklin	618	-	-
USD #288 - Central Heights	555	-	-
USD #289 - Wellsville	785	-	-
USD #290 - Ottawa	2,422	-	-
Linn County			
USD #344 - Pleasanton	369	7	-
USD #346 - Mound City	595	9	-
USD #362 - Prairie View	891	9	-
Miami County			
USD #230 – Spring Hill	3,988	-	-
USD #367 - Osawatomie	1,149	13	-
USD #368 - Paola	2,057	10	-
USD #416 - Louisburg	1,730	10	-
Osage County			
Three Lakes Educational Cooperative	-	2	\$957,927
USD #420 - Osage City	726	3	\$38,163,200
USD #421 - Lyndon	455	-	-
USD #434 - Santa Fe Trail	1,041	-	-
USD #454 - Burlingame	296	-	-
USD #456 - Marias Des Cygnes Valley	215	2	\$12,400,000
Shawnee County			
USD #321 - Kaw Valley	1,136	7	-
USD #345 - Seaman	3,980	10	-
USD #372 - Silver Lake	725	17	-
USD #437 - Auburn / Washburn	6,327	6	-
USD #450 - Shawnee Heights	3,524	18	-
USD #501 - Topeka	13,388	12	-

Source: Kansas State Department of Education and Participating USD

:- Information unavailable

The following table presents participating college and university enrollment information, the number of school structures, and the insured valuation of these structures and contents within (if information is available).

-





Table 3.20: Participating College and University Information

School District	Estimated Enrollment (2018)	Number of Offices and Schools (2018)	Total Insured Valuation of Structures (2018)
Shawnee County			
Washburn University	6,636	32	-

Source: Participating College or University

-: Information unavailable

3.8 – Regional Land Use

In general, land use is determined by three major types of regulation, zoning ordinances, floodplain ordinances and building code requirements.

- 2017 Kansas Statutes, KS Stat § 12-741 (2017): This act is enabling legislation for the enactment of planning and zoning laws and regulations by cities and counties for the protection of the public health, safety and welfare, and is not intended to prevent the enactment or enforcement of additional laws and regulations on the same subject which are not in conflict with the provisions of this act.
- 2012 Kansas Statutes, Chapter 19 Counties and County Officers, Article 33 Flood Control: Allows cities and counties to develop stormwater management and flood control projects and programs, provide local funding, and enter into agreements with other agencies to develop and use flood control works.
- The Kansas State Legislature has not implemented a statewide building code, nor does it require comprehensive planning by local governments.

These three types of regulations can assist in preventing the following:

- Unrestricted residential growth which can increase a population’s exposure to identified hazard prone areas
- Rapid, unchecked development that can put a strain on a community’s vulnerable resources such as its energy infrastructure
- Residential development constructed quickly and inexpensively to meet consumer demand that often lacks long term mitigation measures and resiliency
- Rapid development under pressure to meet consumer demand can alter the landscape in ways affecting urban runoff, drainage, or other environmental considerations which have drastic effects on floodplains

Information on relevant codes and ordinances may be found in Section 5 of this HMP.

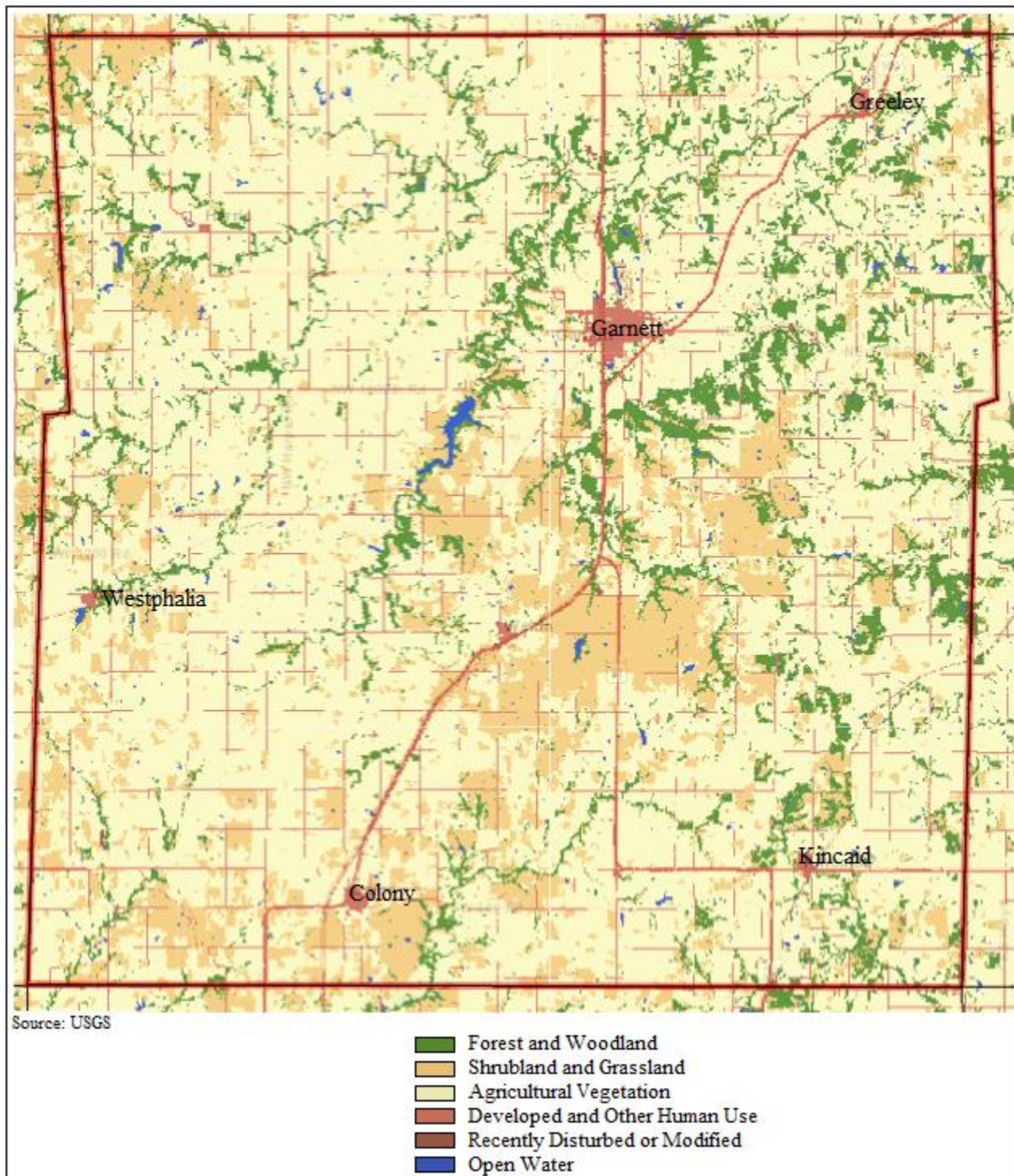
3.9 – Regional Land Cover

The 2016 USGS land cover map illustrates land usage. As indicated by the following maps, large areas of the region are grasslands and cultivated crops. Additionally, each county has at least one area of low to high intensity development corresponding with larger cities.



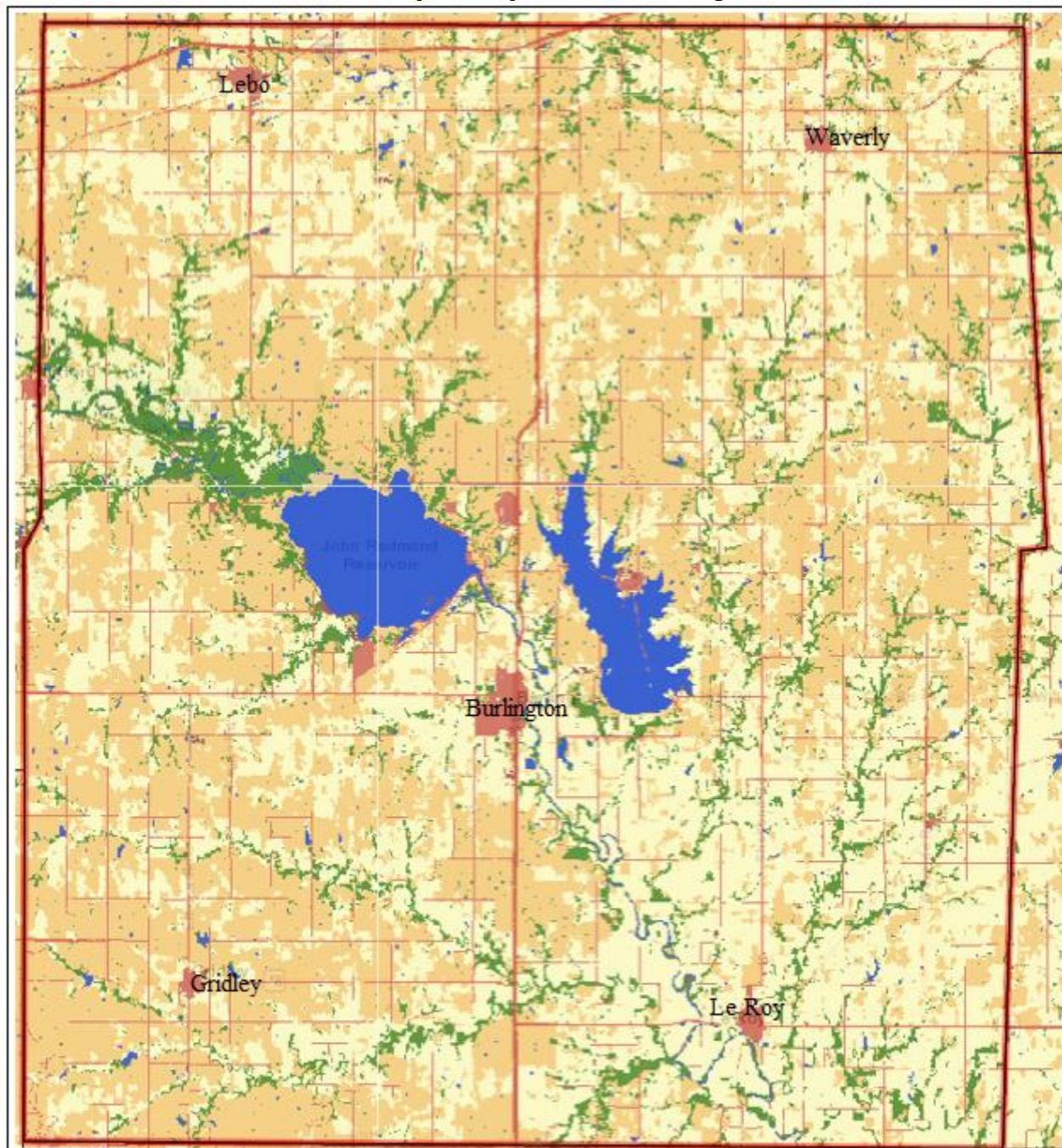


Anderson County Land Cover Map











Coffey County Land Cover Map



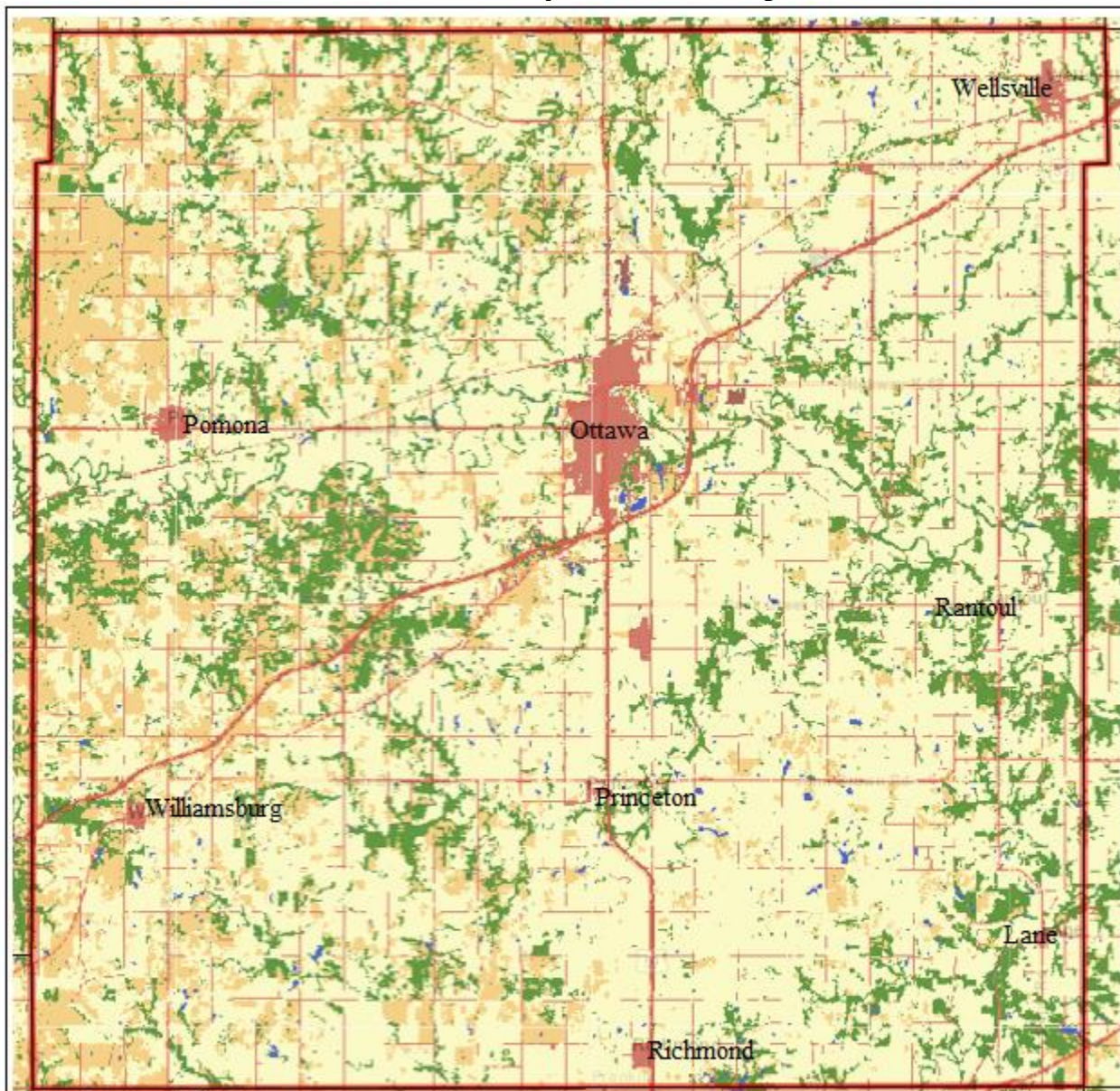
Source: USGS

-  Forest and Woodland
-  Shrubland and Grassland
-  Agricultural Vegetation
-  Developed and Other Human Use
-  Recently Disturbed or Modified
-  Open Water











Franklin County Land Cover Map



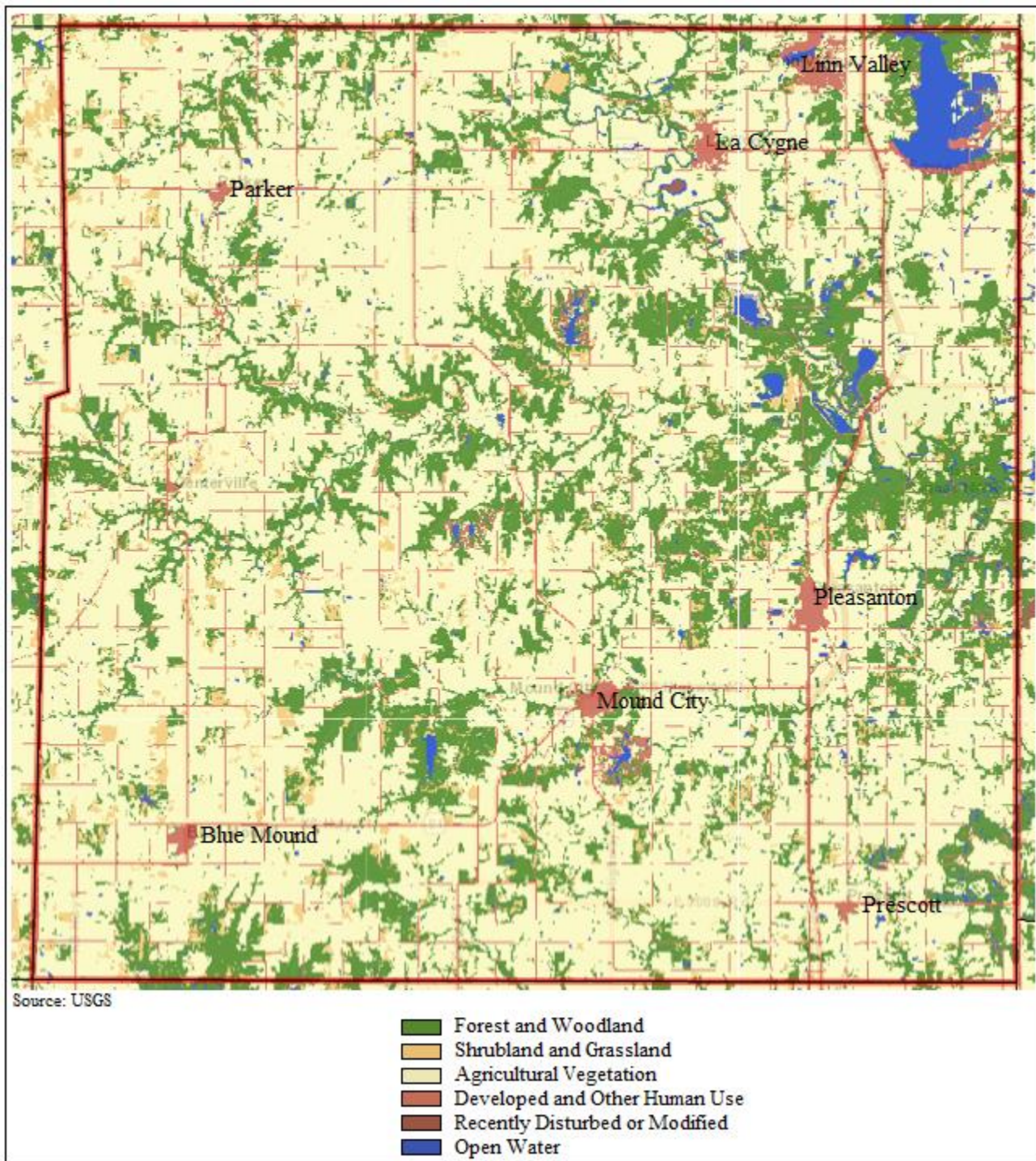
Source: USGS

-  Forest and Woodland
-  Shrubland and Grassland
-  Agricultural Vegetation
-  Developed and Other Human Use
-  Recently Disturbed or Modified
-  Open Water



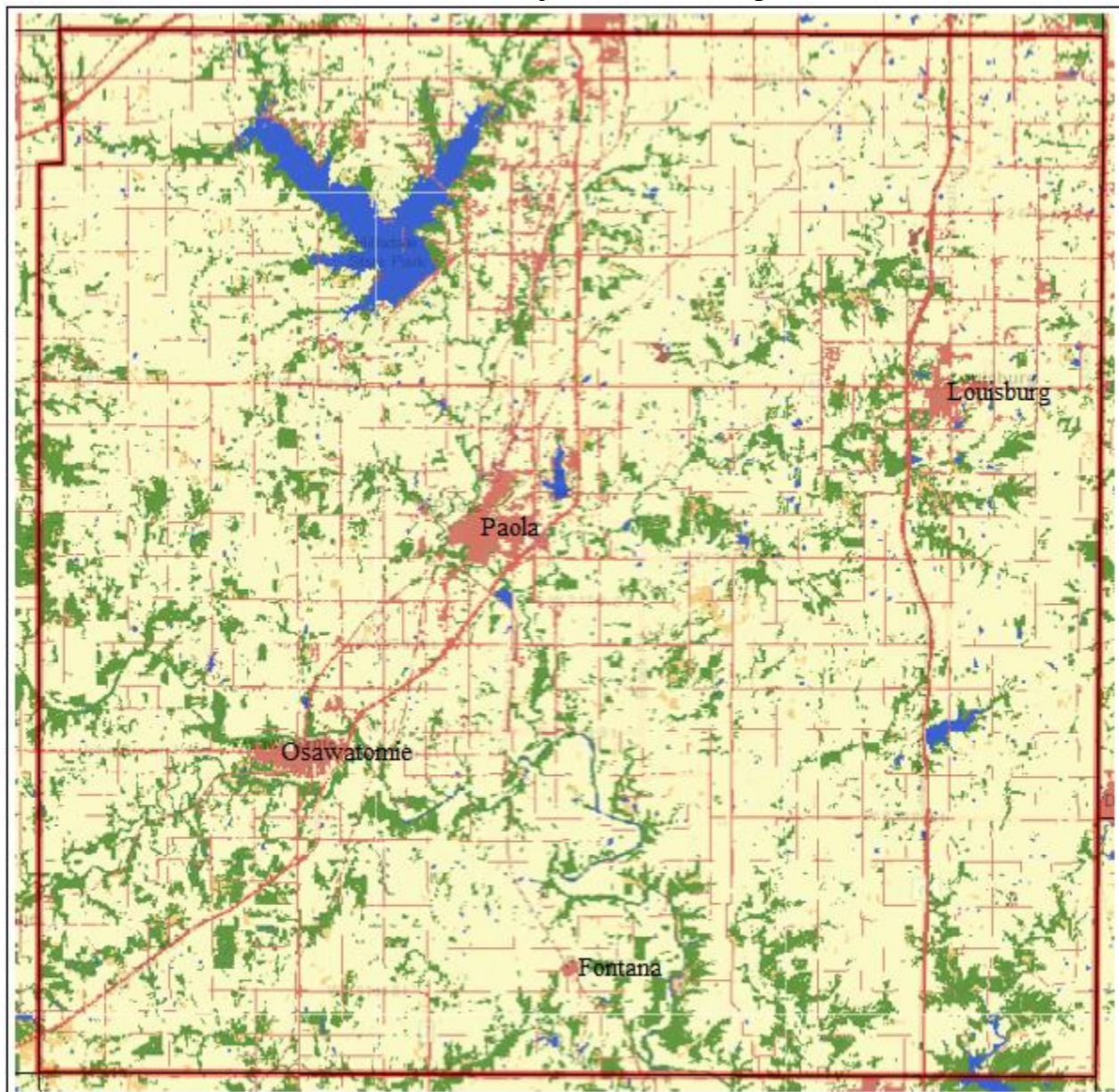


Linn County Land Cover Map











Miami County Land Cover Map



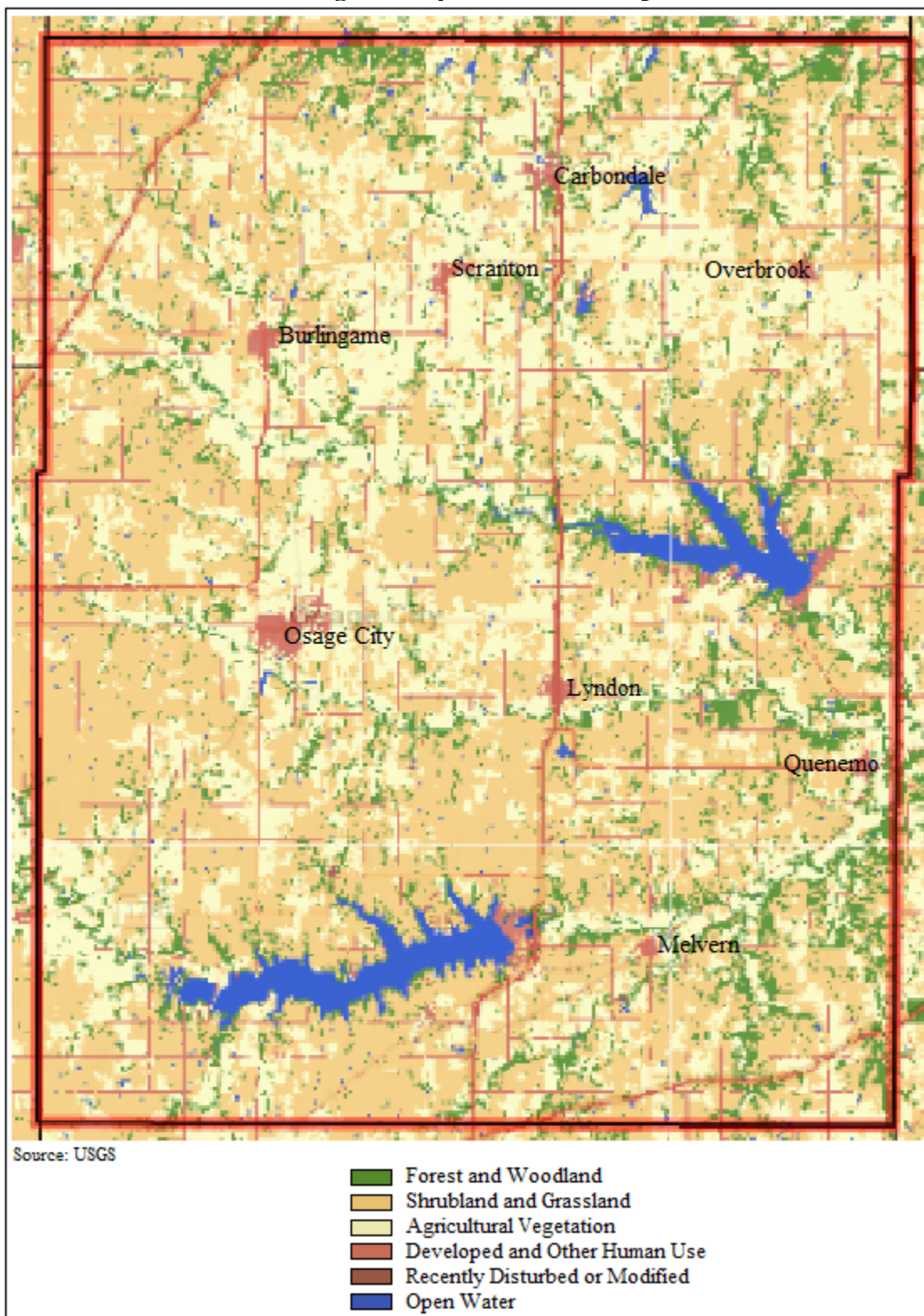
Source: USGS

-  Forest and Woodland
-  Shrubland and Grassland
-  Agricultural Vegetation
-  Developed and Other Human Use
-  Recently Disturbed or Modified
-  Open Water



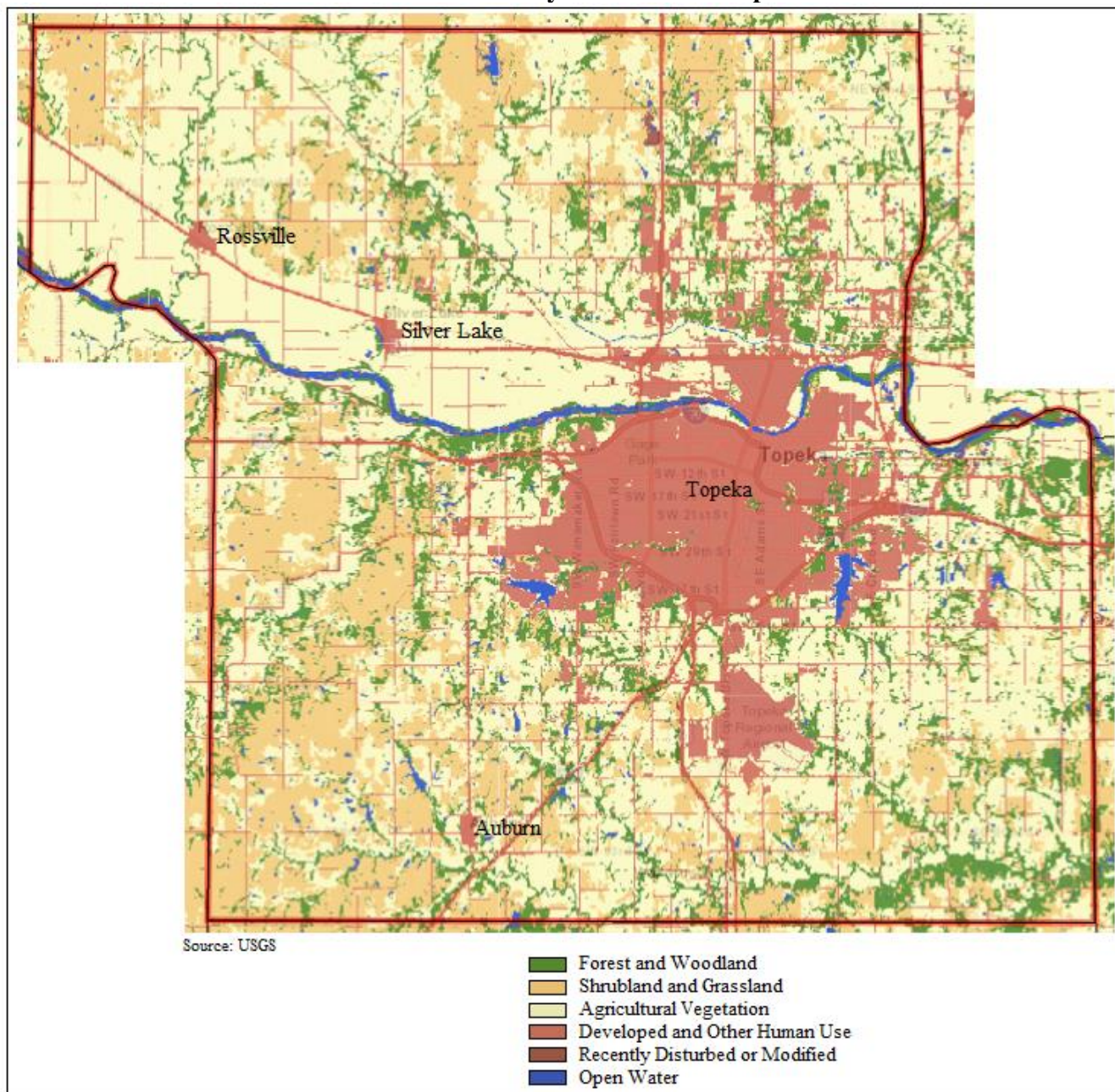


Osage County Land Cover Map





Shawnee County Land Cover Map



3.10 – Regional Agricultural Data

Agriculture is a major component of the economy of Kansas. According to the Kansas Department of Agriculture, Agriculture is the largest economic driver in Kansas, valued at nearly \$67.5 billion and accounting for 44.5 percent of the state's total economy. In Kansas, there are 46,137,295 acres of farmland, which accounts for 88 percent of all Kansas land.





The following tables present information from the USDA National Agricultural Statistics Service 2017 Census of Agriculture (the latest available data) relating to farm totals and agricultural acreage, livestock (cattle, hogs and pigs), and agricultural market value for Kansas Region J.

Table 3.21: Kansas Region J Farm Data, 2017 Census of Agriculture

Jurisdiction	Number of Farms	Farm Acreage	Cropland Acreage	Pasture and Other Usage Acreage
Anderson	611	364,522	242,149	122,373
Coffey	699	386,279	218,978	167,301
Franklin	1,020	355,436	222,549	132,887
Linn	864	302,064	156,904	145,160
Miami	1,400	295,774	181,564	114,210
Osage	1,042	439,560	252,612	186,948
Shawnee	847	201,662	126,486	75,176

Source: United States Department of Agriculture National Agricultural Statistics Service

Table 3.22: Kansas Region J Farm Data, 2017 Census of Agriculture

Jurisdiction	Cattle	Beef Cattle	Milk Cattle	Hogs	Sheep	Chicken Layers
Anderson	39,110	18,214	721	(D)	1,243	1,526
Coffey	36,472	14,382	230	78	618	666
Franklin	55,763	18,004	1,125	10,956	435	2,328
Linn	37,443	20,800	384	132	720	2,551
Miami	40,025	22,694	7	584	447	3,770
Osage	37,088	19,635	170	185	243	1,110
Shawnee	15,239	(D)	(D)	112	132	1,769

Source: United States Department of Agriculture National Agricultural Statistics Service

(D): Data not reported due to privacy concerns

Table 3.23: Kansas Region J Farm Data, 2017 Census of Agriculture

Jurisdiction	Total Agricultural Commodity Sales	Crop Sales	Animal Sales
Anderson	\$108,777,000	\$80,868,000	\$27,909,000
Coffey	\$71,692,000	\$46,874,000	\$24,818,000
Franklin	\$140,884,000	\$75,773,000	\$65,112,000
Linn	\$60,276,000	\$41,143,000	\$19,133,000
Miami	\$71,799,000	\$53,030,000	\$18,769,000
Osage	\$92,401,000	\$66,913,000	\$25,488,000
Shawnee	\$49,156,000	\$39,209,000	\$9,947,000

Source: United States Department of Agriculture National Agricultural Statistics Service

3.11 – Regional Development Trends

44 CFR 201.6 (c)(2)(ii)(A) The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas

Future development speaks to the potential impacts of land use and demographic changes in hazard prone areas. Data in this section is based on the best available data but is speculative as future conditions are





subject to numerous unpredictable factors. While past trends are used to inform the discussion, previous historical trends are no guarantee of future conditions.

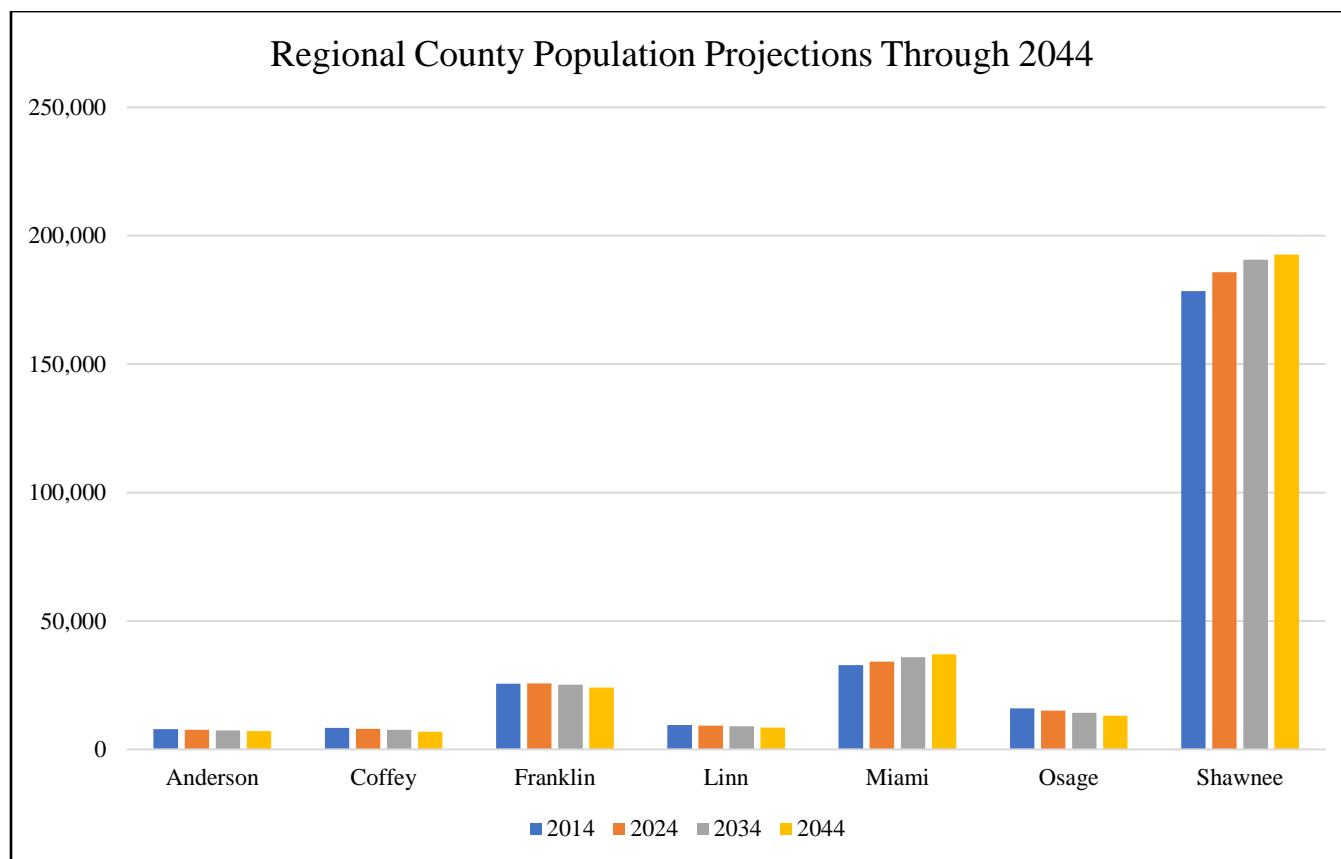
The University of Kansas Institute for Policy and Social Research developed population projections for the region using historical and trend data. Indications are the region will experience a steady decrease in the population through the year 2044.

Table 3.24: Kansas Region J Population Projections Through 2044

County	2014	2024	2034	2044	Projected Growth Percentage Through 2044
Anderson	7,883	7,647	7,433	7,153	-9.30%
Coffey	8,433	8,015	7,586	6,935	-17.80%
Franklin	25,611	25,658	25,171	24,055	-6.10%
Linn	9,502	9,205	8,953	8,552	-10.00%
Miami	32,822	34,216	35,907	36,978	12.70%
Osage	15,936	15,165	14,270	13,144	-17.50%
Shawnee	178,406	185,833	190,714	192,718	8.00%

Source: University of Kansas Institute for Policy and Social Research

The following chart illustrates the above data.





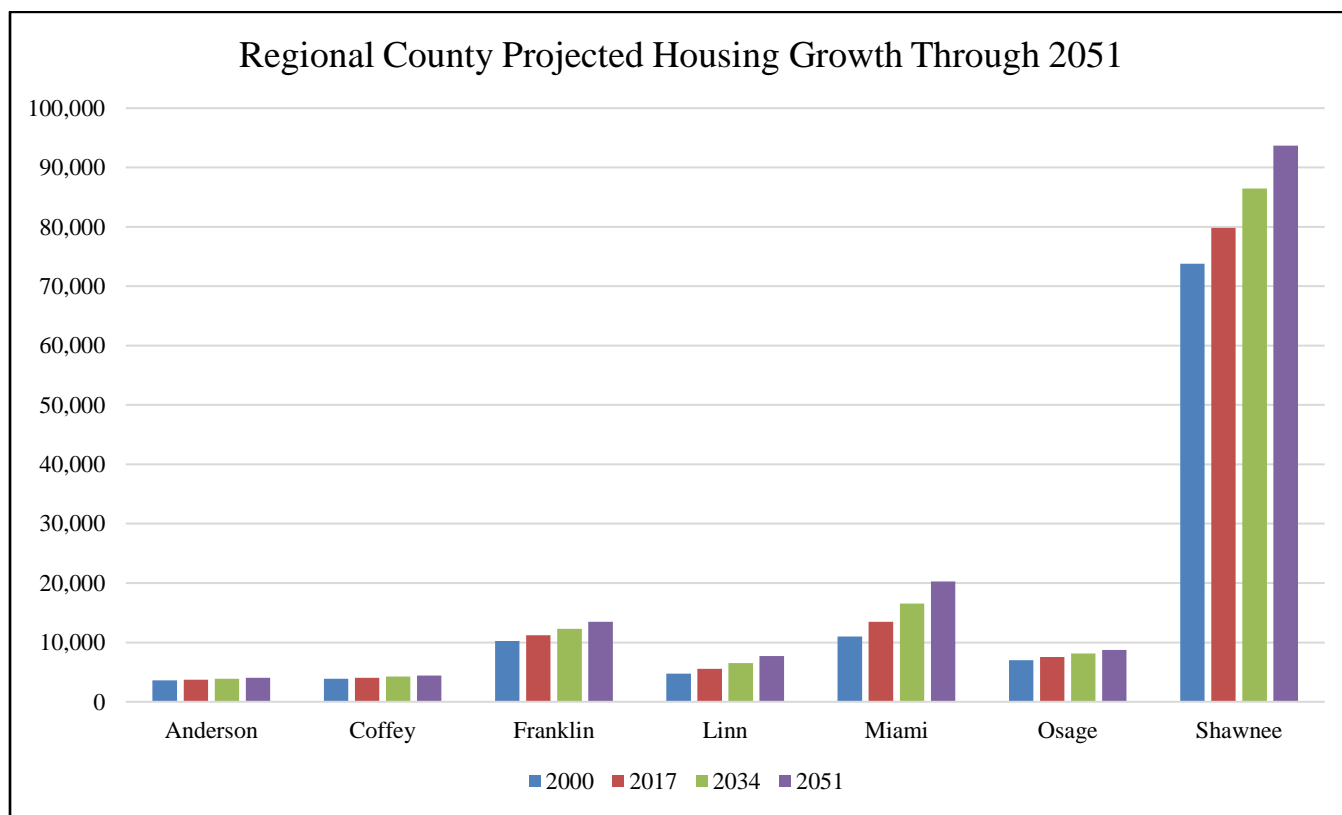
US Census Bureau data was used to develop housing projections for the region using historical and trend data. Indications are the region will experience steady to static growth in housing through the year 2051.

Table 3.25: Kansas Region J Housing Projections Through 2051

County	2000	2017	2034	2051	Projected Growth Percentage Through 2051
Anderson	3,596	3,743	3,896	4,056	4.1%
Coffey	3,876	4,056	4,243	4,438	4.6%
Franklin	10,229	11,213	12,289	13,469	9.6%
Linn	4,720	5,558	6,547	7,713	17.8%
Miami	10,984	13,473	16,531	20,284	22.7%
Osage	7,018	7,553	8,127	8,745	7.6%
Shawnee	73,768	79,858	86,486	93,665	8.3%

Source: US Census Bureau

The following chart illustrates the above data.



FEMA’s loss estimation software HAZUS data was used to developed property valuation projections for the region using historical and trend data. Indications are the region will experience steady growth in the property valuation through the year 2030.





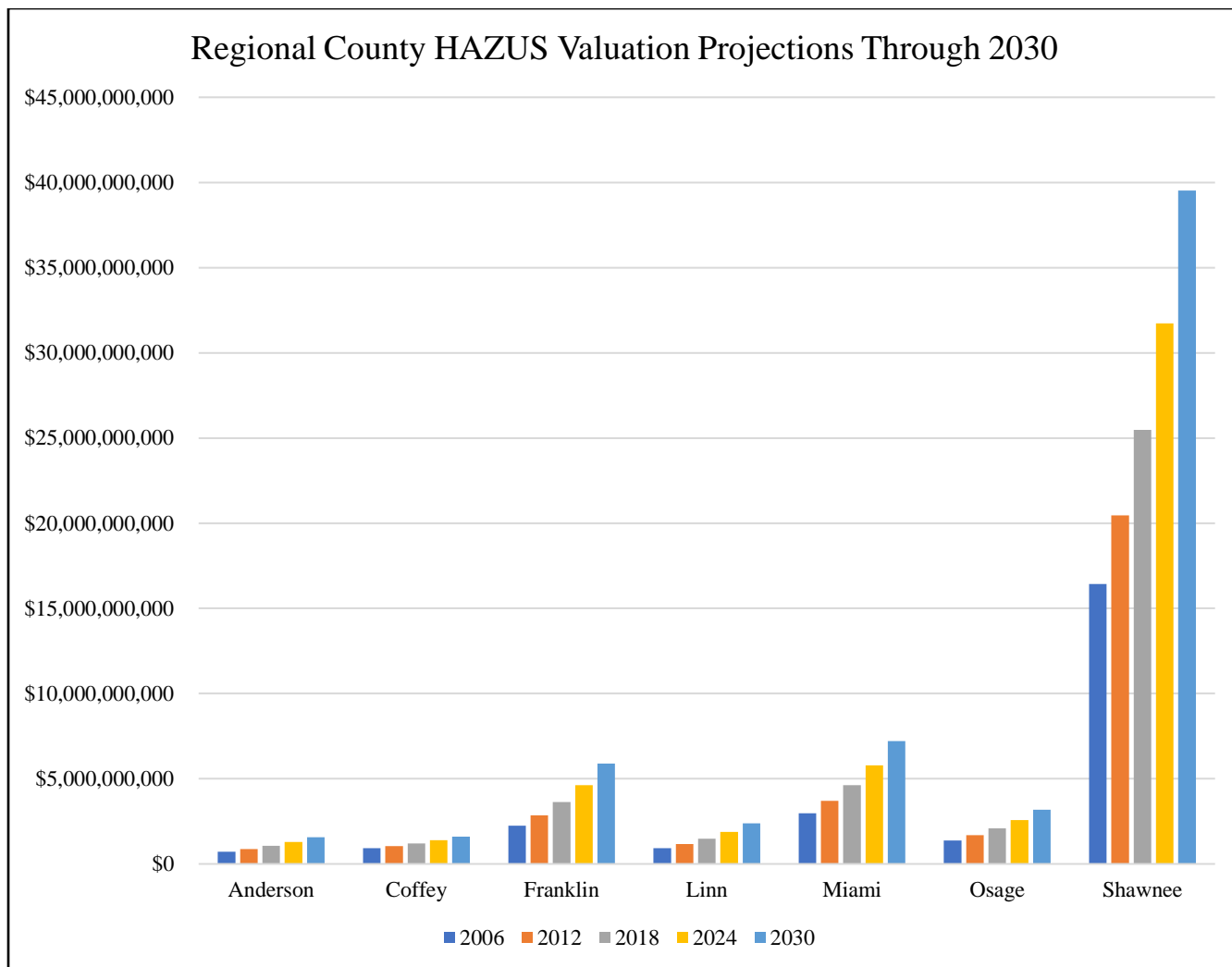
Table 3.26: Kansas Region J Property Valuation Projections Through 2030

County	2006	2012	2018	2024	2030	Projected Growth Percentage Through 2030
Anderson	\$724,879,000	\$879,410,000	\$1,066,884,195	\$1,294,324,473	\$1,570,250,876	21.3%
Coffey	\$917,660,000	\$1,053,574,000	\$1,209,618,130	\$1,388,773,851	\$1,594,464,204	14.8%
Franklin	\$2,242,302,000	\$2,853,762,000	\$3,631,962,846	\$4,622,373,594	\$5,882,862,394	27.3%
Linn	\$926,558,000	\$1,172,469,000	\$1,483,645,445	\$1,877,408,960	\$2,375,678,377	26.5%
Miami	\$2,967,974,000	\$3,706,416,000	\$4,628,584,875	\$5,780,192,494	\$7,218,323,996	24.9%
Osage	\$1,375,800,000	\$1,695,650,000	\$2,089,859,662	\$2,575,716,336	\$3,174,526,389	23.2%
Shawnee	\$16,434,512,000	\$20,465,546,000	\$25,485,306,353	\$31,736,306,468	\$39,520,543,104	24.5%
Reno	\$724,879,000	\$879,410,000	\$1,066,884,195	\$1,294,324,473	\$1,570,250,876	21.3%
Rice	\$917,660,000	\$1,053,574,000	\$1,209,618,130	\$1,388,773,851	\$1,594,464,204	14.8%
Sedgwick	\$2,242,302,000	\$2,853,762,000	\$3,631,962,846	\$4,622,373,594	\$5,882,862,394	27.3%
Sumner	\$926,558,000	\$1,172,469,000	\$1,483,645,445	\$1,877,408,960	\$2,375,678,377	26.5%

Source: HAZUS

The following chart illustrates the above data.





The United States Department of Agriculture (USDA) National Agricultural Statistics Service data was used to develop agricultural projections for the region using historical and trend data. Indications are the region will experience a steady increase in the number of farms through the year 2037.



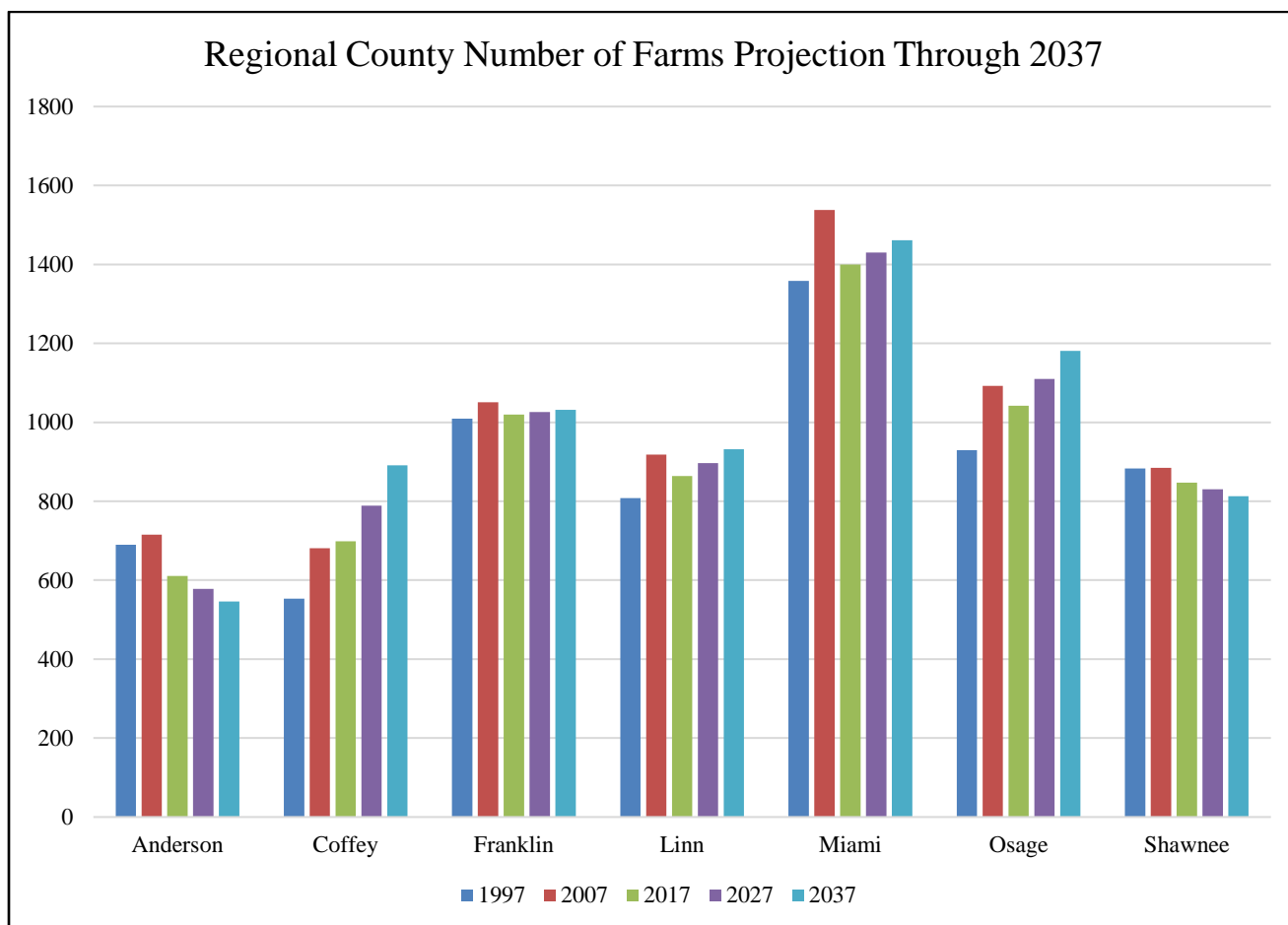


Table 3.27: Kansas Region J Number of Farms Data Projections Through 2037

County	Number of Farms, 1997	Number of Farms, 2007	Number of Farms, 2017	Number of Farms, 2027	Number of Farms, 2037	Projected Growth Percentage Through 2037
Anderson	690	715	611	578	546	-5.5%
Coffey	553	681	699	789	891	12.9%
Franklin	1,009	1,051	1,020	1,026	1,032	0.6%
Linn	808	918	864	897	932	3.9%
Miami	1,358	1,538	1,400	1,430	1,461	2.1%
Osage	929	1,092	1,042	1,110	1,181	6.5%
Shawnee	883	885	847	830	813	-2.0%

Source: United States Department of Agriculture National Agricultural Statistics Service

The following chart illustrates the above data.





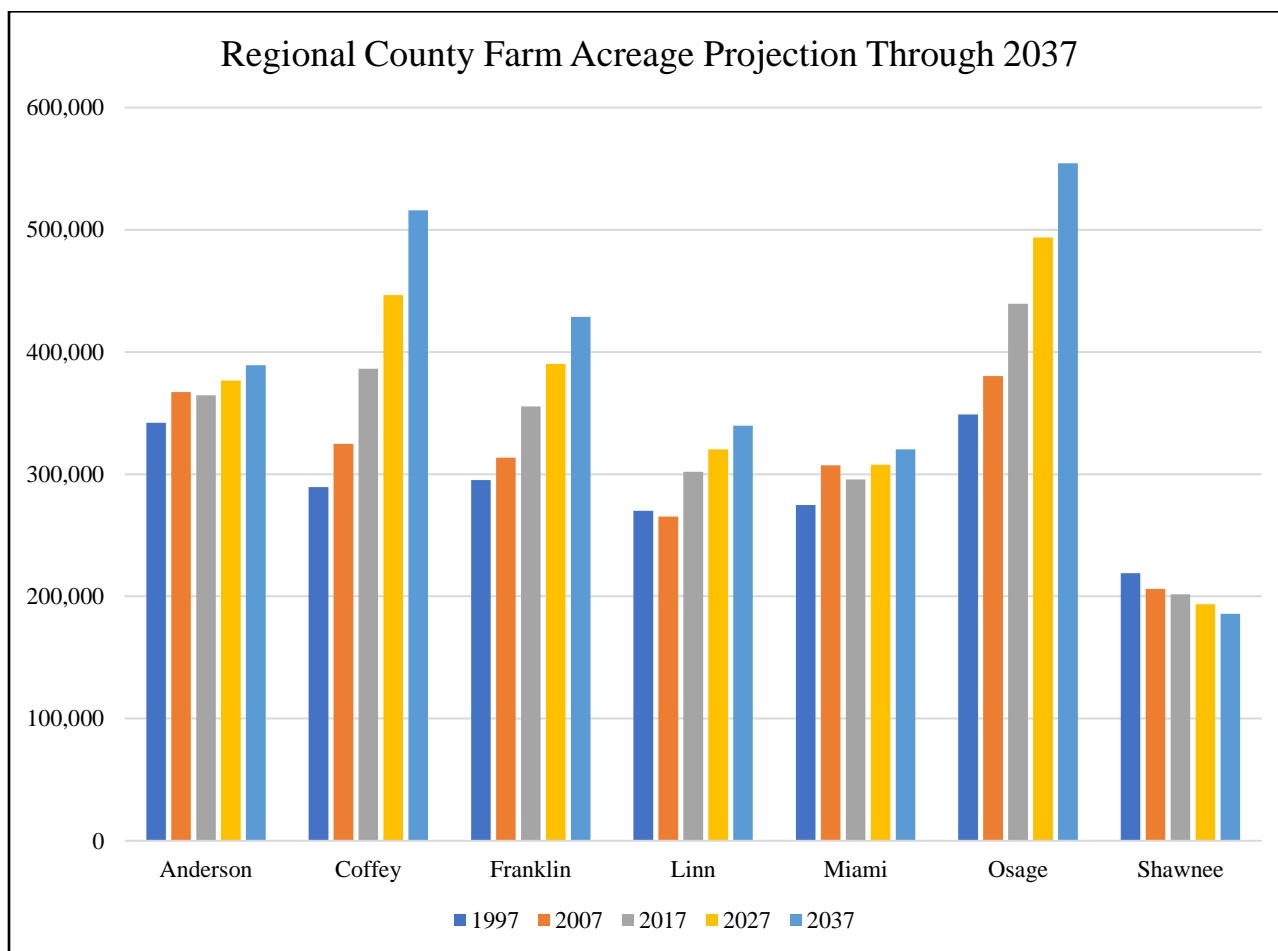
USDA National Agricultural Statistics Service data indicates the region will experience steady increase in farm acreage through the year 2037.

Table 3.28: Kansas Region J Farm Acreage Data Projections Through 2037

County	Farm Acreage, 1997	Farm Acreage, 2007	Farm Acreage, 2017	Farm Acreage, 2027	Farm Acreage, 2037	Projected Growth Percentage Through 2037
Anderson	342,015	367,192	364,522	376,614	389,106	3.3%
Coffey	289,436	324,827	386,279	446,434	515,957	15.6%
Franklin	295,065	313,546	355,436	390,310	428,607	9.8%
Linn	270,106	265,319	302,064	320,304	339,646	6.0%
Miami	274,617	307,083	295,774	307,811	320,339	4.1%
Osage	348,848	380,156	439,560	493,628	554,346	12.3%
Shawnee	219,019	206,243	201,662	193,541	185,746	-4.0%

Source: United States Department of Agriculture National Agricultural Statistics Service

The following chart illustrates the above data.





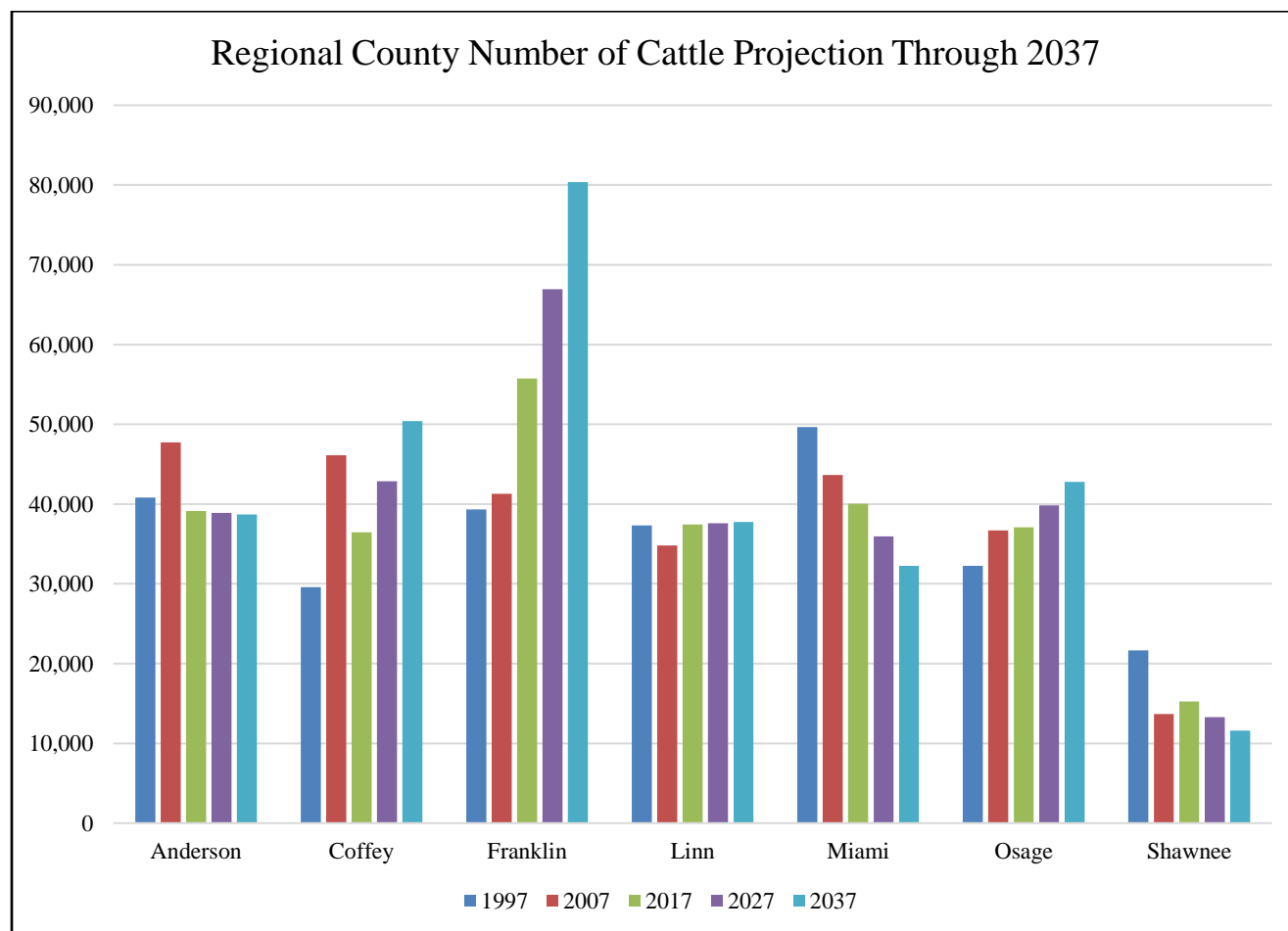
USDA National Agricultural Statistics Service data indicates the region will experience steady increase in the number of cattle through the year 2037.

Table 3.29: Kansas Region J Total Cattle Data Projections Through 2037

County	Cattle, 1997	Cattle, 2007	Cattle, 2017	Cattle, 2027	Cattle, 2037	Projected Growth Percentage Through 2037
Anderson	40,799	47,714	39,110	38,898	38,687	-0.5%
Coffey	29,568	46,132	36,472	42,869	50,388	17.5%
Franklin	39,311	41,293	55,763	66,939	80,355	20.0%
Linn	37,322	34,826	37,443	37,598	37,753	0.4%
Miami	49,660	43,635	40,025	35,941	32,274	-10.2%
Osage	32,264	36,693	37,088	39,833	42,782	7.4%
Shawnee	21,665	13,692	15,239	13,296	11,600	-12.8%

Source: United States Department of Agriculture National Agricultural Statistics Service

The following chart illustrates the above data.





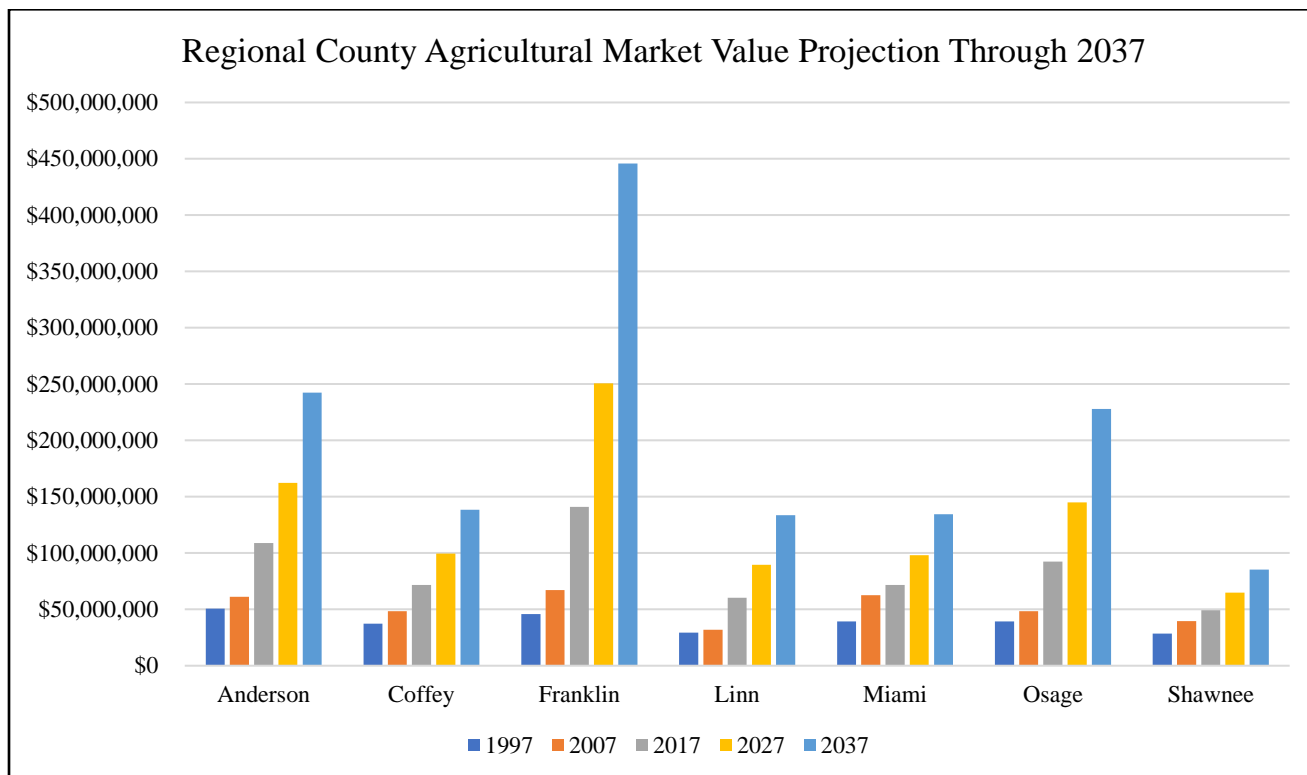
USDA National Agricultural Statistics Service data indicates the region will experience a continued increase in the market value of agricultural products through the year 2037.

Table 3.30: Kansas Region J Agricultural Market Value Data Projections Through 2037

County	Market Value, 1997	Market Value, 2007	Market Value, 2017	Market Value, 2027	Market Value, 2037	Projected Growth Percentage Through 2037
Anderson	\$50,674,000	\$61,105,000	\$108,777,000	\$162,404,632	\$242,470,968	49.3%
Coffey	\$37,264,000	\$48,494,000	\$71,692,000	\$99,642,263	\$138,489,378	39.0%
Franklin	\$45,994,000	\$67,209,000	\$140,884,000	\$250,594,821	\$445,740,922	77.9%
Linn	\$29,265,000	\$32,009,000	\$60,276,000	\$89,716,584	\$133,536,823	48.8%
Miami	\$39,388,000	\$62,672,000	\$71,799,000	\$98,248,880	\$134,442,576	36.8%
Osage	\$39,279,000	\$48,449,000	\$92,401,000	\$145,099,084	\$227,851,909	57.0%
Shawnee	\$28,396,000	\$39,673,000	\$49,156,000	\$64,791,601	\$85,400,593	31.8%

Source: United States Department of Agriculture National Agricultural Statistics Service

The following chart illustrates the above data.



Future development speaks to the potential impacts of land use and demographic changes in hazard prone areas. Future development data is speculative as future conditions are subject to numerous unpredictable factors. While past trends are used to inform the discussion, these historical trends are no guarantee of future conditions.





For hazards that affect the entire planning area, the predicted decrease to relatively static state in population will tend to decrease potential vulnerability. It is difficult to quantify the exact change in vulnerability, but it can be depicted as generally directly proportional to the population change itself.

For hazards that affect the entire planning area, the predicted increase in structures will tend to increase potential vulnerability. It is difficult to quantify the exact change in vulnerability, but it can be depicted as generally directly proportional to the change in the number of structures.

As indicated in the data above, the majority of Kansas Region J participating jurisdiction have seen a slight increase or steady hold in farm acreage and an increase in the market value of produced agricultural goods. These continuing agricultural gains could result in increased exposure to both natural and man-made hazards.

3.12 – Regional Economic Activity Patterns

Kansas Region J’s continued economic growth can impact future vulnerability in two ways, by location-based growth in identified hazard prone areas or by the industry type itself, as is the case with chemical manufacturing.

Gross domestic product (GDP) is a measure of the entire output of a defined economy, and roughly equals the total dollar amount of all goods and services produced within a defined area. GDP is the most comprehensive measure of economic activity and business growth. The following table, using data from the Bureau of Economic Analysis, details GDP for all Kansas Region J counties for the period 2012 to 2015 (the latest available data).

Table 3.31: Kansas Region J Gross Domestic Product, 2012 to 2015

County	2012	2013	2014	2015	State Rank in 2015 (out of 105)
Anderson	\$184,893,000	\$189,806,000	\$178,815,000	\$177,944,000	71
Coffey	\$781,872,000	\$750,042,000	\$746,161,000	\$728,911,000	26
Franklin	\$804,667,000	\$820,492,000	\$808,588,000	\$803,033,000	24
Linn	\$582,393,000	\$521,158,000	\$508,209,000	\$474,549,000	34
Miami	\$659,740,000	\$676,987,000	\$670,763,000	\$691,636,000	27
Osage	\$213,512,000	\$229,521,000	\$214,409,000	\$206,819,000	64
Shawnee	\$8,879,036,000	\$8,591,934,000	\$8,447,919,000	\$8,344,022,000	4

Source: Bureau of Economic Analysis

The following table, using data from the Bureau of Economic Analysis, details the percentage GDP change from the preceding period for 2012 to 2015 (the latest available data).

Table 3.32: Kansas Region J GDP Percentage Change from Preceding Period, 2012 to 2015

County	2013	2014	2015	State Rank in 2015 (out of 105)
Anderson	2.7%	-5.8%	-0.5%	45
Coffey	-4.1%	-0.5%	-2.3%	65
Franklin	2.0%	-1.5%	-0.7%	49
Linn	-10.5%	-2.5%	-6.6%	95





Miami	2.6%	-0.9%	3.1%	16
Osage	7.5%	-6.6%	-3.5%	74
Shawnee	-3.2%	-1.7%	-1.2%	54

Source: Bureau of Economic Analysis

The average Kansas Region J unemployment rate for March 2019 of 4.9% is higher than the average State of Kansas unemployment rate of 3.5%. The following chart details the regional unemployment rates, using data from the Kansas Department of Labor, for the months of March 2014 and March 2019.

Table 3.33: Kansas Region J Unemployment Rate, March 2014 and March 2015

County	March 2014	March 2019
Anderson	5.7%	4.1%
Coffey	4.2%	5.0%
Franklin	6.0%	4.1%
Linn	7.0%	8.2%
Miami	5.7%	4.3%
Osage	6.5%	4.6%
Shawnee	5.5%	3.9%

Source: Kansas Department of Labor

3.13 – Climate Change

For hazards related to weather patterns, climate change should be considered as it may cause significant changes in patterns and event frequency. There is a scientific consensus that climate change is occurring, and recent climate modeling results indicate that extreme weather events may become more common. Rising average temperatures produce a more variable climate system which may result in an increase in the frequency and severity of some extreme weather events, including:

- Longer and hotter heat waves
- An increased risk of wildfires
- Higher wind speeds
- Greater rainfall intensity
- Increased tornado activity.

As climate modeling improves, future plan updates should include climate change as a factor in the ranking of natural hazards as these are expected to have a significant impact on Kansas Region J communities. Where applicable, and with proper scientific evidence, potential climate change factors will be addressed in subsequent sections for relevant identified hazards.

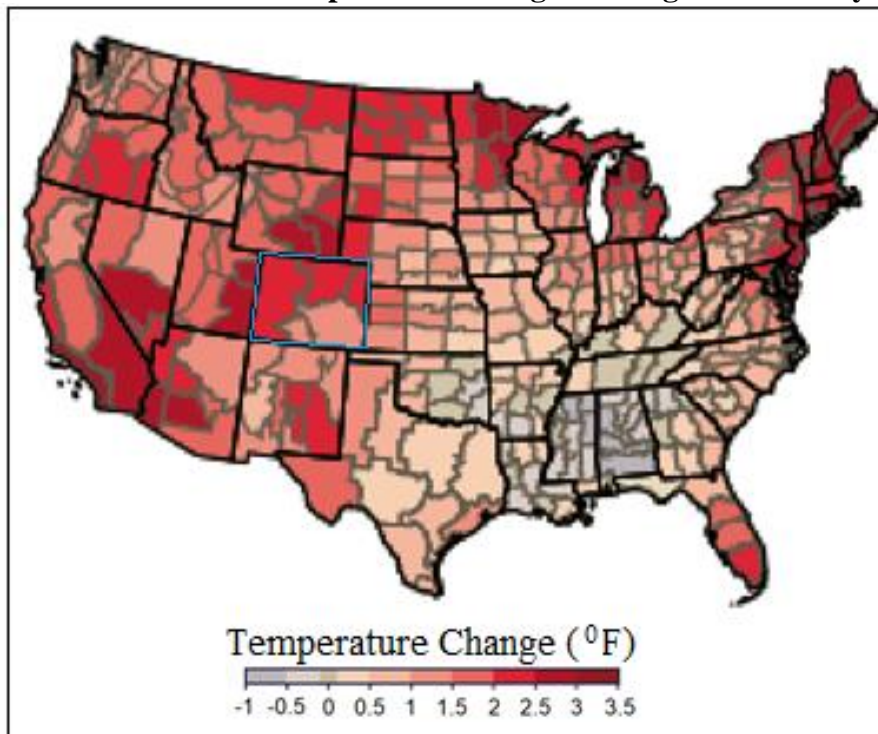
According to the United State Environmental Protection Agency (USEPA) “What Climate Change Means for Kansas” (August 2016), “In the past century, most of the state has warmed by at least half a degree (F). The soil is becoming drier. Rainstorms are becoming more intense, and floods are becoming more severe. Warming winters and changes in the timing and size of rainfall events have altered crop yields. In the coming decades, summers are likely to become increasingly hot and dry, creating problems for agriculture and possibly human health.”





The following map, from the USEPA Climate Change Indicators in the United States, illustrates modeled temperature changes during the last century.

USEPA Modeled Temperature Changes During Last Century



Concerning potential impacts on agriculture, the report states “Rising temperatures, drier soils, and decreasing water availability are likely to present challenges for Kansas’s farms. Yields would decline by about 50 percent in fields that can no longer be irrigated. Even where ample water is available, higher temperatures would reduce yields of corn. Increased concentrations of carbon dioxide, however, may increase yields of wheat and soybean enough to offset the impact of higher temperature. Although warmer and shorter winters may allow for a longer growing season, they may also promote the growth of weeds and pests, and shorten the dormancy for many winter crops, which could increase crop losses during spring freezes. The early flowering of winter wheat could have negative repercussions on livestock farmers who depend on it for feed. Livestock themselves may also be affected by more intense heat waves and lack of water. Hot weather causes cows to eat less, grow more slowly, and produce less milk, and it can threaten their health.”

Concerning potential impacts on rainfall, flooding, and drought, the report states “Although summer droughts are likely to become more severe, floods may also intensify. During the last 50 years, the amount of rain falling during the wettest four days of the year has increased about 15 percent in the Great Plains.





River levels associated with flooding have increased in eastern Kansas. Over the next several decades, the amount of rainfall during the wettest days of the year is likely to continue to increase, which would increase flooding.”

Concerning potential impacts on tornados, the report states “Scientists do not know how the frequency and severity of tornados will change. Rising concentrations of greenhouse gases tend to increase humidity, and thus atmospheric instability, which would encourage tornados. But wind shear is likely to decrease, which would discourage tornados. Research is ongoing to learn whether tornados will be more or less frequent in the future. Because Kansas experiences about 100 tornados a year, such research is closely followed by meteorologists in the state.”

Concerning potential impacts on human health, the report states “By 2050, Kansas is likely to have four times as many days above 100°F. Certain people are especially vulnerable, including children, the elderly, the sick, and the poor. The elderly may be particularly prone to heat stress and other heat-related health problems, including dehydration, cardiovascular strain, and respiratory problems. Those with low incomes may be particularly vulnerable due to a lack of air conditioning. Power failures due to severe weather can also present risks, especially in lightly populated areas where access to the necessary support services may be limited.”



4.0 Hazard Profiles

4.1 – Introduction

The ultimate purpose of this HMP is to minimize the loss of life and property. To accomplish this, all relevant hazards and vulnerabilities the region faces have been identified. Once this identification has been completed, Kansas Region J and all participating jurisdictions can use the accumulated data to assist in the development of and prioritization of mitigation action to defend against these potential risks.

4.2 – Methodology

Each hazard that has historically, or could potentially, affect Kansas Region J is reviewed and discussed in detail. In general, each hazard details the following information:

- Location and Extent
- Previous Occurrences
- Hazard Probability Analysis
- Vulnerability Assessment

Data sets used for this HMP were designed to follow the lead of the 2018 State of Kansas Hazard Mitigation Plan. Ten-year data sets from the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI) (2009 to 2018, with 2009 and 2018 being full data set years) were used, where applicable, for hazard occurrence and impact data. Ten-year data sets from the United States Department of Agriculture (USDA) Risk Management Agency (2009 to 2018, with 2013 and 2018 being full data set years) were used to determine agricultural losses. The ten-year data set was used to reflect the change in the climate and more accurately depict changes in the region. Where data sets were unavailable for a hazard, local reporting from participating jurisdictions was relied upon.

In addition, to ensure compliance with EMAP standards, a hazard consequence analysis was conducted for each hazard detailing the following potential impacts:

- Health and Safety of the Public
- Health and Safety of Responders
- Continuity of Operations; Property, Facilities, and Infrastructure
- Environment
- Economic Conditions
- Public Confidence in the Jurisdiction's Governance.

4.3 – Declared Federal Disasters

Historical events of significant magnitude or impact can result in a Secretarial or Presidential Disaster Declaration. The MPC reviewed the historical federal disaster declarations to assist in hazard identification. Since the approval of the previous Kansas Region J hazard mitigation plan in 2013, there has been one federal disaster declaration for the region, as follows:

- DR 4417: Declared on February 25, 2019 – Severe Storms, Straight-Line Winds and Flooding





In addition, since the 2013 plan, there have be no Fire Management Assistance Declarations

For the 20-year period from 2009 to 2018, Kansas Region J has had 17 federal disaster declarations. These declarations included the following identified hazards:

- Flooding
- Ice Storm
- Severe Storms
- Straight-Line Winds
- Severe Winter Storms
- Tornados

Information on past declared disasters are presented in the subsequent, relevant sections.

4.4 – Identified Potential Hazards

Based on the above data, and data contained in previous mitigation plans, Kansas Region J’s MPC met to discuss previously identified hazards and deliberate on any changes or additions. Based on this review, no changes, additions or subtractions were indicated for any identified hazard. Additionally, a thorough and comprehensive revision of data for each hazard was completed as part of this plan update.

The MPC confirmed sixteen natural hazards that may impact Kansas Region J, as listed below:

- Agricultural Infestation
- Dam/Levee Failure
- Drought
- Earthquake
- Expansive Soils
- Extreme Temperatures
- Flood
- Hailstorm
- Land Subsidence
- Landslide
- Lightning
- Soil Erosion and Dust
- Tornado
- Wildfire
- Wind Storm
- Winter Storm

Additionally, the MPC confirmed six man-made hazards that may impact Kansas Region J, as listed below:

- Civil Disorder





- Hazardous Materials Incident
- Major Disease Outbreak
- Radiological Event
- Terrorism/Agri-Terrorism
- Utility/Infrastructure Failure

Based on discussion with the MPC, a lack of identified risk or history, and geographic improbability, numerous FEMA identified hazards such as coastal erosion, hurricane, tsunami were not included in the scope of this plan.

4.5 – Hazard Planning Significance

Previous planning efforts used the calculated priority risk index (CPRI) methodology to assign a planning significance to each of the identified hazards. CPRI considers the following four elements of risk:

- Probability of an Impactful Event
- Magnitude/Severity
- Warning Time
- Duration

Each element was then assigned a number based on pre-established rating parameters. The following tables provide a summary for each of the risk elements, including a rationale behind each numerical rating.

Table 4.1: CPRI Element Ratings

CPRI Element	Rating Number and Definition			
	1	2	3	4
Probability	Unlikely (10% chance of occurrence)	Occasional (20% chance of occurrence)	Likely (33% chance of occurrence)	Highly Likely (100% chance of occurrence)
Magnitude	Negligible (Minor injuries and <10% of property severely damaged)	Limited (Multiple injuries and 10-25% of property severely damaged)	Critical (Multiple disabling injuries and 25-50% of property severely damaged)	Catastrophic (Multiple deaths and 50% of property severely damaged)
Warning Time	24+ hours	12-24 hours	6-12 hours	<6 hours
Duration	< 6 hours	< 1 day	< 1 week	1 week +

Using the rankings, the following weighted formula was used to determine each hazard’s CPRI:

$$(\text{Probability} \times 0.45) + (\text{Magnitude/Severity} \times 0.30) + (\text{Warning Time} \times 0.15) + (\text{Duration} \times 0.10)$$

Each planning significance category was assigned a CPRI range, with a higher score indicating greater planning criticality. The following table details planning significance CPRI ranges.





Table 4.2: CPRI Planning Significance Range

Planning Significance	CPRI Range	
	Low CPRI	High CPRI
High	3.0	4.0
Moderate	2.0	2.9
Low	1.0	1.9

The terms high, moderate and low indicate the level of planning significance for each hazard, and do not indicate the potential impact of a hazard occurring. Hazards rated with moderate or high planning significance were more thoroughly investigated and discussed due to the availability of data and historic occurrences, while those with a low planning significance were generally addressed due to lack of available data and historical occurrences. The following table shows the CPRI ratings for Kansas Region J.

Table 4.3: Kansas Region J Natural Hazard CPRI Planning Significance

Hazard	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Agricultural Infestation	1.5	2.0	1.0	4.0	1.8
Dam and Levee Failure	1.5	3.0	2.5	4.0	2.4
Drought	2.5	2.0	1.0	4.0	2.3
Earthquake	1.0	1.5	4.0	1.0	1.6
Expansive Soils	1.0	1.0	1.0	4.0	1.3
Extreme Temperature	3.5	2.0	1.0	3.5	2.7
Flood	3.5	3.0	2.5	3.0	3.2
Hailstorm	4.0	3.0	3.5	1.0	3.3
Land Subsidence	1.0	1.0	2.0	4.0	1.5
Landslide	1.0	1.0	3.5	1.5	1.4
Lightning	2.5	1.5	3.0	1.0	2.1
Soil Erosion & Dust	2.0	1.0	1.0	4.0	1.8
Tornado	3.0	3.0	4.0	1.0	3.0
Wildfire	3.5	3.0	4.0	2.0	3.3
Windstorm	3.5	2.5	3.0	2.0	3.0
Winter Storm	3.5	3.0	2.0	3.5	3.1

Table 4.4: Kansas Region J Man-Made Hazard CPRI Planning Significance

Hazard	Probability	Magnitude/Severity	Warning Time	Duration	CPRI
Civil Disorder	1.0	2.0	4.0	1.0	1.8
Hazardous Materials Event	2.0	2.0	4.0	2.0	2.3
Major Disease Outbreak	1.0	3.0	1.0	4.0	1.9
Radiological Event	1.0	1.0	4.0	4.0	1.8
Terrorism, Agri-Terrorism	1.0	2.0	4.0	1.0	1.8
Utility / Infrastructure Failure	2.5	2.0	3.5	3.0	2.6

The average CPRI for each identified hazard remained the same as the calculated CPRI for the 2014 planning effort, where individual county rankings were combined into a regional ranking.





4.6 – Hazard Profiles

44 CFR 201.6(c)(2)(i) A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Each identified hazard is profiled in the subsequent sections, with the level of detail varying based on available information. Sources of information are cited in the detailed hazard profiles below.

With each update of this plan, new information will be incorporated to provide for better evaluation and prioritization of the hazards.

The following hazards are presented in alphabetical order, and not by planning significance, for ease of reference. Additionally, man-made hazards are presented, again in alphabetical order, after natural hazards.





4.7 – Agricultural Infestation

Agricultural infestation is the naturally occurring infection of vegetation, crops or livestock with insects, vermin (to include lice, roaches, mice, coyote, fox, fleas, etc.), or diseases that render the crops or livestock unfit for consumption or use. The levels and types of agricultural infestation will vary according to many factors, including cycles of heavy rains and drought. A certain level of agricultural infestation is normal; however, infestation becomes an issue when the level of an infestation escalates suddenly, or a new infestation appears, overwhelming normal control efforts. Infestation of crops or livestock can pose a significant risk to state and local economies due to the dominance of the agricultural industry.



Onset of agricultural infestation can be rapid. Controlling an infestation's spread is critical to limiting impacts through methods including quarantine, culling, premature harvest and/or crop destruction when necessary. Duration is largely affected by the degree to which the infestation is aggressively controlled but is generally more than one week. Maximizing warning time is also critical for this hazard and is most affected by methodical and accurate monitoring and reporting of livestock and crop health and vigor, including both private individuals and responsible agencies.

4.7.1 –Location and Extent

The entire planning area may be affected by agricultural infestation. While rural areas within the region are more susceptible to crop and livestock infestation, urban and suburban areas are also at risk due to landscaping, urban gardens and parks, all of which add value to homes and communities, may be susceptible to damage or loss. The magnitude and severity of an agricultural infestation is relative to the type of infestation. A foreign animal disease like foot and mouth could potentially cause the economy to crumble, whereas an infestation of fleas would be manageable. The MPC has determined that the magnitude of this hazard in the planning area would be limited, as most infestations are manageable in scope.

Animal Disease

Of key concern regarding this hazard is the potential introduction of a rapid and economically devastating foreign animal disease, including Foot and Mouth disease and Bovine Spongiform Encephalopathy (BSE) disease. Because Kansas is a major cattle state, with cattle raised locally as well as imported into the state, the potential for highly contagious diseases such as these is a continuing, significant threat. The loss of production, death of animals, and other lasting problems resulting from an outbreak could cause continual and severe economic losses, as well as widespread unemployment. It would affect not only farmers, ranchers, and butchers, but also support and related industries

Of particular concern are Confined Animal Feeding Operations (CAFO) facilities, defined as facilities with 300 or more animal units. The CAFO facilities are regulated by the Kansas Department of Health & Environment (KDHE), Bureau of Water, and Livestock Waste Management. The CAFO includes beef, dairy, sheep, swine, chicken, turkey, and horses. The following is a list of the number of CAFOs per county, using the latest available data from 2016, in Kansas Region J:





- Anderson County: 5
- Coffey County: 3
- Franklin County: 7
- Linn County: 4
- Miami County: 3
- Osage County: 4
- Shawnee County: 0

Knowing where diseased and at-risk animals are, where they've been and when, is important to ensuring a rapid response when animal disease events take place. The Kansas Department of Agriculture (KDA), Division of Animal Health monitors and reports on animal reportable diseases. Producers are required by state law to report any of the reportable animal diseases.

Crop Pests and Diseases

Many factors influence disease development in plants, including hybrid/variety genetics, plant growth stage at the time of infection, weather (e.g., temperature, rain, wind, hail, etc.), single versus mixed infections, and genetics of the pathogen populations.

Field crops in the region are also subject to various types of infestation. According to KDA, Plant Protection and Weed Control Division, the following are the highest risk crop pests to this region and the potentially impacted crop:

- Aspergillus Ear Rot (Alfatoxin): Corn
- Austro-Asian Rust: Soybean
- Black Stem Rust, Blast: Wheat
- South American strains, Stripe Rust, Leaf Rust, Karnal: Wheat

Infestation is not only a risk to crops in the field, but insect infestation can also cause major losses to stored grain. It is estimated that damage to stored grain by the lesser grain borer, rice weevil, red flour beetle, and rusty grain beetle costs the United States about \$500 million annually.

Tree Pests

According to the KDA, Plant Protection and Weed Control Division, the following are the highest risk plant pests by host to Kansas Region J:

- Emerald Ash Borer (EAB): Ash Trees
- Asian Longhorned Beetle: Maple, Birch, Willow, Mimosa, Ash, Sycamore & Poplar Trees
- Thousand Cankers: Walnut Trees

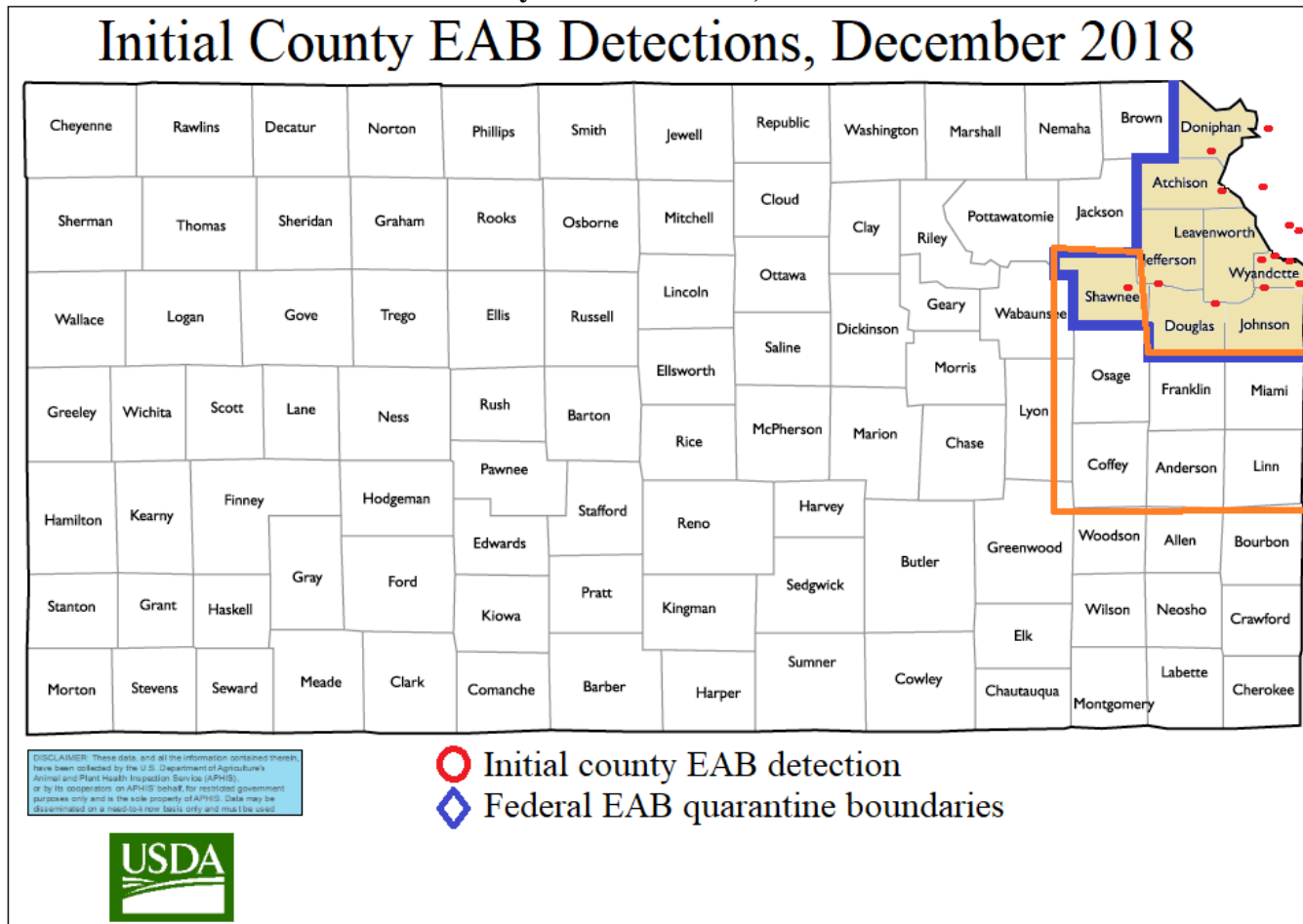
As of this plan, neither the Asian Longhorned Beetle nor Thousand Cankers have been detected in Kansas.





As of this plan, the EAB has been discovered in numerous Kansas counties, including Shawnee County within Region J. The following map from the USDA shows the Federal EAB Quarantine area for the State of Kansas in relation to Kansas Region J.

Initial County EAB Detections, December 2018



Wildlife Pests

The region's farmers also lose a significant amount of crops each year as a result of wildlife foraging. This can be particularly problematic in areas where natural habitat has been diminished or in years where weather patterns such as early/late frost deep snow, or drought has caused the wild food sources to be limited. Also of concern are the following wildlife diseases:

- Chronic Wasting Disease (CWD), affecting deer and captive elk populations.
- Hemorrhagic Disease (HD), affecting white-tailed deer

There have been 48 positive cases of CWD found in Kansas since surveillance started in 1996 and regular occurrences of HD seasonally in late summer and fall. These diseases can seriously damage the populations of the captive deer and elk farms and the wild deer populations but also affect the annual \$350 million-dollar regional and statewide hunting economy.





4.7.2 – Previous Occurrences

There have been no major reported or recorded agricultural infestations, above what is considered a normal level, for Kansas Region J.

Crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of agricultural infestation on the region’s agricultural base. Crop loss data for the ten-year period of 2009- 2018 (with 2009 and 2018 being full data years) for the region indicates 120 claims on 13,286 acres for \$1,725,410.

Table 4.5: USDA Risk Management Agency Cause of Loss Indemnities 2009-2018, Agricultural Infestation

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Anderson	13	1,974	\$473,199
Coffey	20	2,405	\$247,171
Franklin	24	2,674	\$216,692
Linn	23	1,402	\$182,853
Miami	17	2,811	\$335,809
Osage	13	1,158	\$112,879
Shawnee	10	962	\$156,807

Source: USDA Farm Service Agency

4.7.3 – Hazard Probability Analysis

Kansas Region J experiences agricultural losses every year because of insects, vermin or diseases that impact plants and livestock. Data from the UDSA Risk Management Agency indicates that there has been at least one claimed incident of agricultural infestation for Kansas Region J for the period 2015 through 2018. Using the binomial probability equation (number of years with an event divided by total number of years in reporting period) we derive a probability 100% of a reportable agricultural infestation event in a given year. However, the large majority of events are expected to be small and limited in scope.

4.7.4 – Vulnerability Assessment

Regional populations and facilities are not directly vulnerable to losses as a result of agricultural infestation. The USDA 2017 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region J County. The USDA Risk Management Agency provides information on insured crop losses related to identified hazards, with data from the ten-year period of 2009 to 2018 (with 2009 and 2018 being full data set years) used for analysis. The higher the percentage loss, the higher the vulnerability the county has to agricultural infestation events.





Table 4.6: Agricultural Infestation Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	242,149	197	0.08%	\$80,868,000	\$47,320	0.06%
Coffey	218,978	240	0.11%	\$46,874,000	\$24,717	0.05%
Franklin	222,549	267	0.12%	\$75,773,000	\$21,669	0.03%
Linn	156,904	140	0.09%	\$41,143,000	\$18,285	0.04%
Miami	181,564	281	0.15%	\$53,030,000	\$33,581	0.06%
Osage	252,612	116	0.05%	\$66,913,000	\$11,288	0.02%
Shawnee	126,486	96	0.08%	\$39,209,000	\$15,681	0.04%

Source: USDA

This table only reflects insured losses that were claimed. According to the 2017 Kansas Crop Insurance Profile Report issued by the USDA Risk Management Agency, 75-94% percent of major Kansas row crops were insured. Data regarding the number or value of livestock and wildlife lost to disease or infestation was not available for this planning effort.

In addition, threats have been identified which, while currently not impacting Kansas, may present a future risk. According to the KDA, Plant Protection and Weed Control Division the following table lists the highest risk plant pests to Kansas.

Table 4.7: Potential High-Risk Plant Pests

Pest (Disease Insect, or weed)	Crop or Host Plant	Current Distribution	Type of Loss
Rust, Austro-Asian	Soybean	Australia, Japan, Pacific, Gulf of Mexico	Direct Loss to production
Aspergillus ear rot (Alfatoxin)	Corn	Worldwide, endemic to Kansas	Toxin renders the grain unusable
Black Stem Rust UG99 strain	Wheat	Africa, Asia	Direct Loss to production
Blast – South American strains	Wheat	South America	Direct Loss to production
Stripe Rust (new races)	Wheat	North America	Direct Loss to production
Leaf Rust (new races)	Wheat	North America	Direct Loss to production
Karnal Bunt	Wheat	Asia, Mexico, Arizona	International export quarantines, degradation of flour quality
Thousand Cankers	Walnut	Western US states and PA, VA, Tenn	Death of municipal trees, loss of nut crop, loss of timber
Emerald Ash Borer	Ash	North Central and North Eastern U.S., including Kansas (Wyandotte County)	Death of trees. Cost of removal and re-vegetation.





Table 4.7: Potential High-Risk Plant Pests

Pest (Disease Insect, or weed)	Crop or Host Plant	Current Distribution	Type of Loss
Asian Longhorned Beetle	Maples, Birches, Willows, Mimosa, Ash, Sycamore, Poplar trees	Small parts of Ohio, New York, and Massachusetts	Death of trees. Cost of removal and re-vegetation.
Hydrilla	Water Bodies	Southern U.S. and one park pond in Olathe	Economic and environmental.

4.7.5 – Impact and Consequence Analysis

As per EMAP standards, the information in the following table provides the Consequence Analysis.

Table 4.8: Agricultural Infestation Consequence Analysis

Subject	Impacts of Agricultural Infestation
Health and Safety of the Public	Impact in the area would be minimal. If the infestation is unrecognized, then there is the potential for the food supply to be contaminated.
Health and Safety of Responders	Impact would be minimal with protective clothing, gloves, etc as these diseases cause no risk to humans.
Continuity of Operations	Minimal expectation of execution of the COOP.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the incident area is minimal to non-existent.
Environment	Impact could be severe to the incident area, specifically, plants, trees, bushes, and crops.
Economic Conditions	Impacts to the economy will depend on the severity of the infestation. The potential for economic loss to the community and state could be severe if the infestation is hard to contain, eliminate, or reduce. Impact could be minimized due to crop insurance.
Public Confidence in the Jurisdiction’s Governance	Confidence could be in question depending on timeliness and steps taken to warn the producers and public, and treat/eradicate the infestation.





4.8 – Dam and Levee Failure

A dam is a barrier across flowing water that obstructs, directs or slows down the flow, often creating a reservoir, lake or impoundments. Common reasons for dam failure include:

- Flooding
- Sub-standard construction materials/techniques
- Spillway design error
- Geological instability caused by changes to water levels during filling or poor surveying
- Sliding of a mountain into the reservoir
- Poor maintenance, especially of outlet pipes
- Human, computer or design error
- Internal erosion, especially in earthen dams
- Earthquakes



A levee is an artificial barrier, usually an earthen embankment, constructed along rivers to protect adjacent lands from flooding. Common reasons for levee failure include:

- Surface erosion due to water velocities
- Subsurface actions
- Flood waters exceeding the design capacity of the structure

4.8.1 – Dam Location and Extent

In Kansas, the State has regulatory jurisdiction over non-federal dams that meet the following definition of a “jurisdictional” dam as defined by K.S.A. 82a-301 et seq, and amendments thereto:

- *any artificial barrier including appurtenant works with the ability to impound water, waste water or other liquids that has a height of 25 feet or more; or has a height of six feet or greater and also has the capacity to impound 50 or more acre feet. The height of a dam or barrier shall be determined as follows: (1) A barrier or dam that extends across the natural bed of a stream or watercourse shall be measured from the downstream toe of the barrier or dam to the top of the barrier or dam; or (2) a barrier or dam that does not extend across a stream or watercourse shall be measured from the lowest elevation of the outside limit of the barrier or dam to the top of the barrier or dam.*

The KDA is the State agency responsible for regulation of jurisdictional dams. Within the KDA, the Water Structures Program has the following responsibilities:

- Reviewing and approving of plans for constructing new dams and for modifying existing dams
- Ensuring quality control during construction,
- Monitoring dams that, if they failed, could cause loss of life, or interrupt public utilities or services





In addition to consulting with KDA, both the Kansas Water Office and the Dam Safety Program were consulted for information concerning Dam and Levee hazards.

The KDA uses a three-tiered classification system to describe the potential risk and severity associated with dam failure, with the tiers relating to potential downstream impact rather than the physical condition of the dam.

- **High Hazard (Class C):** Dams assigned the high hazard-potential classification are those where failure could result in any of the following: extensive loss of life, damage to more than one home, damage to industrial or commercial facilities, interruption of a public utility serving a large number of customers, damage to traffic on high-volume roads that meet the requirements for hazard class C dams or a high-volume railroad line, inundation of a frequently used recreation facility serving a relatively large number of persons, or two or more individual hazards described in hazard class B. Emergency Action Plans (EAPs) are required for all High Hazard Dams.
- **Significant Hazard (Class B):** Dams assigned the significant hazard-potential classification are those dams where failure could endanger a few lives, damage an isolated home, damage traffic on moderate volume roads that meet the requirements for hazard class B dams, damage low-volume railroad tracks, interrupt the use or service of a utility serving a small number of customers, or inundate recreation facilities, including campground areas intermittently used for sleeping and serving a relatively small number of persons.
- **Low Hazard (Class A):** Dams assigned the low hazard-potential classification are those where failure could damage only farm or other uninhabited buildings, agricultural or undeveloped land including hiking trails, or traffic on low-volume roads that meet the requirements for hazard class A dams.

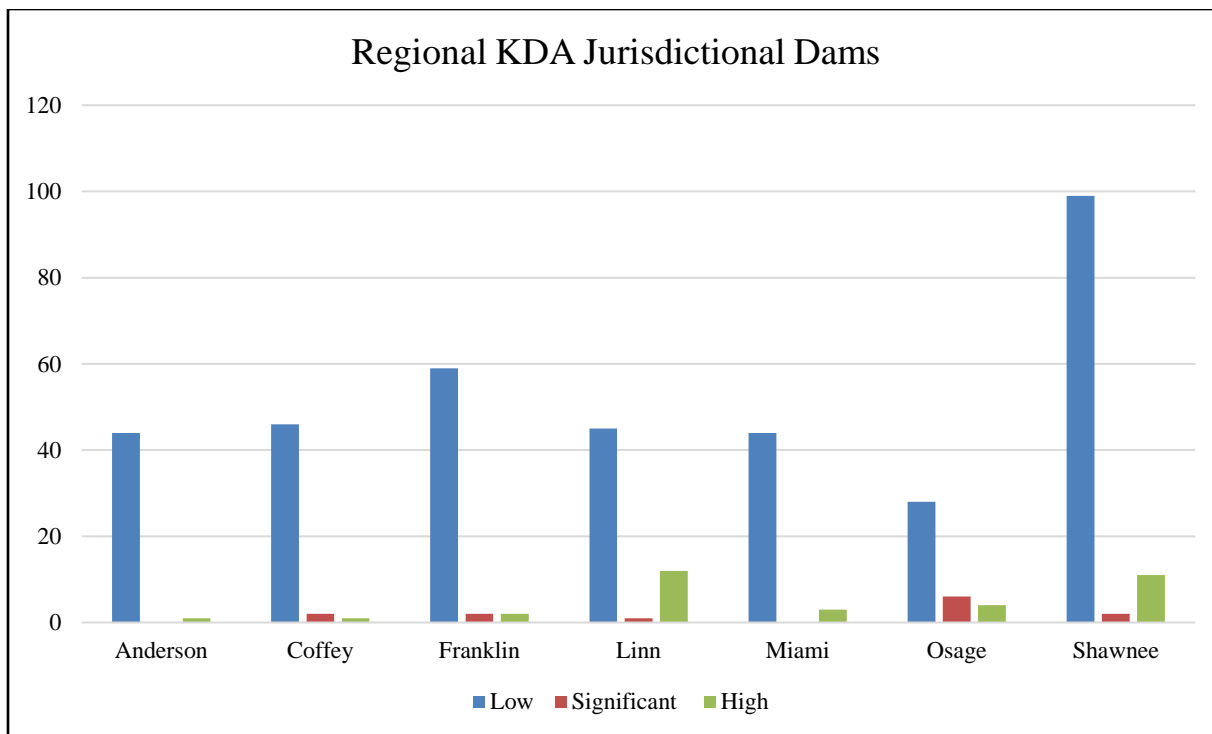
According to the KDA, there are 612 jurisdictional dams in Kansas Region J. These dams are classified as follows.

Table 4.9: Kansas Region J KDA Jurisdictional Dams

County	Low	Significant	High	High Hazard Without EAP
Anderson	44	0	1	0
Coffey	46	2	1	1
Franklin	59	2	2	0
Linn	45	1	12	0
Miami	44	0	3	1
Osage	28	6	4	1
Shawnee	99	2	11	0

Source: KDA





The following is a discussion of select high hazard dams within the region. It is worth noting that a many of these dams did not have inundation data completed, or the information is considered classified.

Cedar Creek Reservoir, Anderson County: The Emergency Action Plan (EAP) for the Cedar Creek Reservoir Dam, dated May 18, 2010, indicates that the Cedar Creek Reservoir is located in unincorporated Anderson County, and is owned and operated by the City of Garnett. The dam is located along Cedar Creek approximately 3.5 miles southwest of the City of Garnett. The dam is a zoned embankment with rock, shale, and earthen fill that was constructed in 1984 by the City of Garnett. The embankment is 70-foot tall, 1,750 feet in length, and impounds a reservoir containing 4,400 acre feet of water at normal pool with a maximum pool capacity of 24,000 acre-feet at the top of the dam. The EAP states that a major flood caused by a sudden breach of the dam could inundate homes located along NW 1700 Road, NW 1800 Road, and along Highway 31. Two paved roads, Paved Road 1 and Highway 31, may also be impacted. There was no indication on the inundation map or from Anderson County Emergency Management that the incorporated City of Garnett would be impacted by flood waters resulting from a breach of the dam.

John Redmond Dam, Coffey County: The dam was constructed in 1959 and completed in 1963, on the Neosho River at river mile 343.7, about three miles north-west of Burlington. The primary purpose of the dam was flood control, with secondary purposes of water supply and recreation.

Council Grove Dam, Coffey County: The dam is located one-mile northwest of Council Grove in Morris County. The rolled earth-fill embankment is 6,500 feet long and rises 96 feet above the stream bed. A roadway crosses the embankment and spillway. The dam was constructed for flood control, water supply, water quality control, and recreation.

Melvorn Dam, Osage County: This high hazard dam on Melvern Lake is owned and maintained by the USACE. The lake is on the Marais des Cygnes River at river mile 175.4 , about four miles west of





Melvern, with the dam located on the eastern edge. The dam is 9,650 feet long and 105 feet high, constructed of rolled earth fill and two hydraulically operated gates. Farmland, and approximately ten associated structures surround this dam.

Pomona Dam, Osage County: This high hazard dam is on Pomona Lake and maintained by the USACE. The lake is on 110 Mile Creek with the dam located on the southeast edge of the lake. The dam is 7,750 feet long and 83 feet high. The dam is largely surrounded by open space and farmland.

Osage City Dam, Osage County: This high hazard dam, owned and operated by the City of Osage, was built in 1940 and is located to the south of Osage City. The dam is 1,655 feet long and 29 feet high with a maximum discharge of 7,882 acre feet. According to the EAP there are three homes and a significant amount of farmland in the floodplain.

City of Overbrook Dam, Osage County: This high hazard dam, located on Overbrook City Lake, is owned and operated by the City of Overbrook. The EAP for the dam indicated there are no structures that would be affected by floodwaters from a breach or failure. The dam is 200 feet long and 22 feet high.

Lake Shawnee Dam, Shawnee County: This dam is owned and operated by Shawnee County and was constructed in 1937. An EAP for this dam was unavailable for review.

Lake Sherwood Dam, Shawnee County: This dam is subject to state regulations and is owned and operated by the Sherwood Lake Club and was constructed in 1964. KDA has determined that “due to gaps between the joints in the primary spillway pipe, the toe drainpipes that connect directly to the primary spillway pipe, and the hydraulic inadequacy of the dam should all be addressed as soon as possible.” As such, the KDA has stated in a letter addressed April 10, 2009 that “Because of these concerns I cannot consider this dam “compliant.””

City of Topeka (unnamed dam), Shawnee County: This dam is owned and operated by the City of Topeka and was constructed in 1977. An EAP for this dam was unavailable for review.

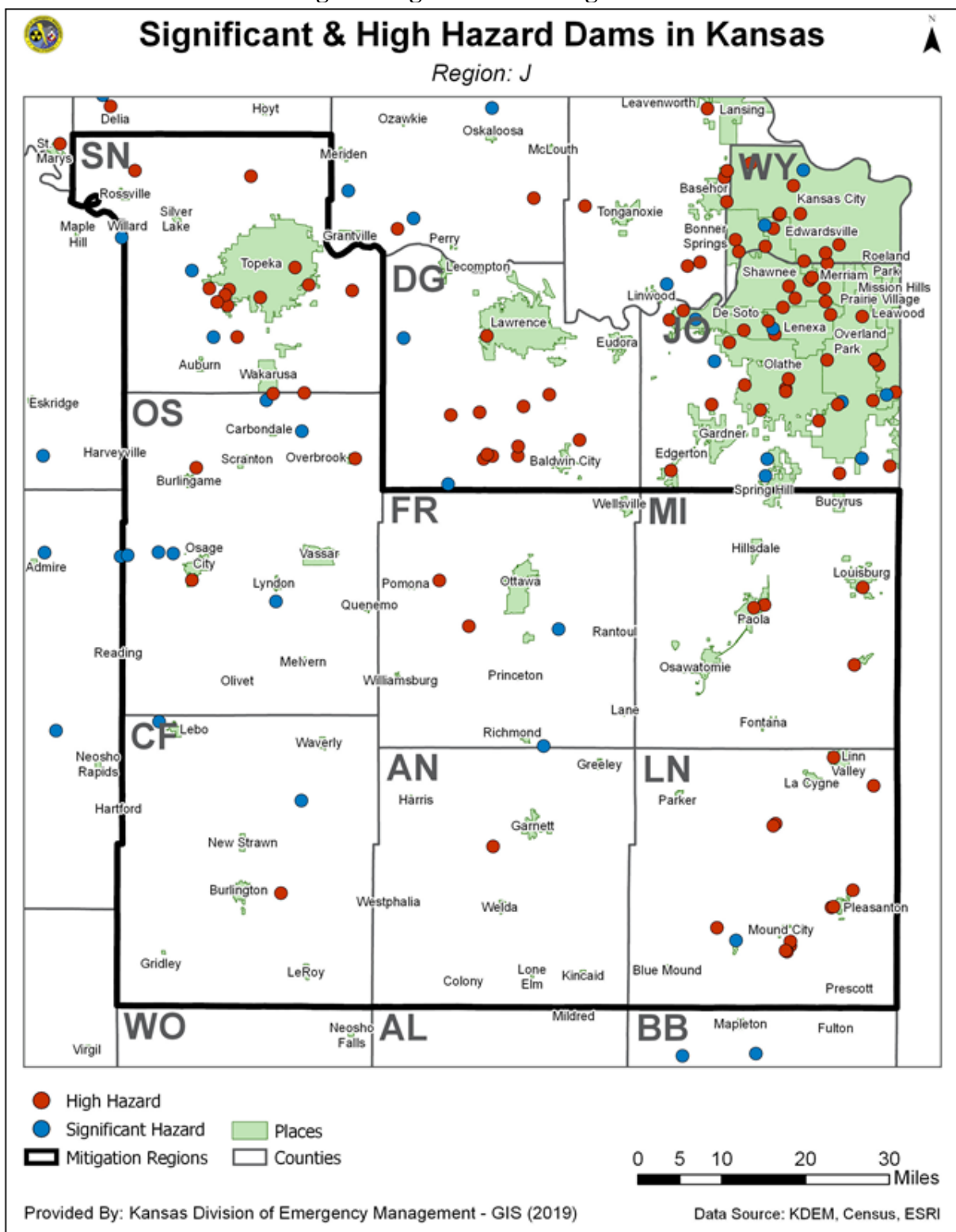
The following maps shows dam locations in participating counties and, if available, potentially impacted cities within east-central Kansas. In addition, available location and/or inundation maps for high hazard dams within the region have been included. Please note that information relate dto dams may have been classified and unable for review.

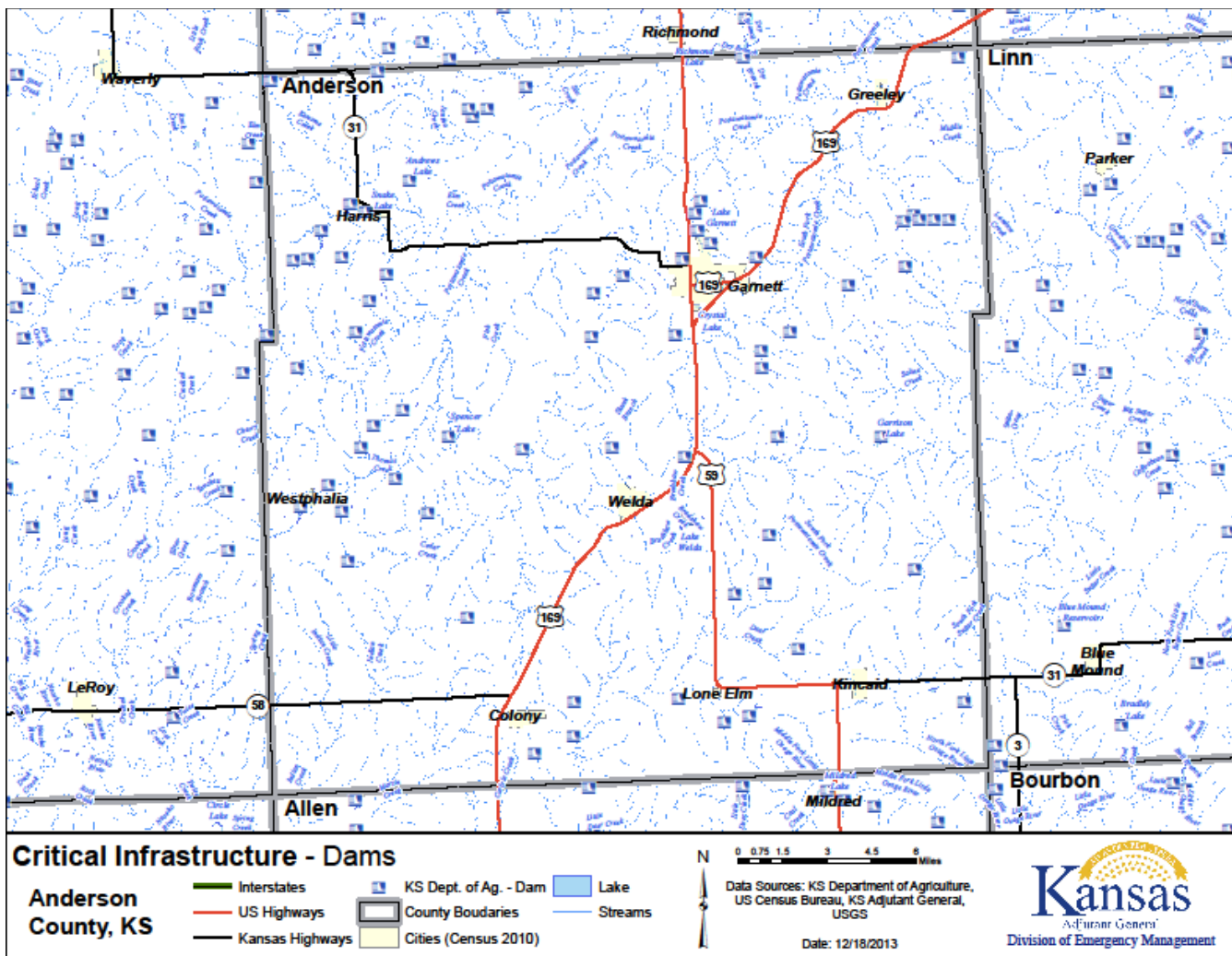
The following maps show all identified dams within Kansas Region J with a Significant or High classification, and available inundation and location mapping.





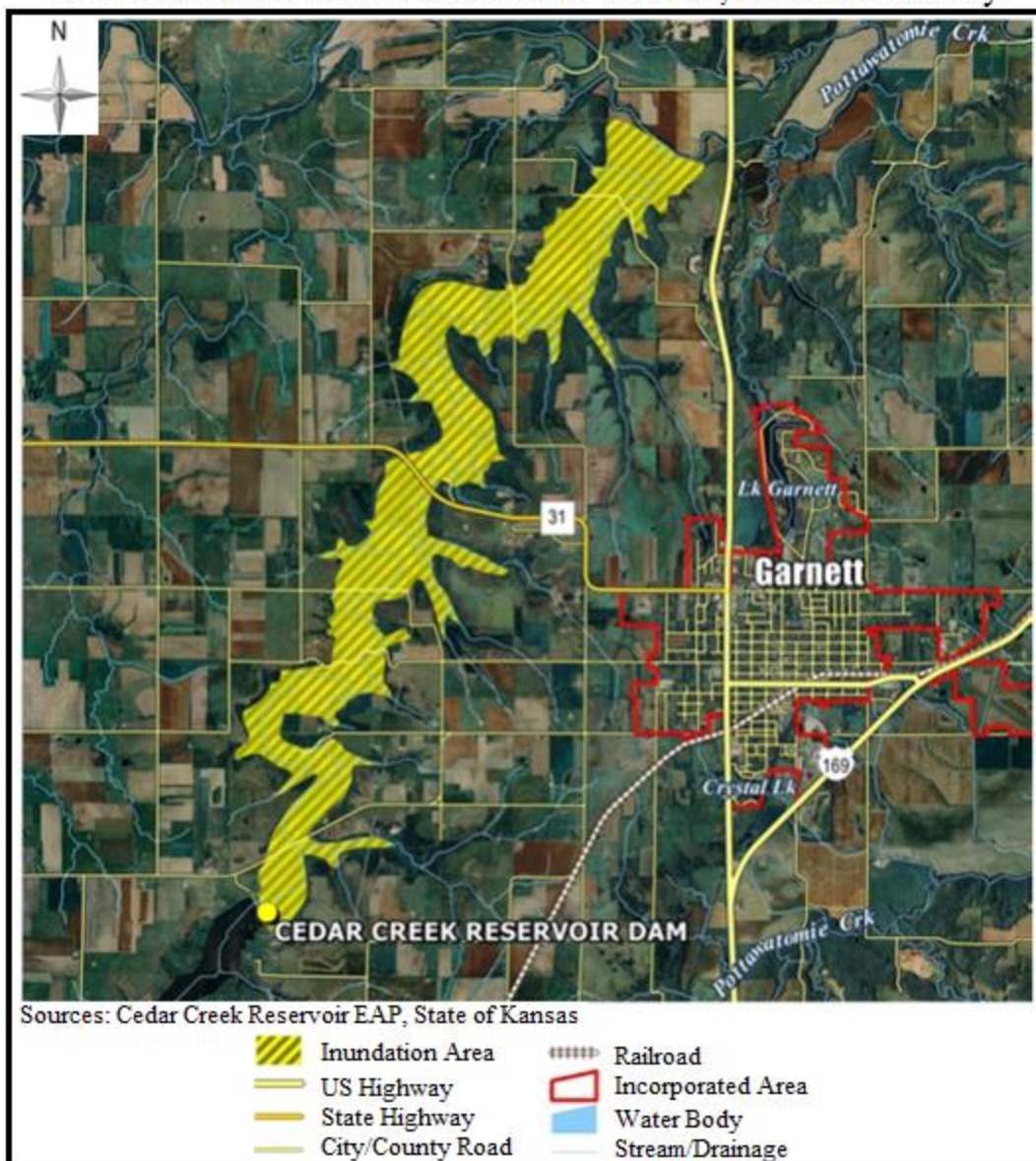
Kansas Region J Significant and High Hazard Dams

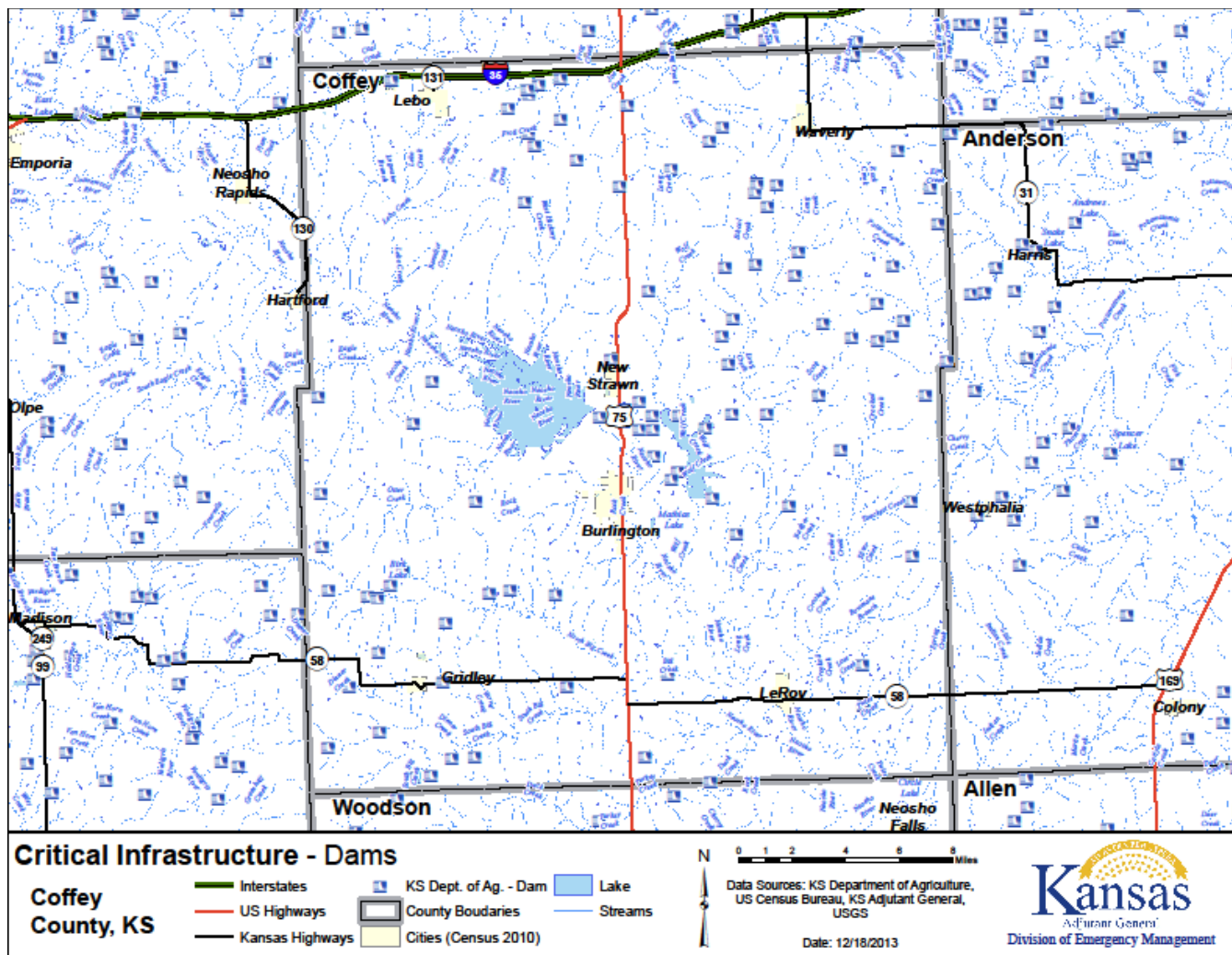






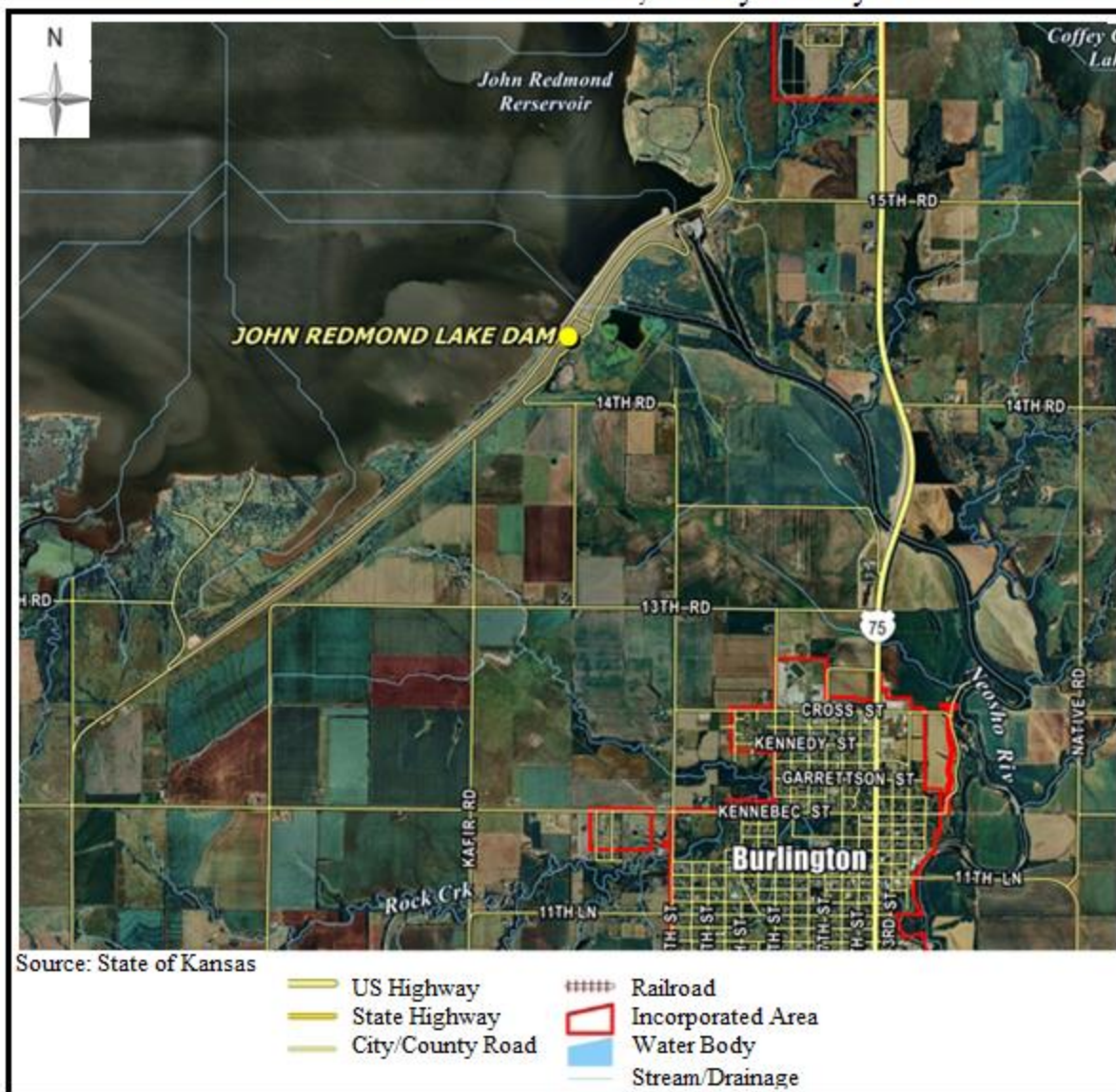
Cedar Creek Reservoir Dam Inundation Area, Anderson County







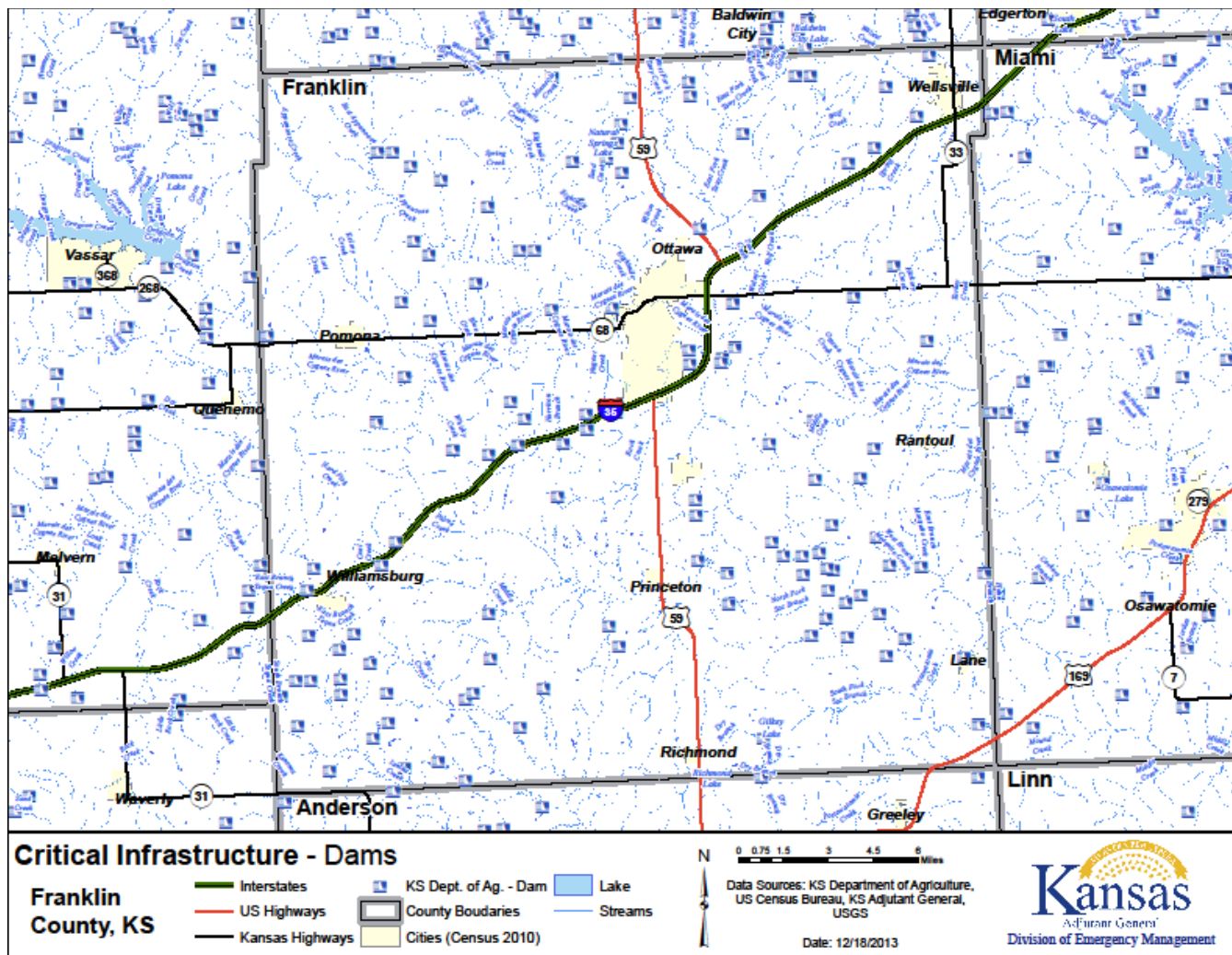
John Redmond Lake Dam, Coffey County

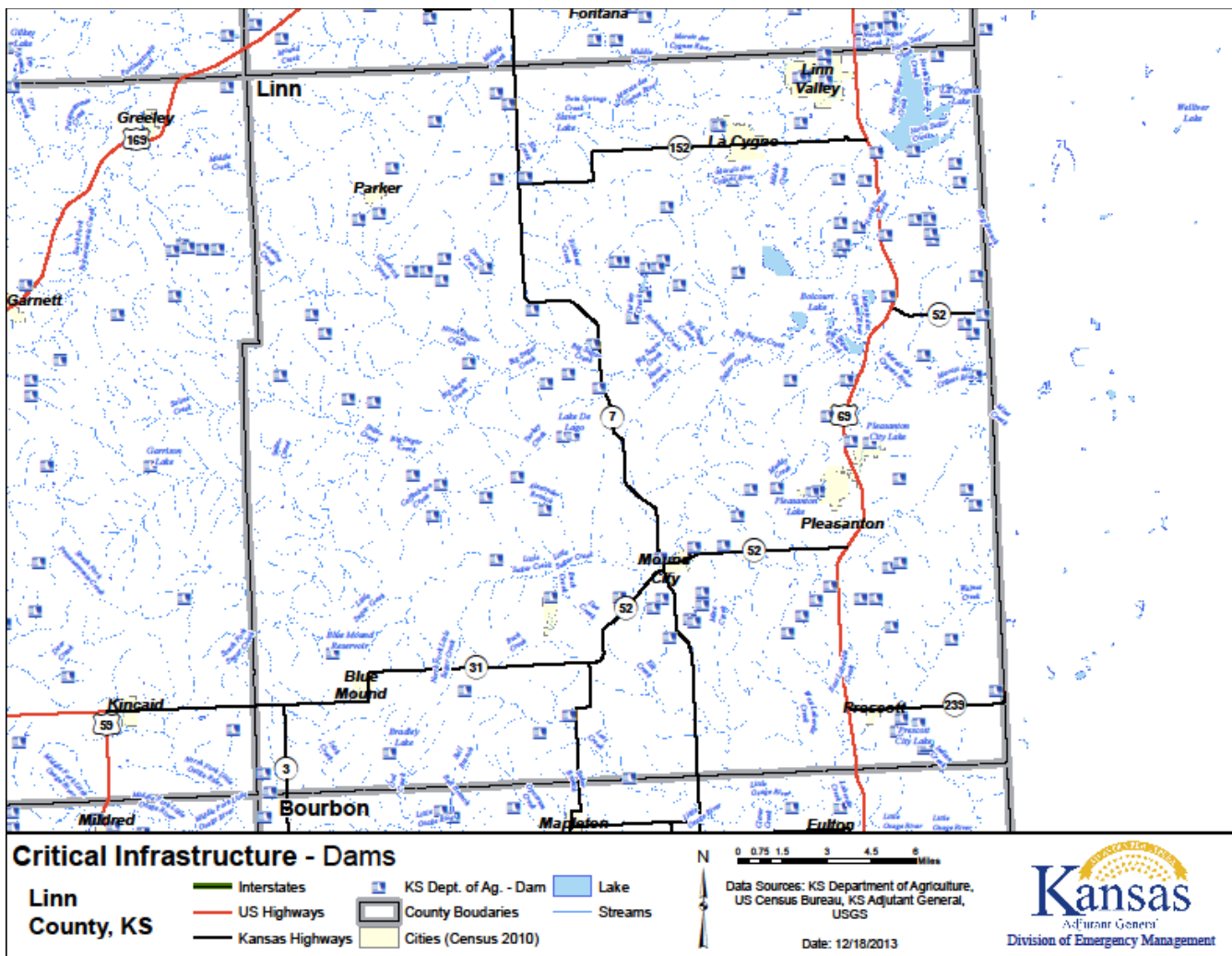




Wolf Creek Cooling Unit #1 Dam, Coffey County

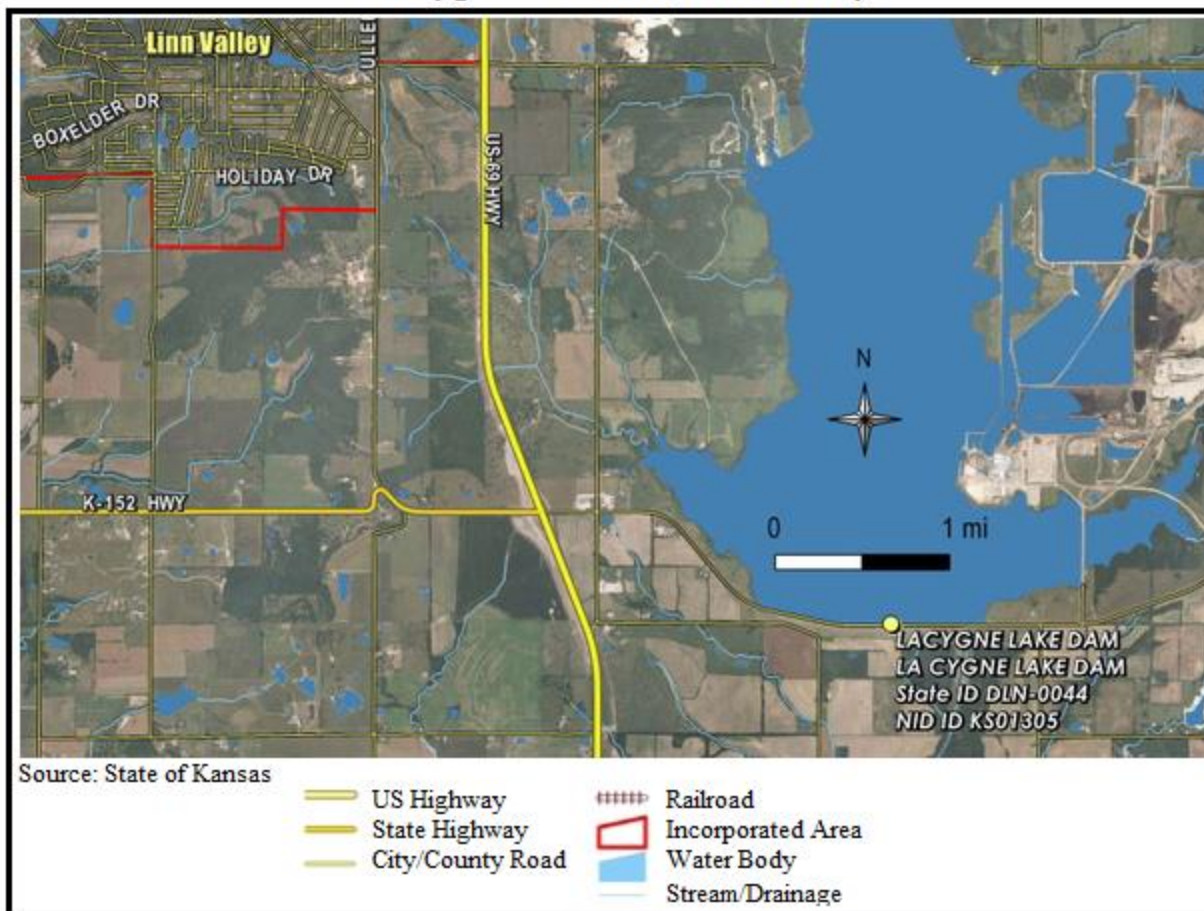






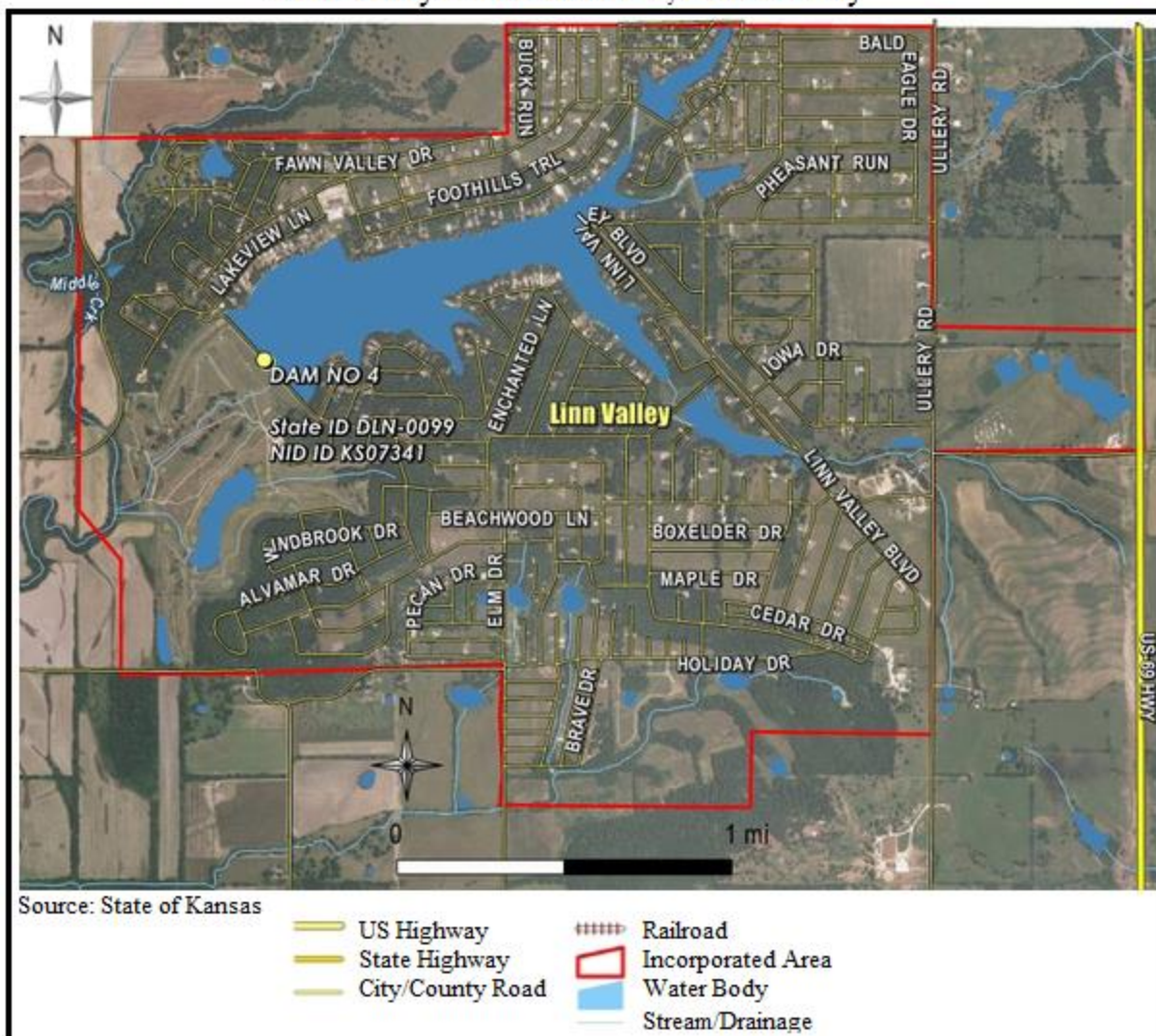


La Cygne Lake Dam, Linn County



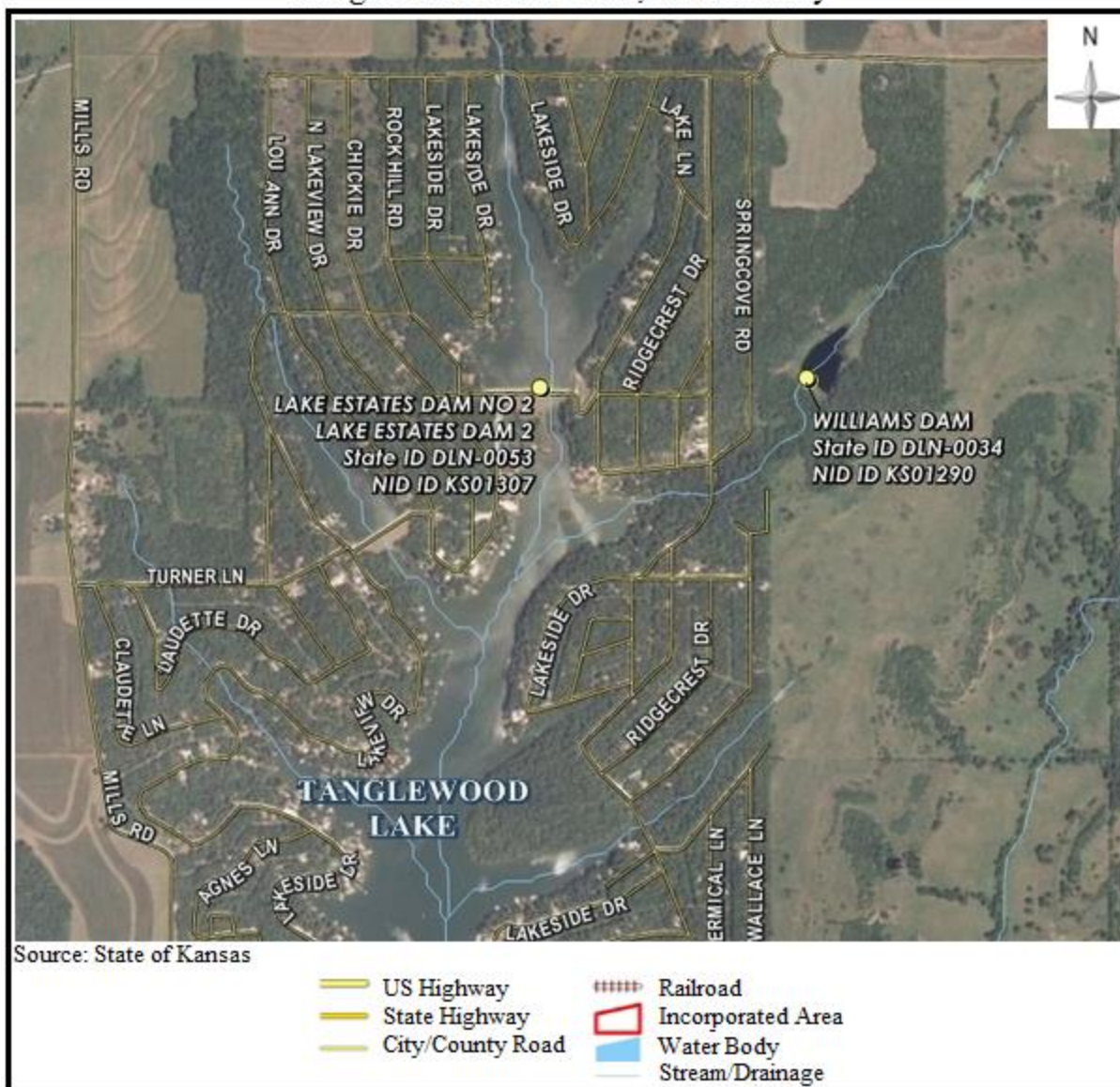


Linn Valley Dam Number 4, Linn County



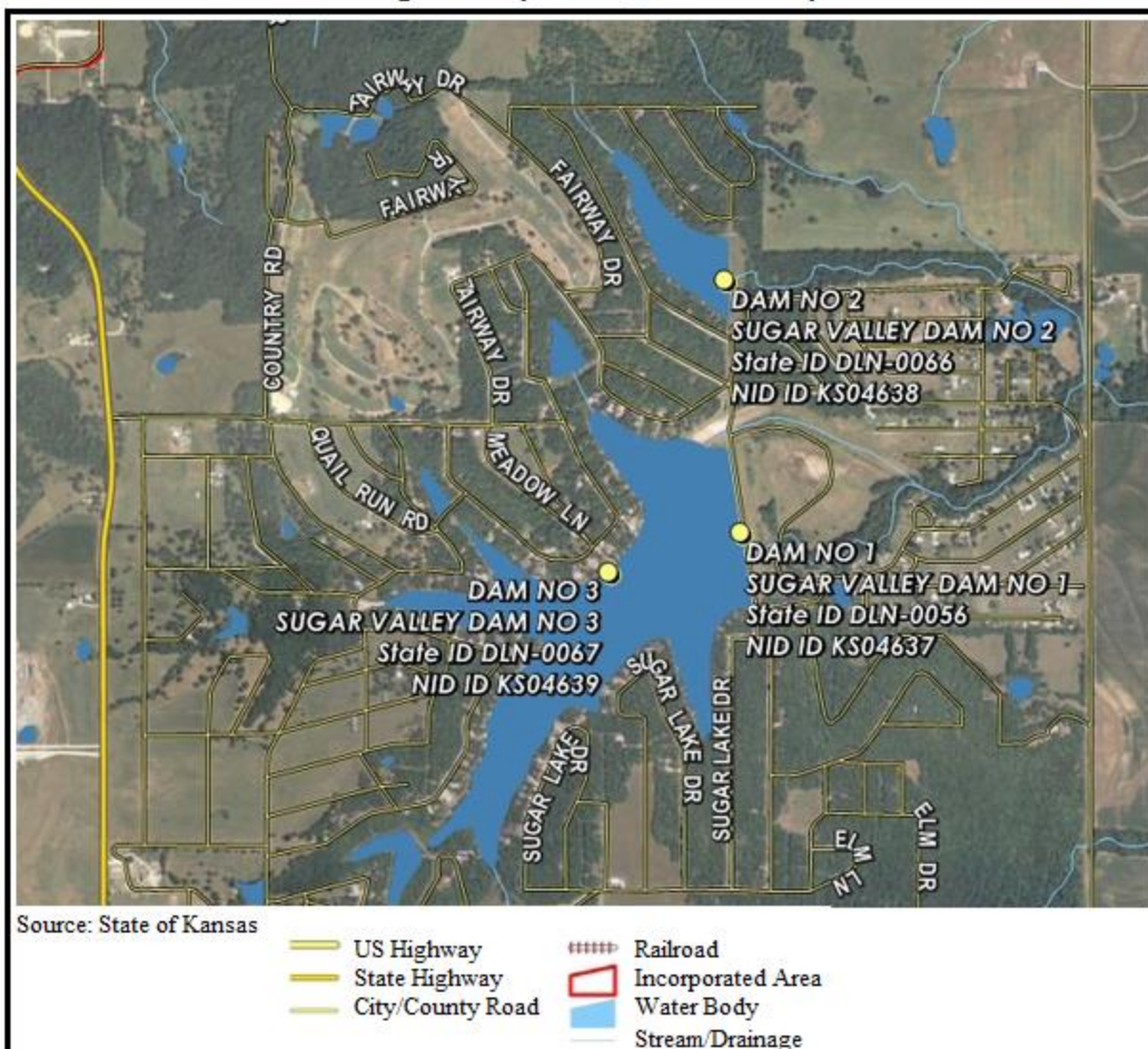


Tanglewood Lake Dams, Linn County



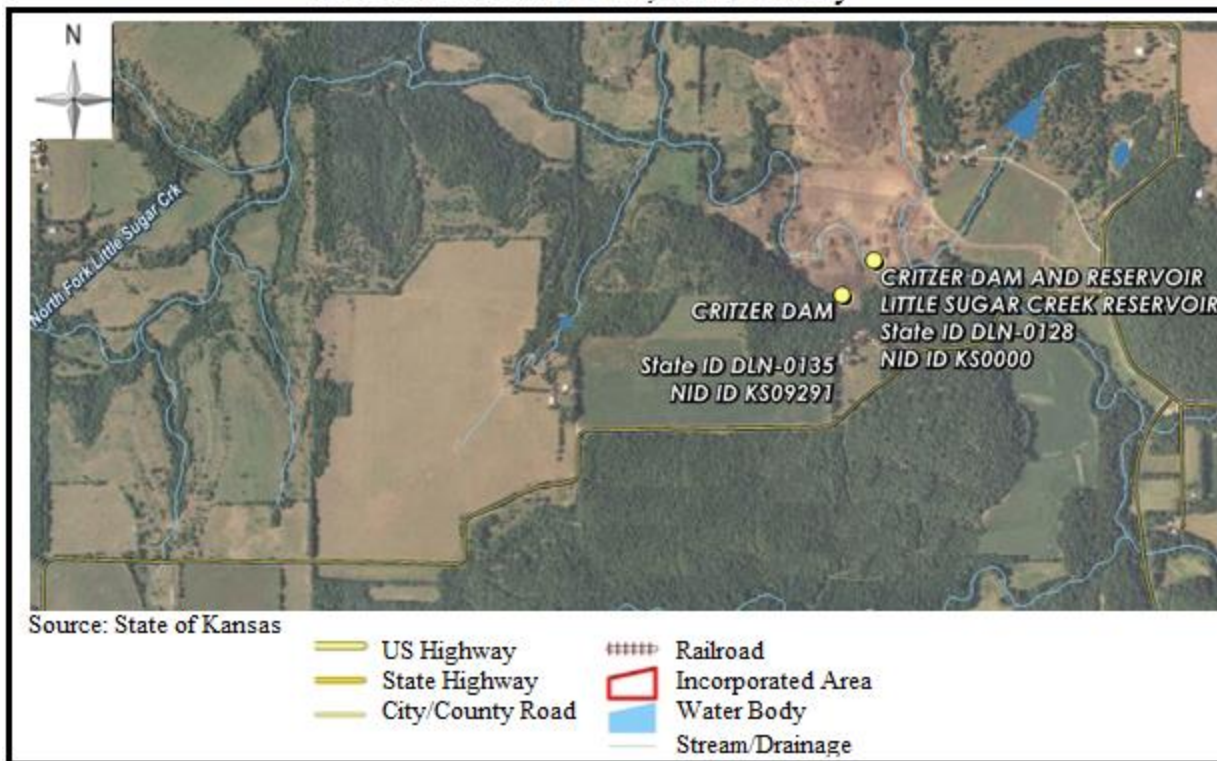


Sugar Valley Dams, Linn County



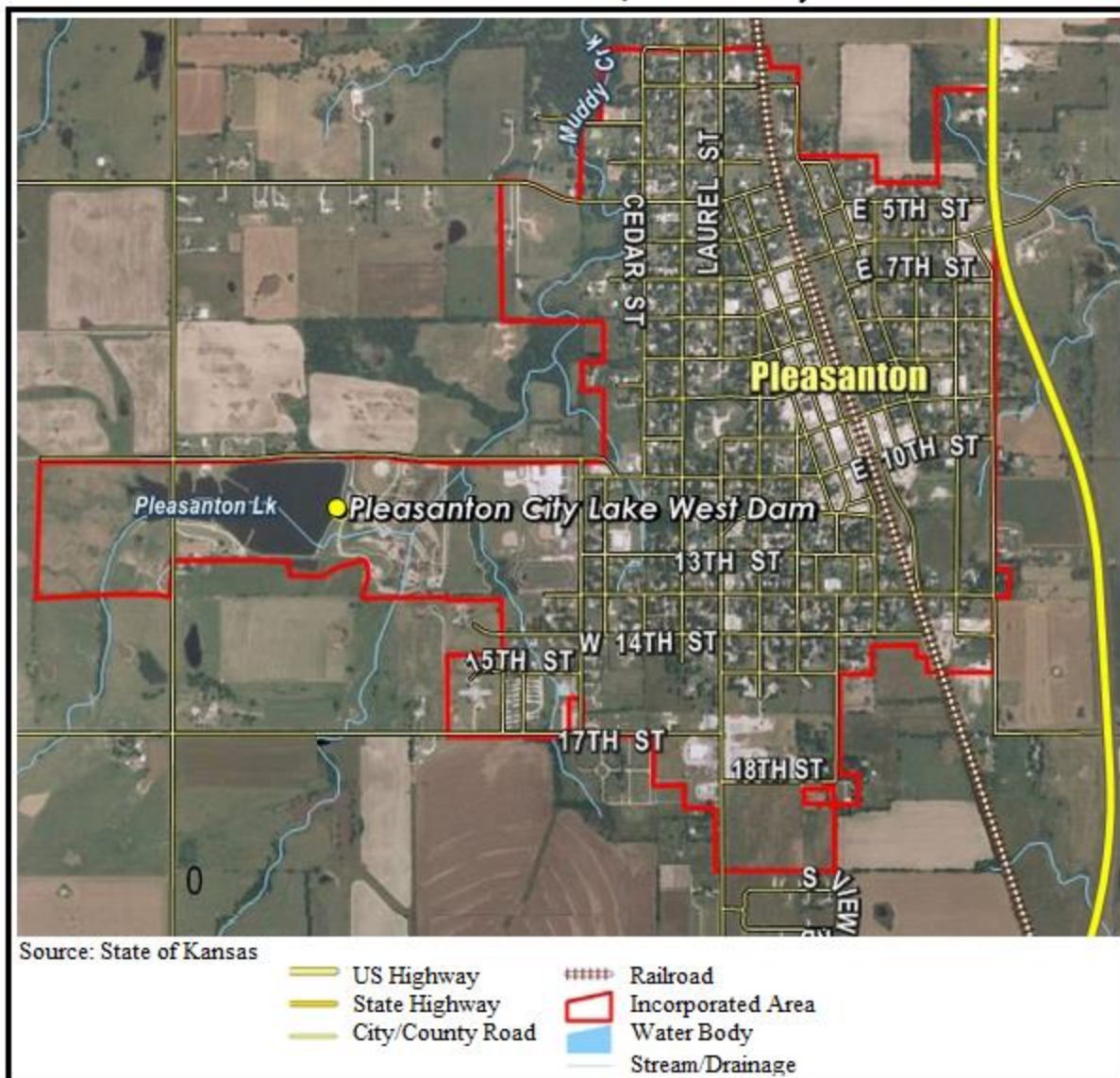


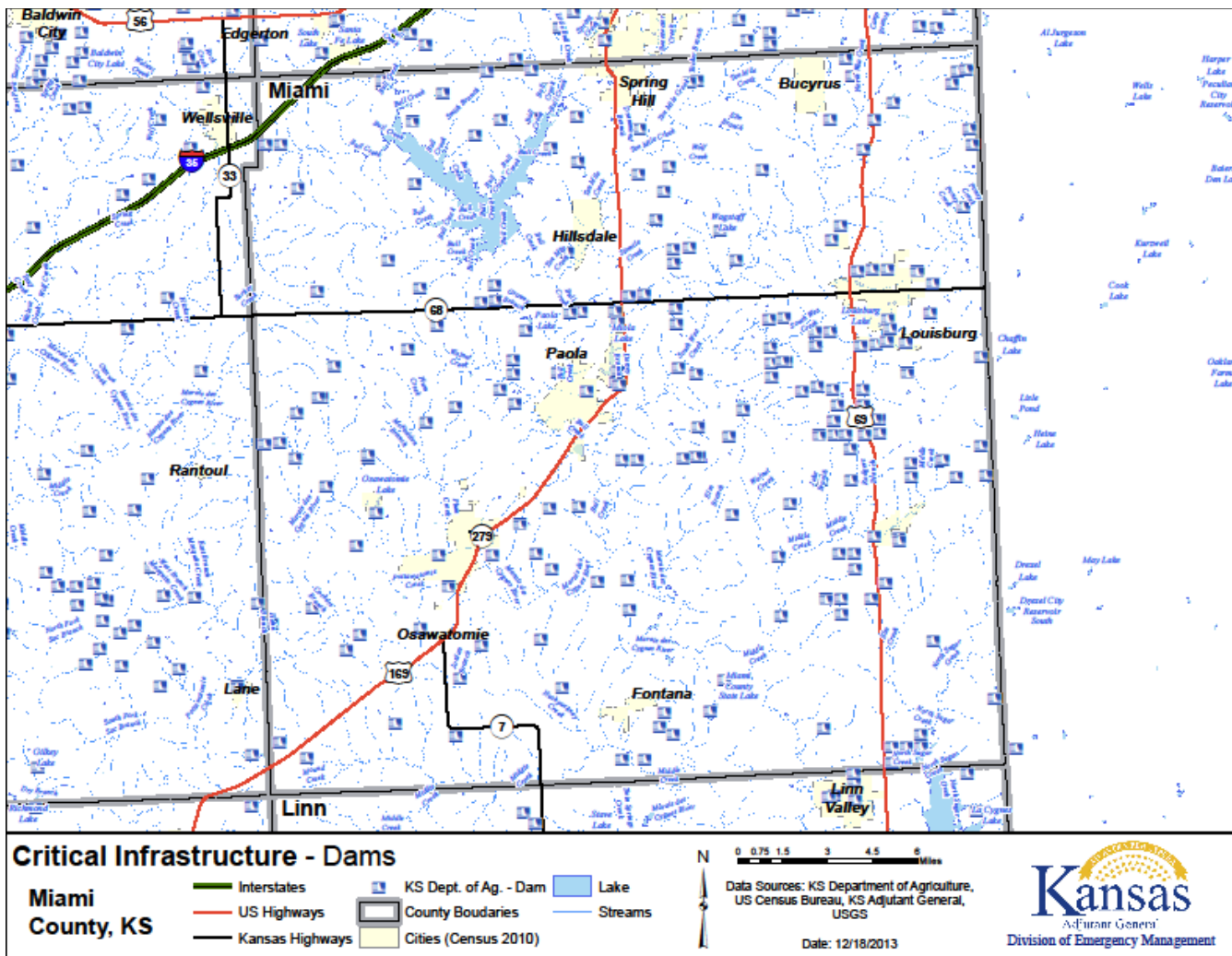
Critzer Reservoir Dam, Linn County





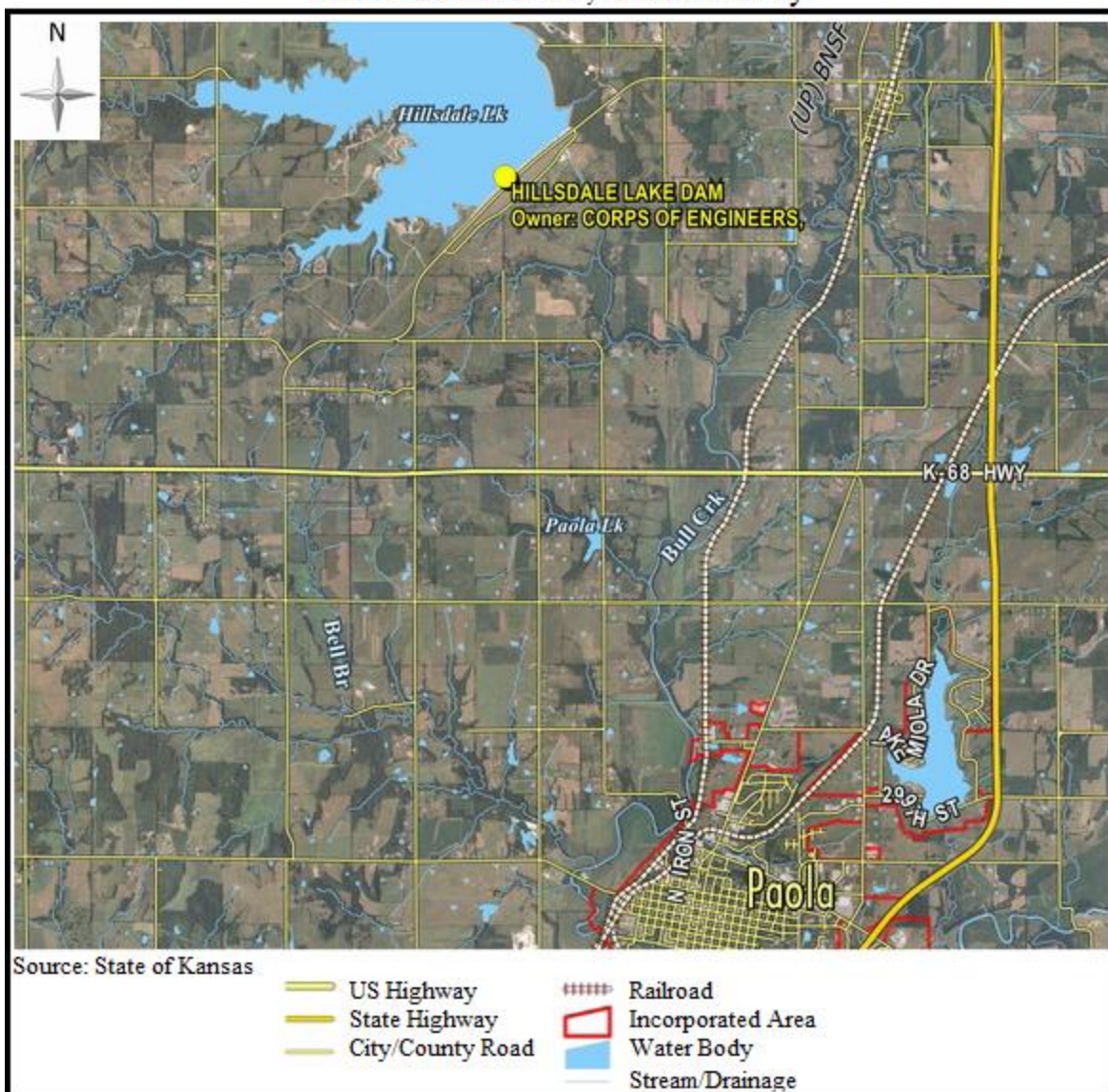
Pleasanton Lake Dam, Linn County





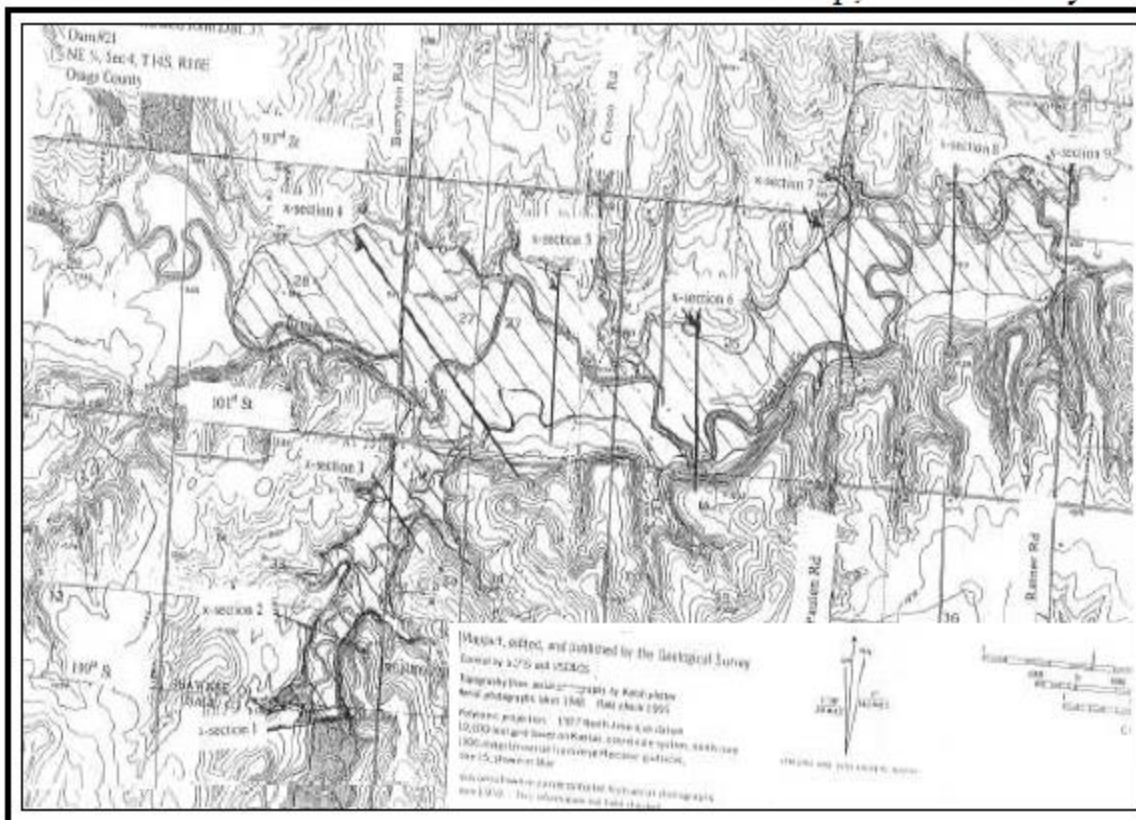


Hillsdale Lake Dam, Miami County



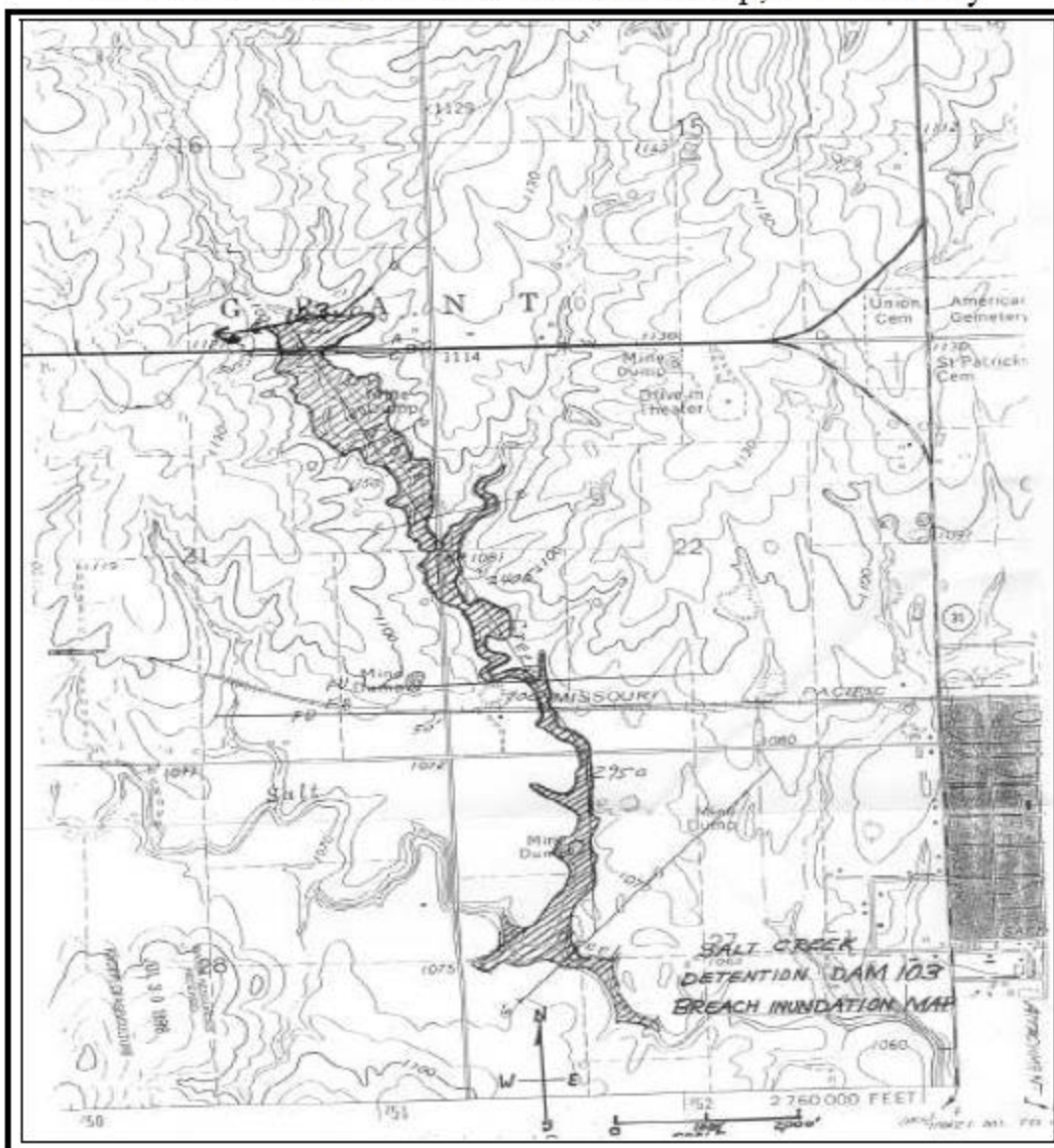


Wakarusa Watershed Dam Number 21 Inundation Map, Miami County



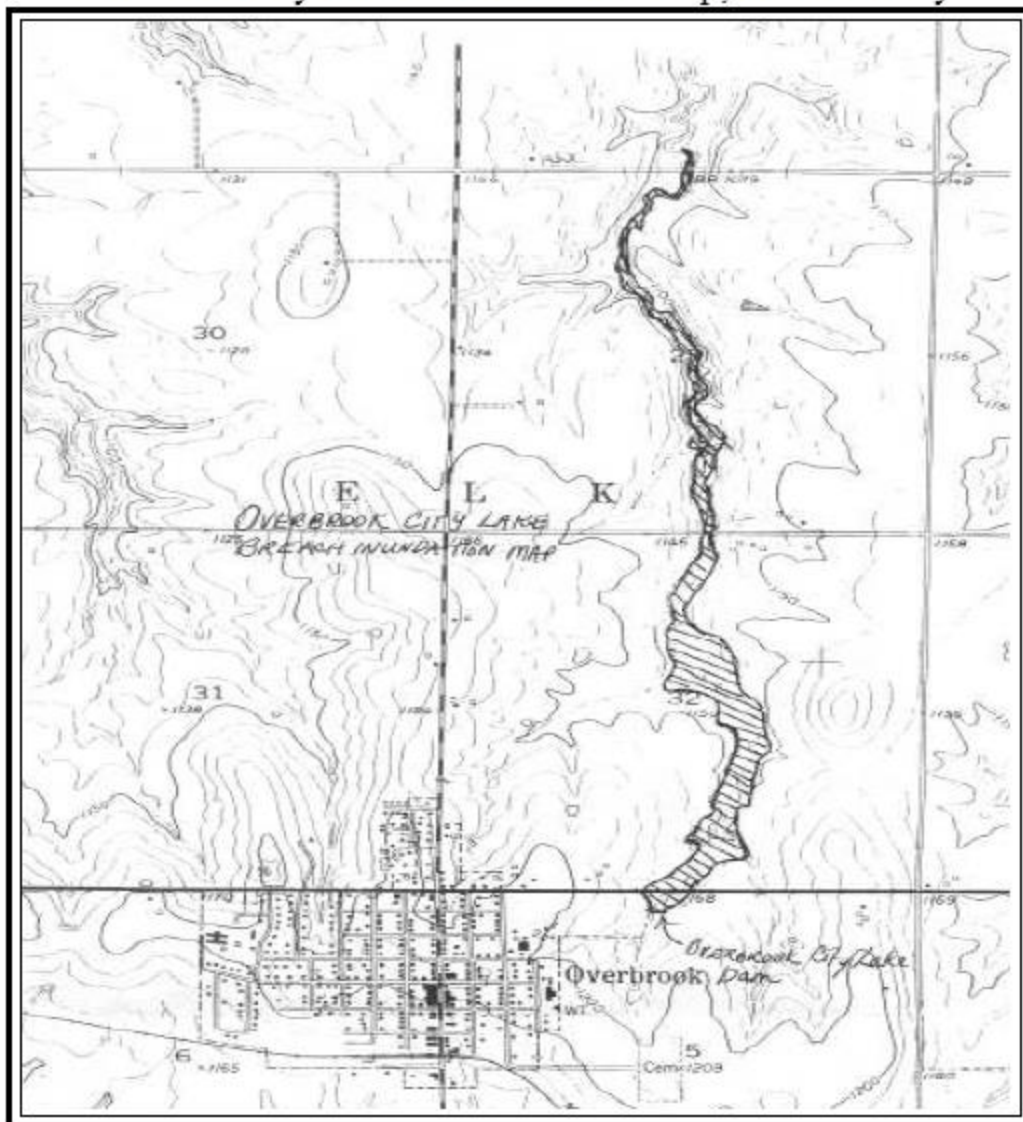


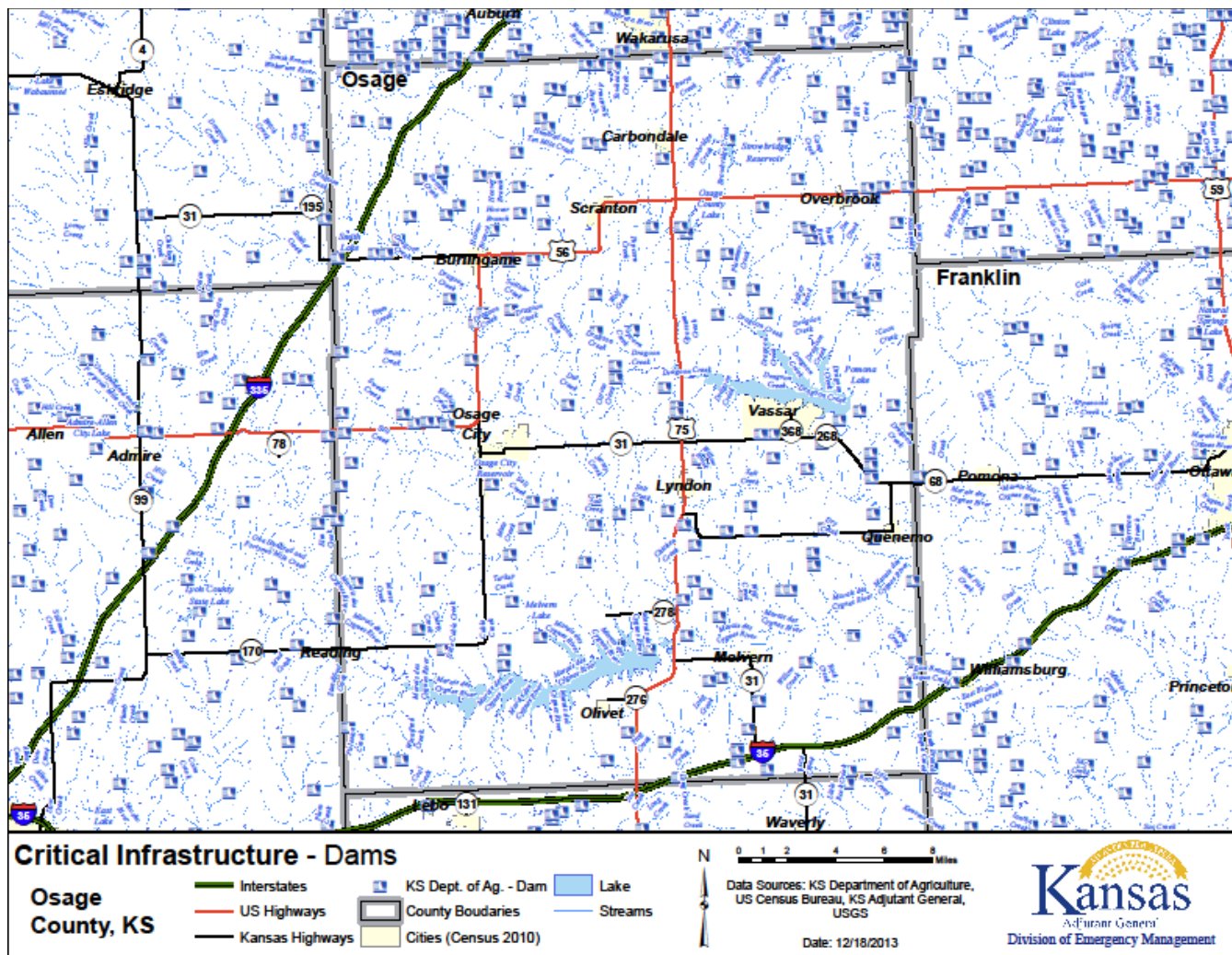
Salt Creek Detention Dam 103 Inundation Map, Miami County





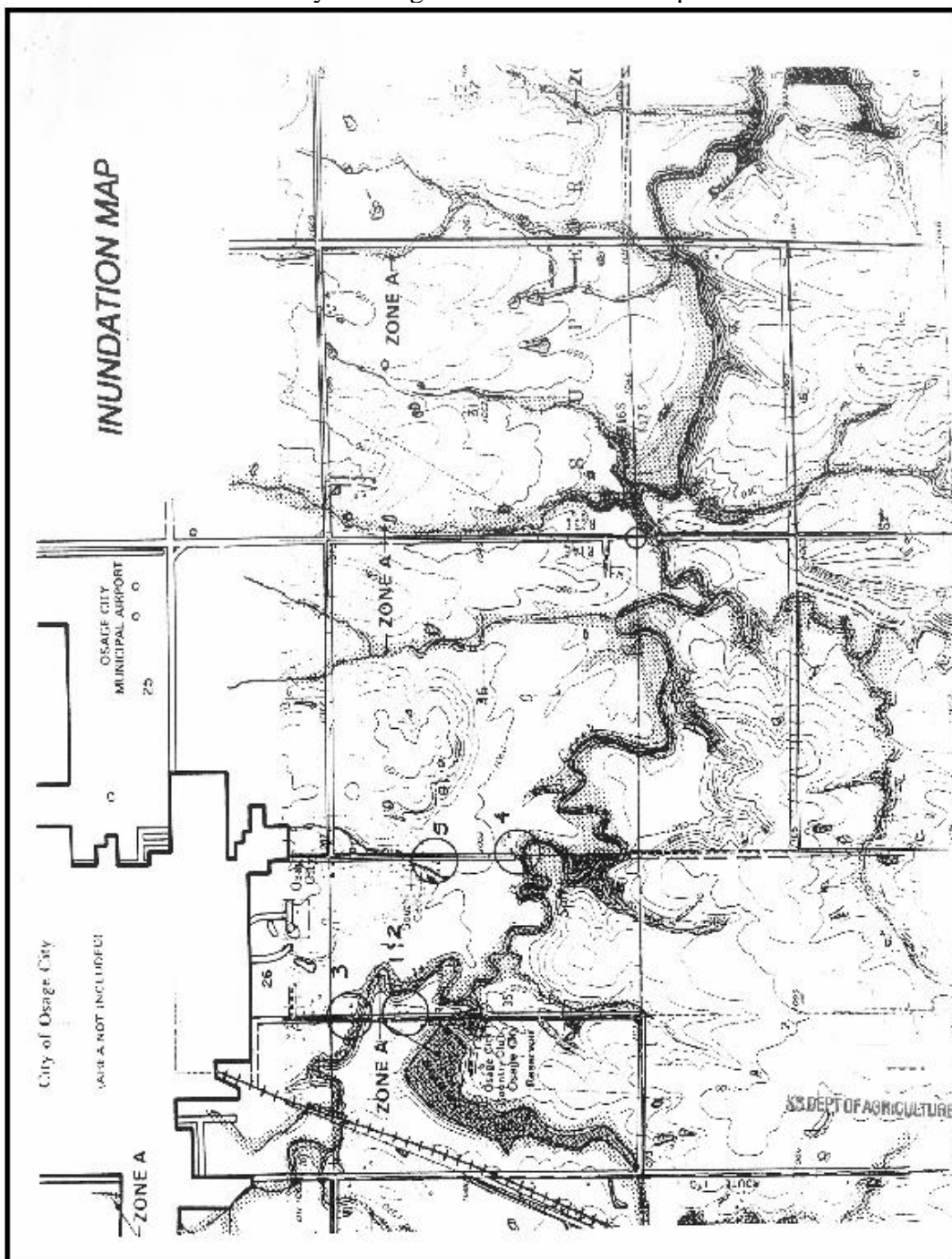
Overbrook City Lake Dam Inundation Map, Miami County

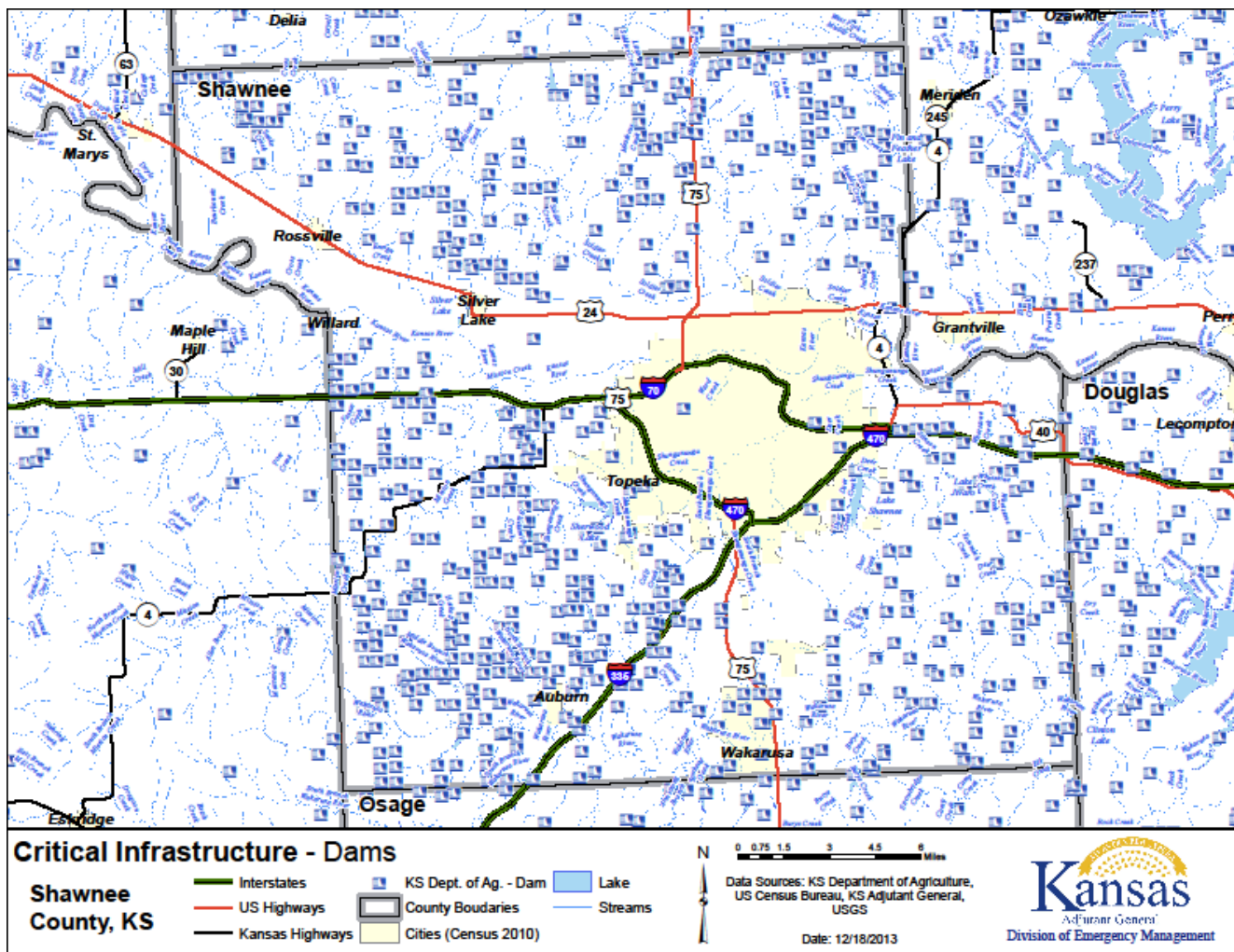






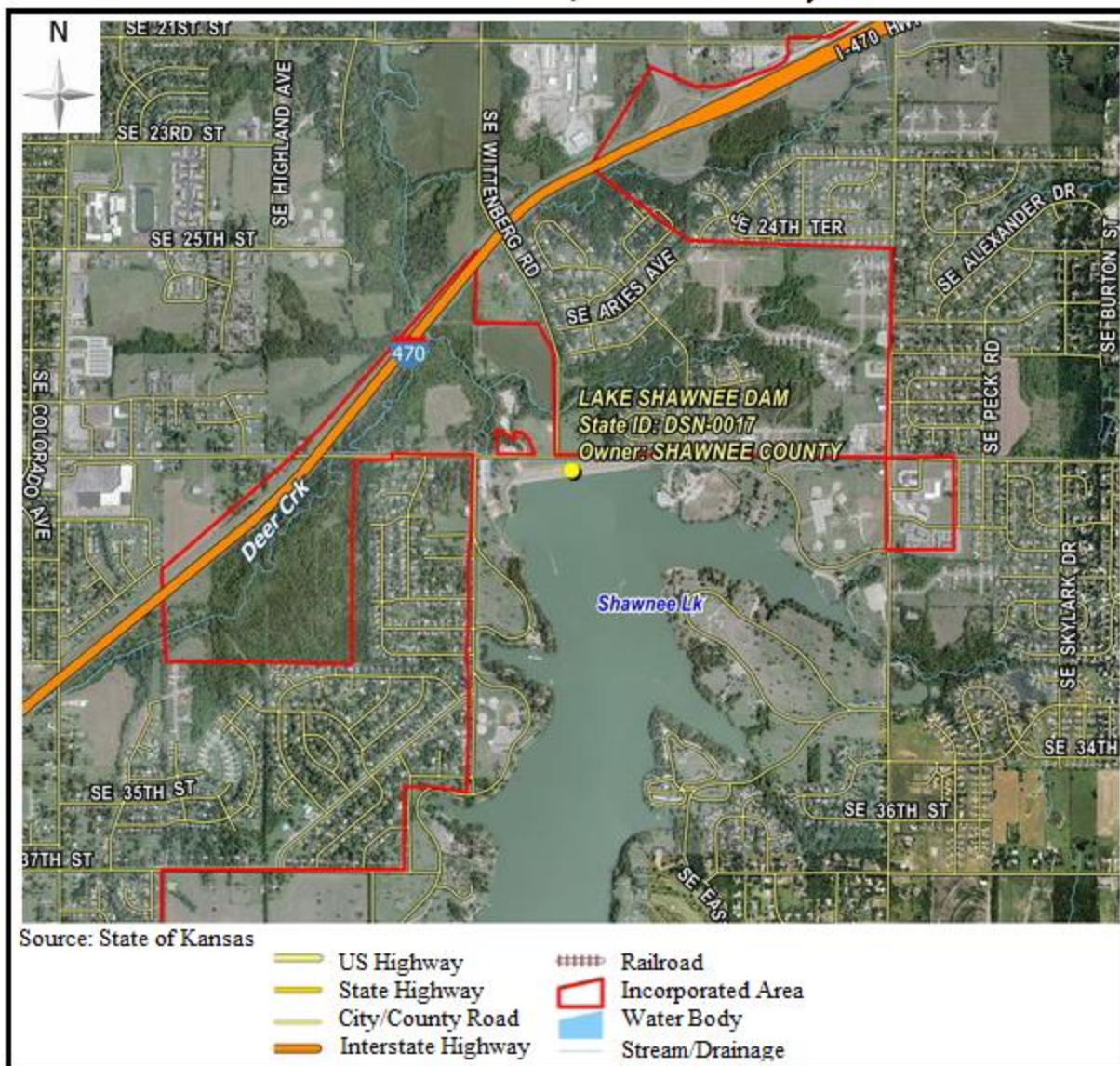
City of Osage Dam Inundation Map





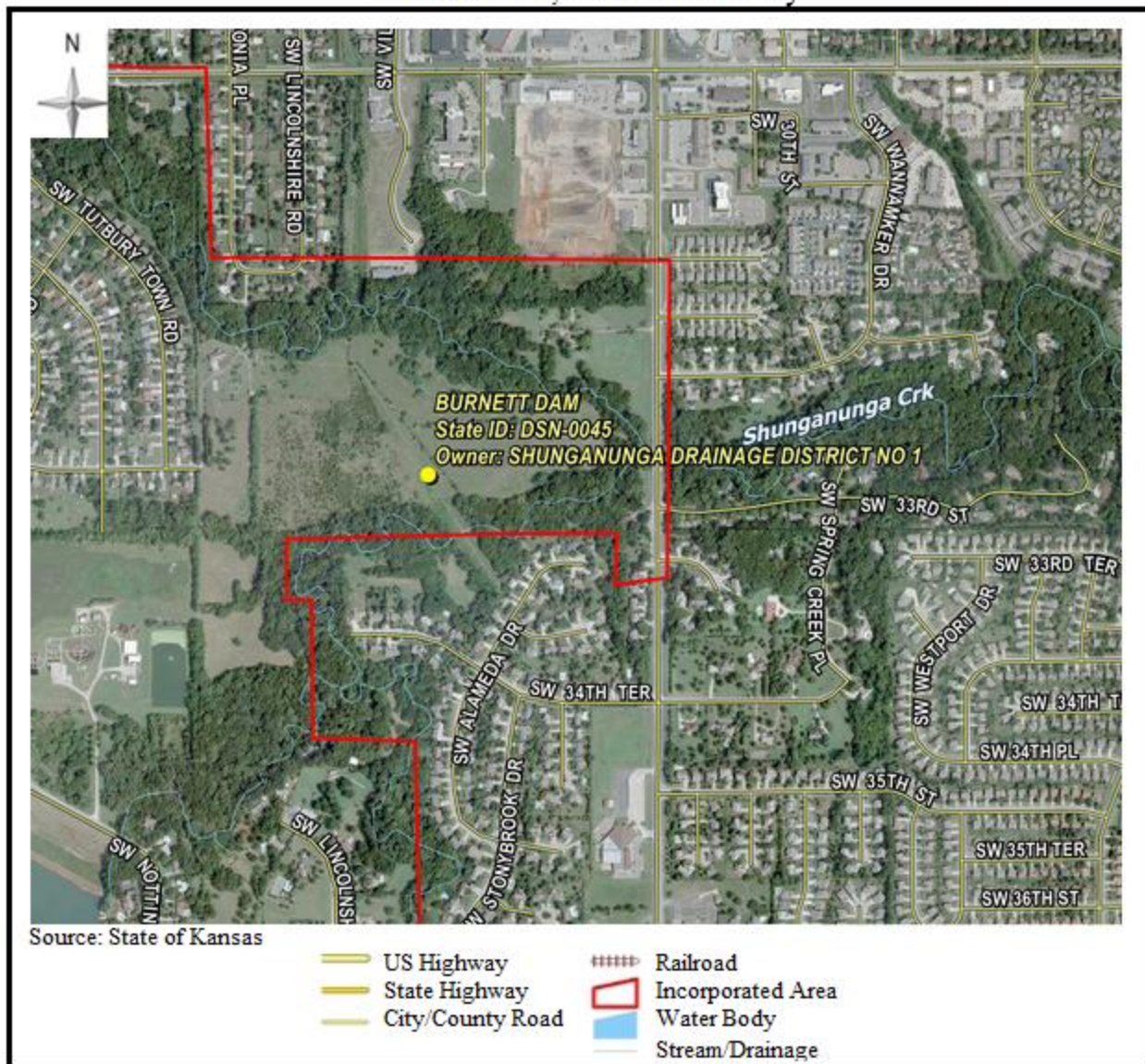


Lake Shawnee Dam, Shawnee County



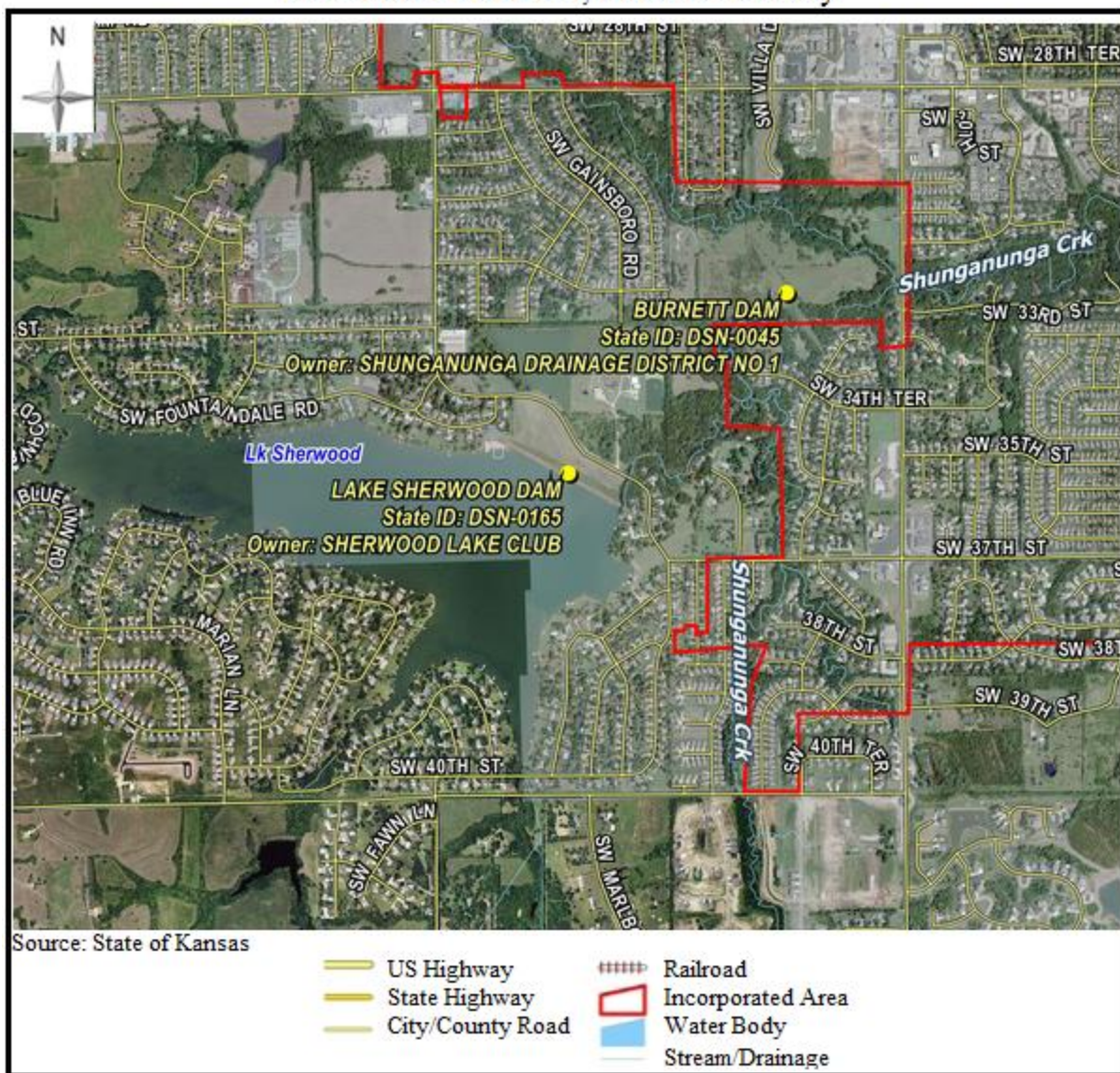


Burnett Dam, Shawnee County



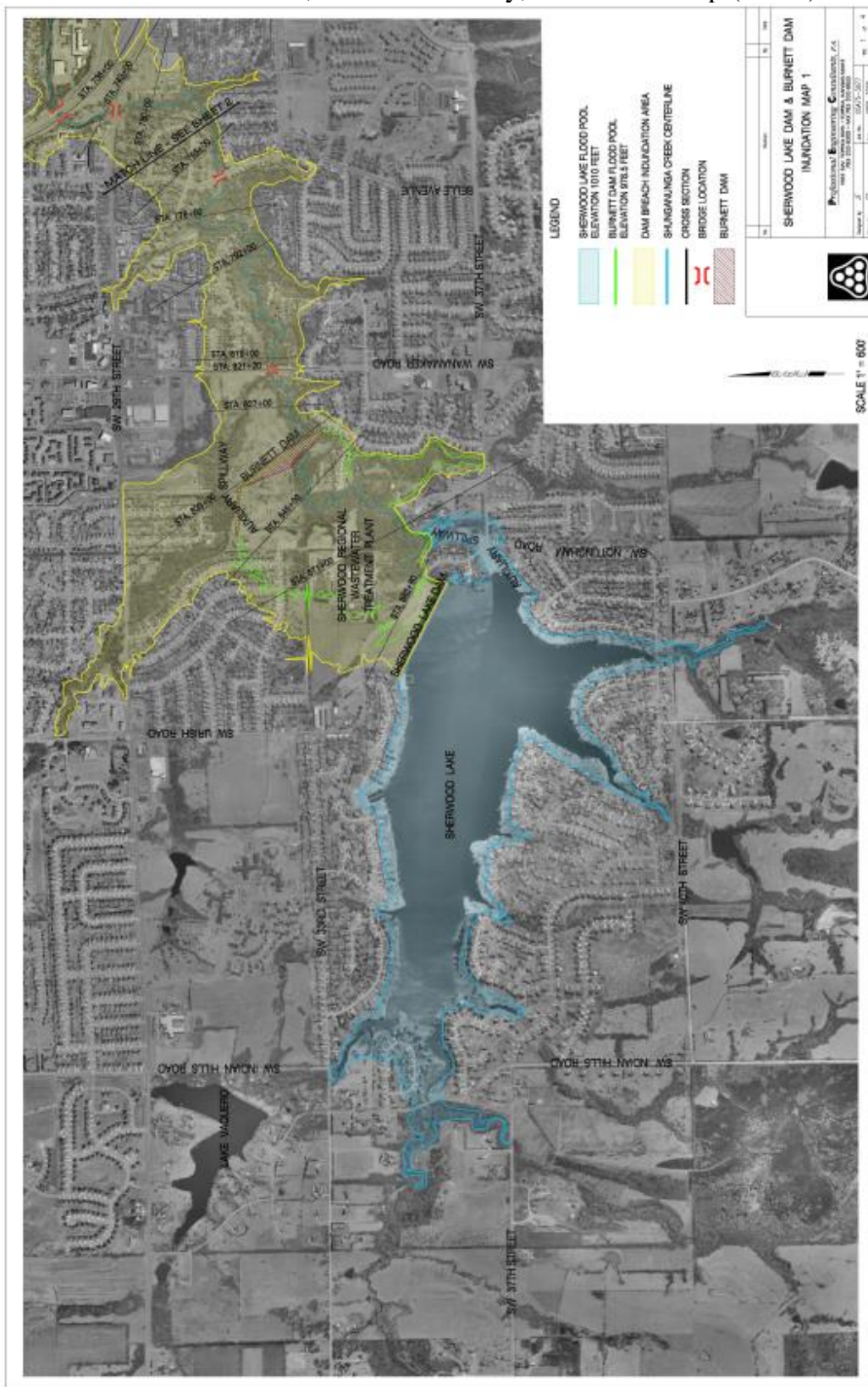


Lake Sherwood Dam, Shawnee County



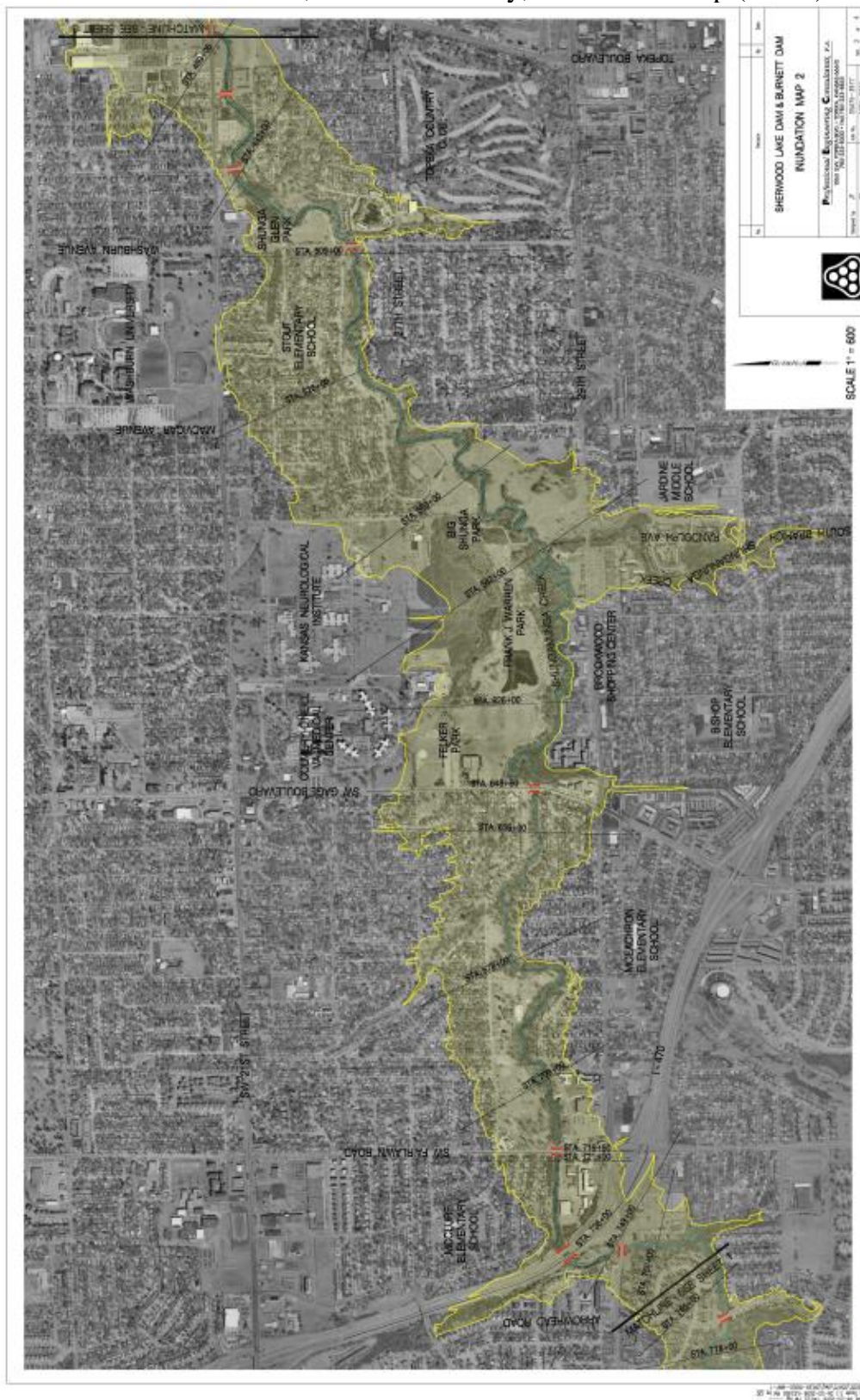


Lake Sherwood Dam, Shawnee County, Inundation Map (1 of 4)



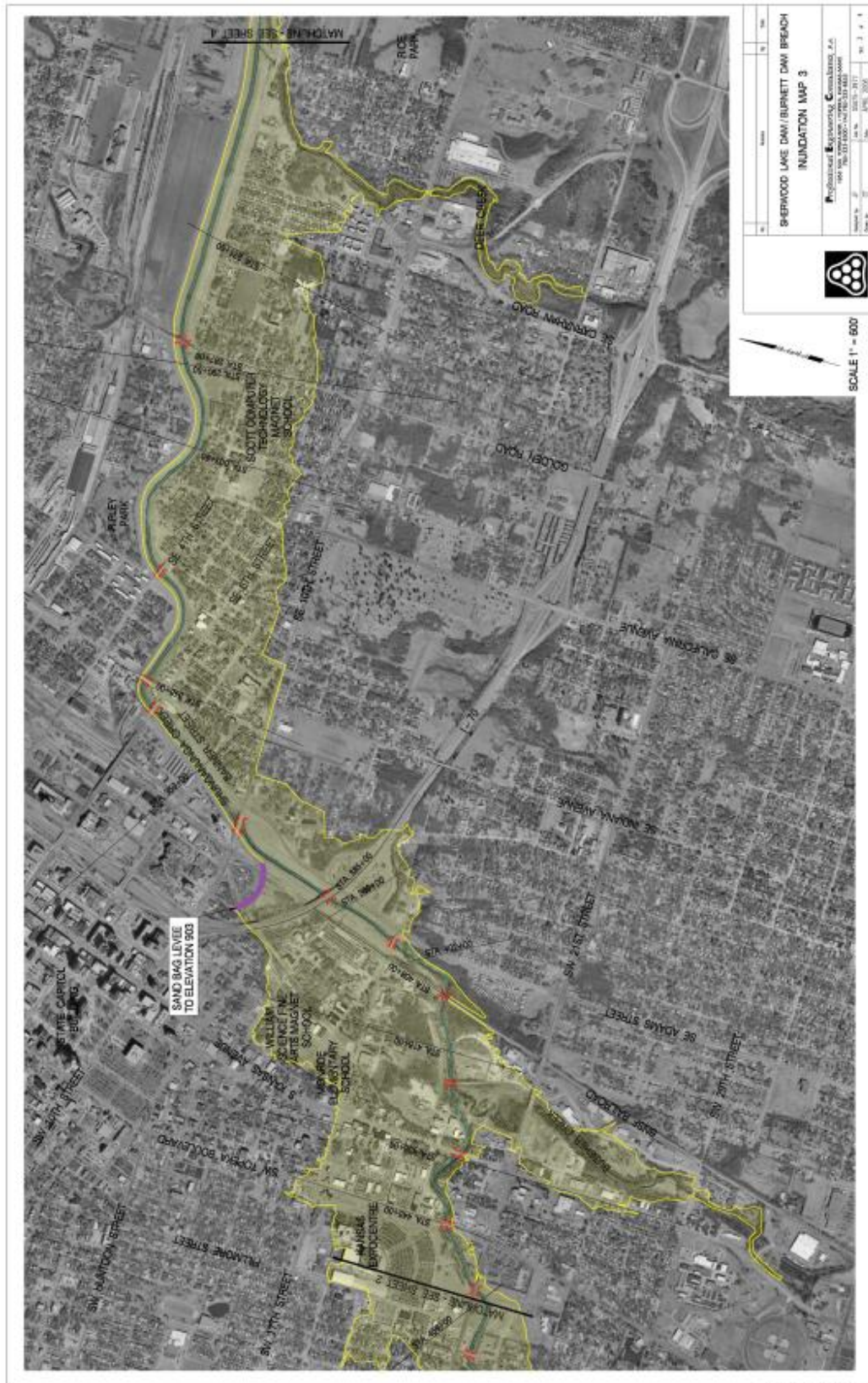


Lake Sherwood Dam, Shawnee County, Inundation Map (2 of 4)



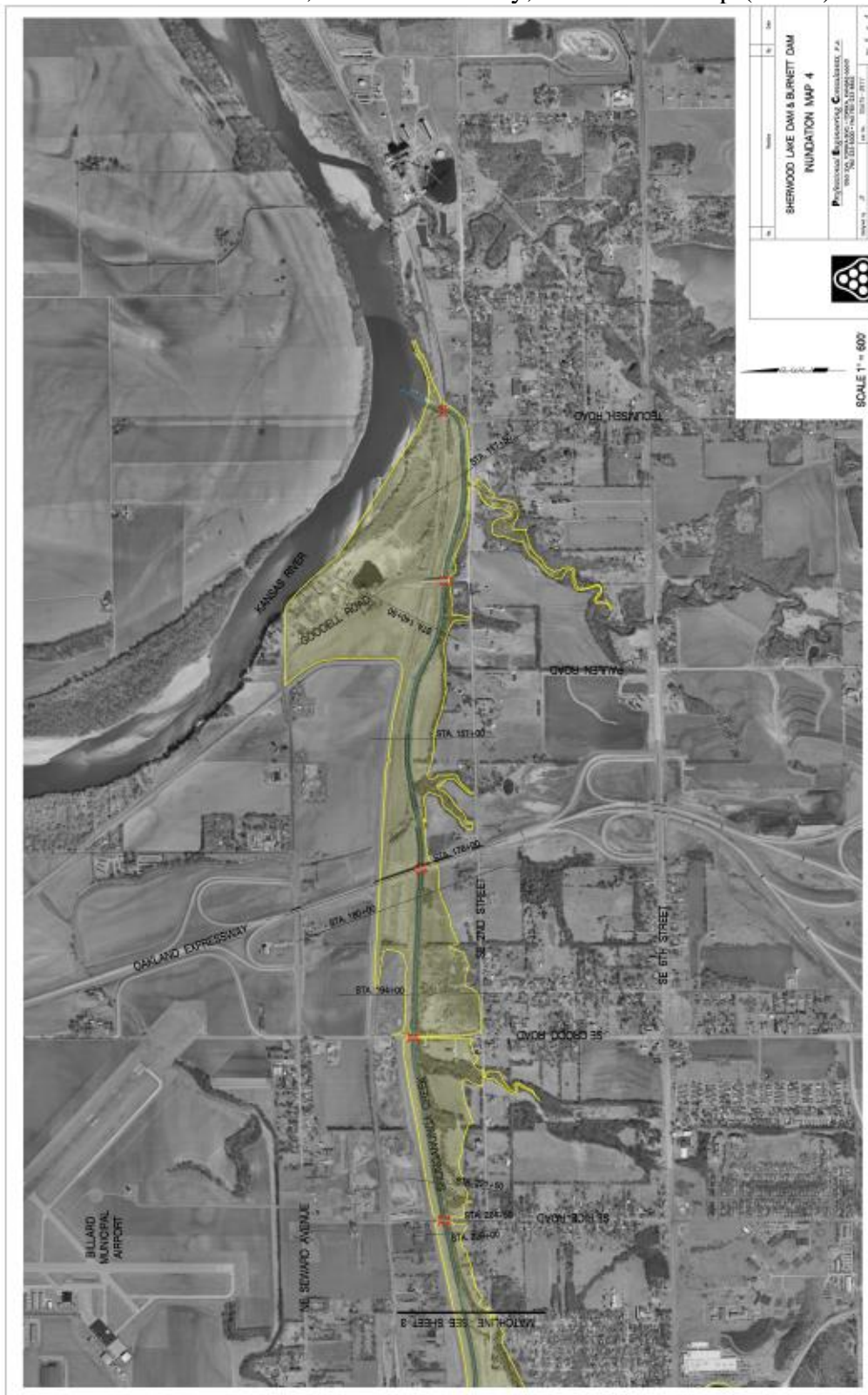


Lake Sherwood Dam, Shawnee County, Inundation Map (3 of 4)



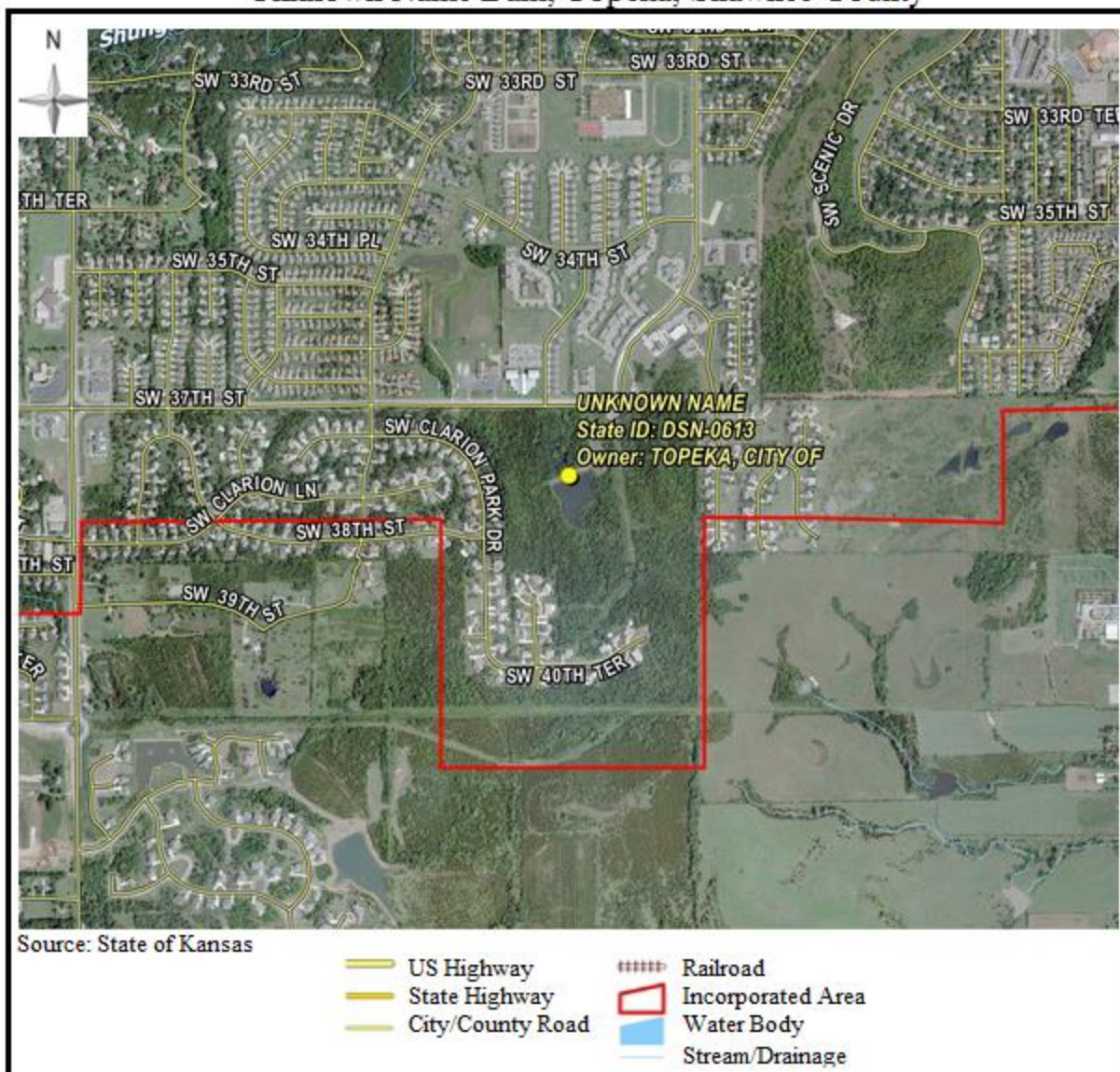


Lake Sherwood Dam, Shawnee County, Inundation Map (4 of 4)



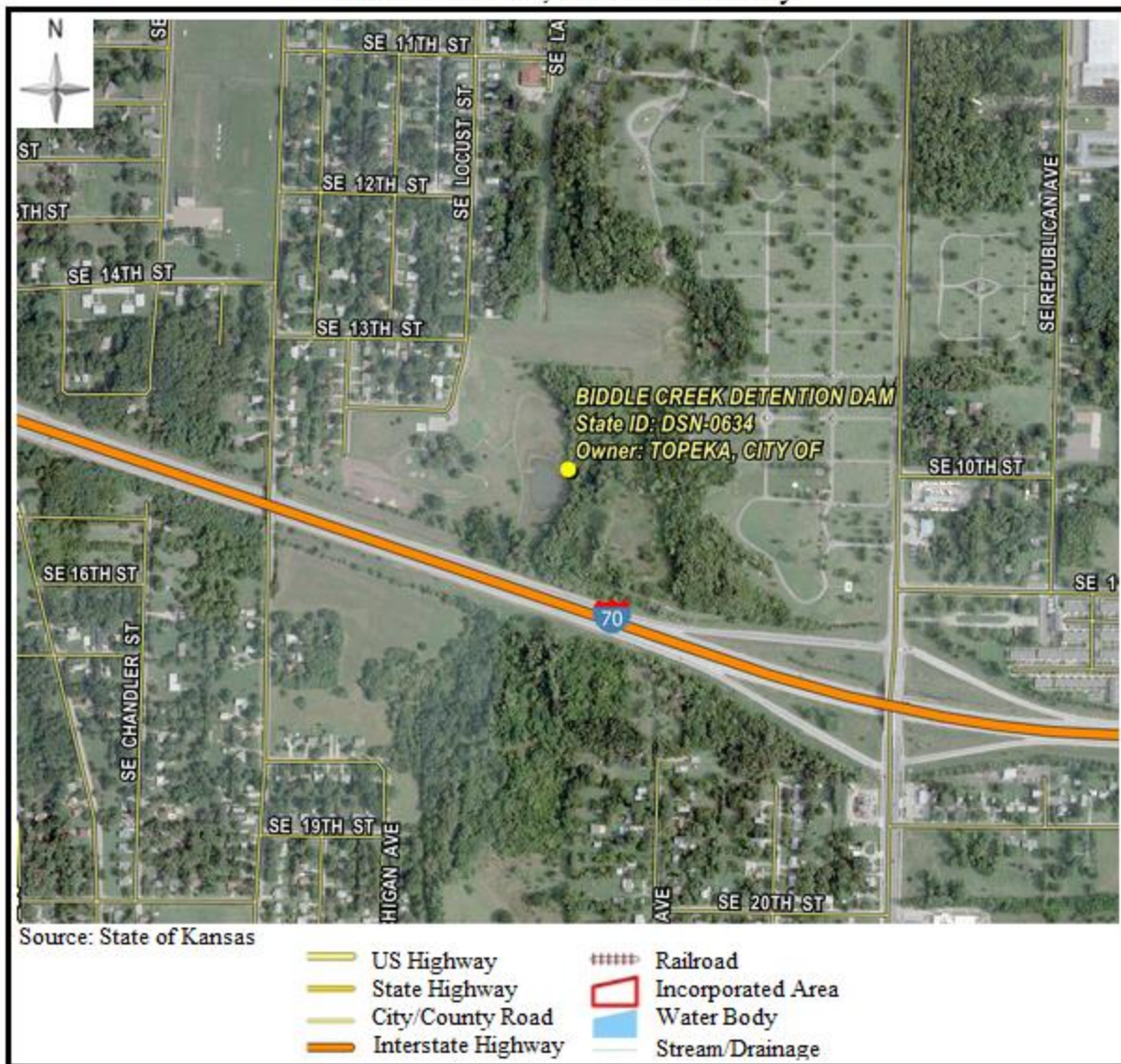


Unknown Name Dam, Topeka, Shawnee County



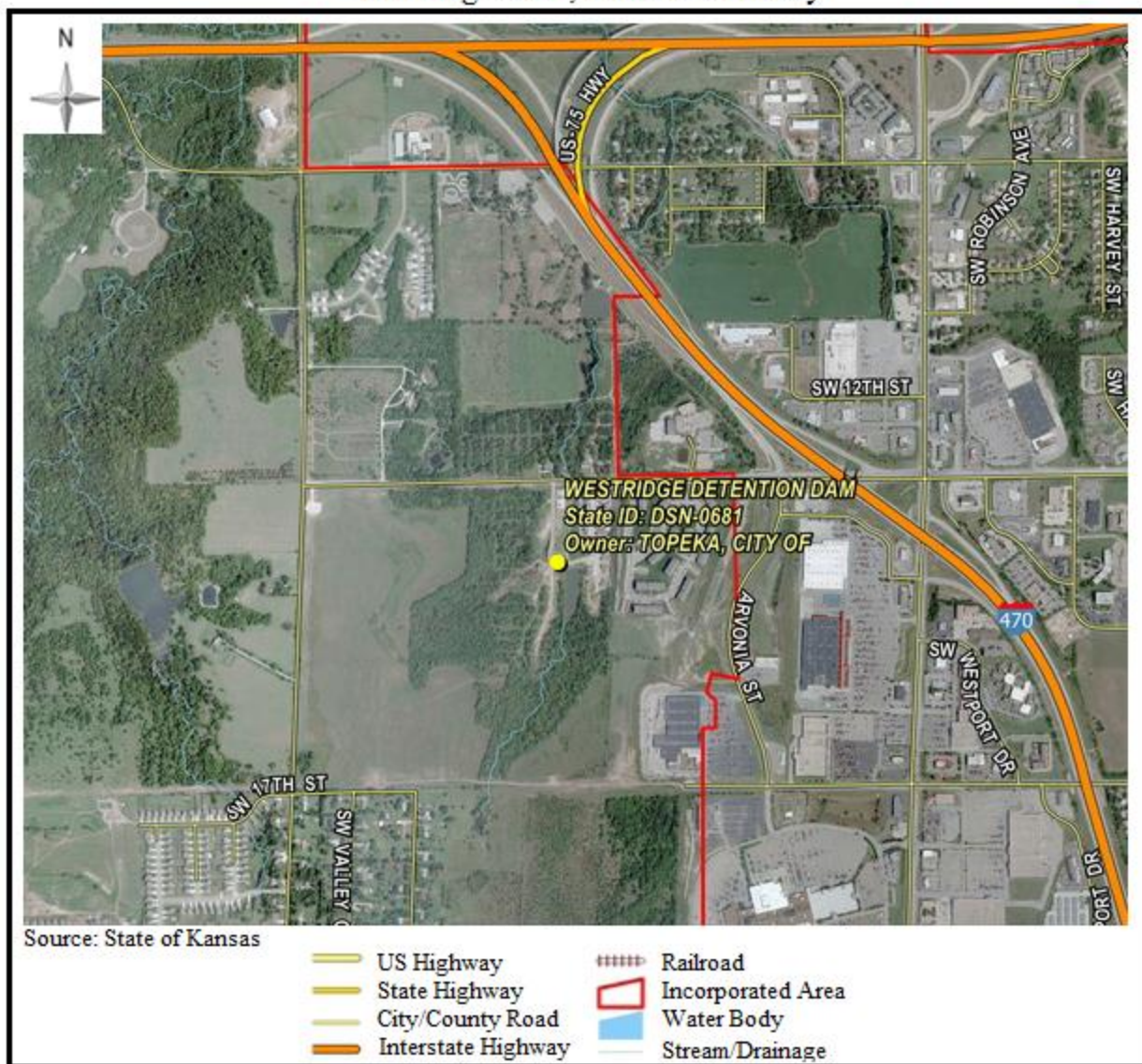


Biddle Creek Dam, Shawnee County





Westridge Dam, Shawnee County





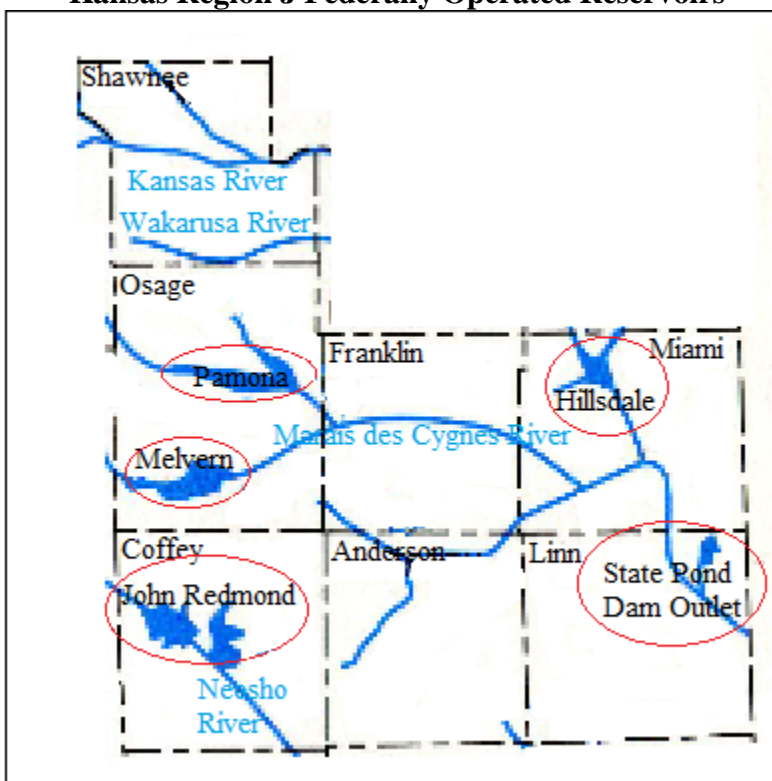
In addition, the KDA indicates that there are three dams within the state that are operated by Federal Government agencies.

Table 4.10: Kansas Region J Federally Operated Reservoirs

County	Federal Reservoir Name	Operating Agency
Coffey	John Redmond	United States Army Corps of Engineers (USACE)
Linn	Stateline Pond Dam Outlet	US Fish and Wildlife Service
Miami	Hillsdale	USACE
Osage	Melvorn	USACE
Osage	Pomona	USACE

Source: KDA

Kansas Region J Federally Operated Reservoirs



Two Federal reservoirs were identified outside of the region that could have a negative impact in the event of a breach, overtopping, or failure of the dam. The reservoirs are Tuttle Creek and Milford dams located in Riley and Geary Counties respectively. A complete failure of the Milford dam could result in flood water reaching Shawnee County communities such as Rossville, Silver Lake and Topeka in 14 to 17 hours. A failure of Tuttle Creek dam could result in floodwaters reaching Shawnee County communities in seven to 11 hours.

Additionally, there are two dams located in bordering Missouri counties. A failure of these dams would be expected to have a minimal impact on the planning region. These dams are:

- Bates County - Drexel Lake Dam (ID # MO20046)





- Bates County - Drexel City Reservoir (ID# MO 20213)

4.8.2 – Levee Location and Extent

As there is no one, comprehensive list of all levees within the region, two sources of data were reviewed to determine a list of all known levees. These sources are:

- The U.S. Army Corps of Engineers (USACE) Integrated National Levee Database (NLD), containing levees enrolled in the USACE National Levee Safety Program (NLSP).
- The FEMA National Levee Inventory Report (NLIR)

According to the USACE Integrated NLD, there are 63 levees in the NLSP in Kansas Region J. The following table provides available information on these levees.

Table 4.11: Kansas Region J USACE NLD Levees

County(ies)	Jurisdiction(s)	Name	Waterway	Segments	Levee Miles	Leveed Area in Square Miles	Inspection Rating Description	Sponsors
Anderson	Greeley	LAN-0003	-	1	0.16	0.02	-	-
Anderson	Garnett	LAN-0009	-	1	0.46	0.17	-	-
Franklin	Ottawa	LFR-0001	-	1	0.85	0.28	-	-
Franklin	Lane	LFR-0004	-	1	1.39	0.30	-	-
Franklin	Pomona	LFR-0006	-	1	0.24	0.07	-	-
Franklin	Ottawa	Ottawa KS Left Bank	Marais Des Cygnes River	1	1.21	0.27	Minimally Acceptable	City of Ottawa, Kansas
Franklin	Ottawa	Ottawa KS Right Bank	Marais Des Cygnes River	1	3.01	0.95	Minimally Acceptable	City of Ottawa, Kansas
Linn	La Cygne	LLN-0004	-	1	3.00	0.57	-	-
Linn	La Cygne	LLN-0007	-	1	0.20	0.03	-	-
Linn	La Cygne	LLN-0012	-	1	1.00	0.44	-	-
Linn	La Cygne	LLN-0015	-	1	2.73	0.67	-	-
Linn	Pleasanton	LLN-0021	-	1	0.64	0.02	-	-
Linn	La Cygne	LLN-0026	-	1	0.41	0.27	-	-
Linn	Pleasanton	LLN-0031	-	1	1.18	0.24	-	-
Linn	Pleasanton	LLN-0033	-	1	1.10	0.12	-	-
Linn	Pleasanton	LLN-0034	-	1	1.65	0.29	-	-
Linn	La Cygne	LLN-0045	-	1	0.63	0.30	-	-
Linn, Miami	La Cygne	LLN-0013	-	1	3.35	1.22	-	-
Miami	Edgerton	LMI-0022-S	-	1	0.80	0.07	-	-
Miami	Spring Hill	LMI-0024	-	1	1.00	0.10	-	-
Miami	Fontana	LMI-0026	-	1	0.40	0.07	-	-





Table 4.11: Kansas Region J USACE NLD Levees

County(ies)	Jurisdiction(s)	Name	Waterway	Segments	Levee Miles	Leveed Area in Square Miles	Inspection Rating Description	Sponsors
Miami	Osawatomie	Osawatomie	Marais Des Cygnes River	1	4.92	1.27	Minimally Acceptable	City of Osawatomie, Kansas
Shawnee	Topeka	Auburndale Unit (S. Topeka)	Kansas River	1	1.09	0.55	Minimally Acceptable	City of Topeka, Kansas
Shawnee	Topeka	Kaw River Drainage District	Kansas River	1	8.25	8.54	-	Kaw River Drainage District
Shawnee	Topeka	North Topeka Unit - Soldier Creek RB2	Kansas River	2	17.61	9.47	Minimally Acceptable	City of Topeka, Kansas, North Topeka Drainage District
Shawnee	Silver Lake	Silver Lake Ditch Levee	Silver Lake Ditch	1	1.82	0.23	-	Silver Lake Drainage District
Shawnee	Topeka	Silver Lake Ditch Levee B	Silver Lake Ditch	1	2.37	0.12	-	Silver Lake and North Topeka Drainage Districts
Shawnee	Topeka	Silver Lake Ditch Levee C	Silver Lake Ditch	1	1.93	0.45	-	North Topeka Drainage District
Shawnee	Silver Lake	Silver Lake Ditch Levee D	Silver Lake Ditch	1	0.48	0.15	-	Undefined
Shawnee	Silver Lake	Silver Lake Ditch Levee E	Silver Lake Ditch	1	0.77	0.12	-	Silver Lake Drainage District
Shawnee	Silver Lake	Silver Lake Ditch Levee F	Silver Lake Ditch	1	0.70	0.14	-	Silver Lake Drainage District
Shawnee	Silver Lake	Silver Lake Ditch Levee South	Silver Lake Ditch	1	5.29	1.65	-	Silver Lake and North Topeka Drainage Districts
Shawnee	Topeka	Soldier Creek Unit LB1	Kansas River	1	0.85	0.07	Minimally Acceptable	North Topeka Drainage District



**Table 4.11: Kansas Region J USACE NLD Levees**

County(ies)	Jurisdiction(s)	Name	Waterway	Segments	Levee Miles	Leveed Area in Square Miles	Inspection Rating Description	Sponsors
Shawnee	Topeka	Soldier Creek Unit LB2	Kansas River	1	1.45	0.22	Minimally Acceptable	North Topeka Drainage District
Shawnee	Topeka	Soldier Creek Unit LB3	Kansas River	1	1.82	0.23	Minimally Acceptable	North Topeka Drainage District
Shawnee	Topeka	Soldier Creek Unit LB4	Kansas River	1	0.62	0.03	Minimally Acceptable	North Topeka Drainage District
Shawnee	Topeka	Soldier Creek Unit LB5	Kansas River	1	1.23	0.09	Minimally Acceptable	North Topeka Drainage District
Shawnee	Topeka	Soldier Creek Unit LB6	Kansas River	1	0.50	0.47	Minimally Acceptable	North Topeka Drainage District
Shawnee	Topeka	Soldier Creek Unit RB1	Kansas River	1	2.87	0.54	Minimally Acceptable	North Topeka Drainage District
Shawnee	Topeka	South Topeka Oakland Unit	Kansas River	1	11.79	5.37	Minimally Acceptable	City of Topeka, Kansas
Shawnee	Maple Hill	Tri-County Drainage District No.1, Section 1	Kansas River	1	5.21	1.68	Minimally Acceptable	Tri-County Drainage District
Shawnee	Rossville	Tri-County Drainage District No.1, Section 2	Kansas River	1	6.08	6.36	Minimally Acceptable	Tri-County Drainage District
Shawnee	Willard	Tri-County Drainage District No.1, Section 3	Kansas River	1	6.16	8.52	Minimally Acceptable	Tri-County Drainage District
Shawnee	Topeka	Water Works Unit (South Topeka)	Kansas River	1	0.40	0.06	Minimally Acceptable	City of Topeka, Kansas

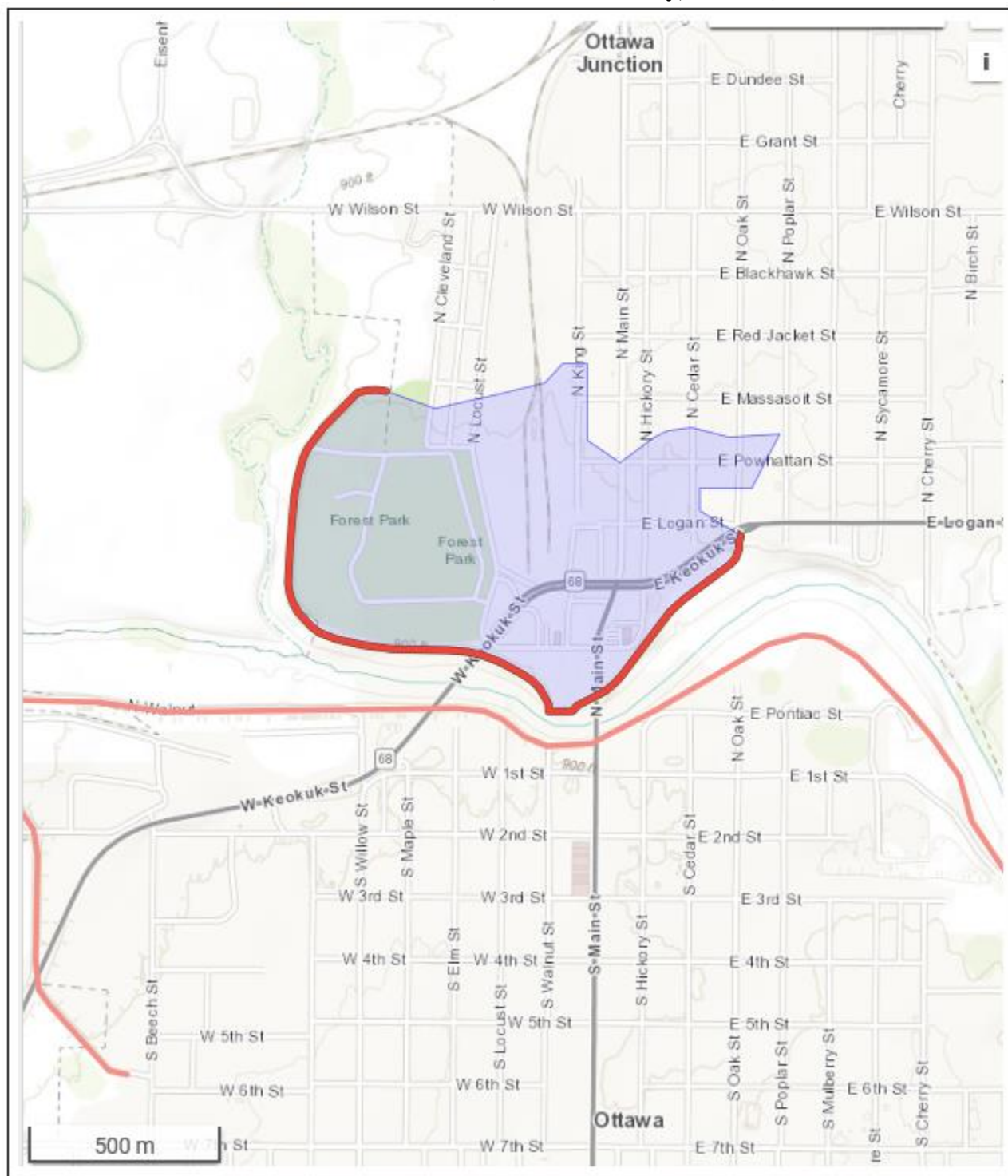
Source: USACE
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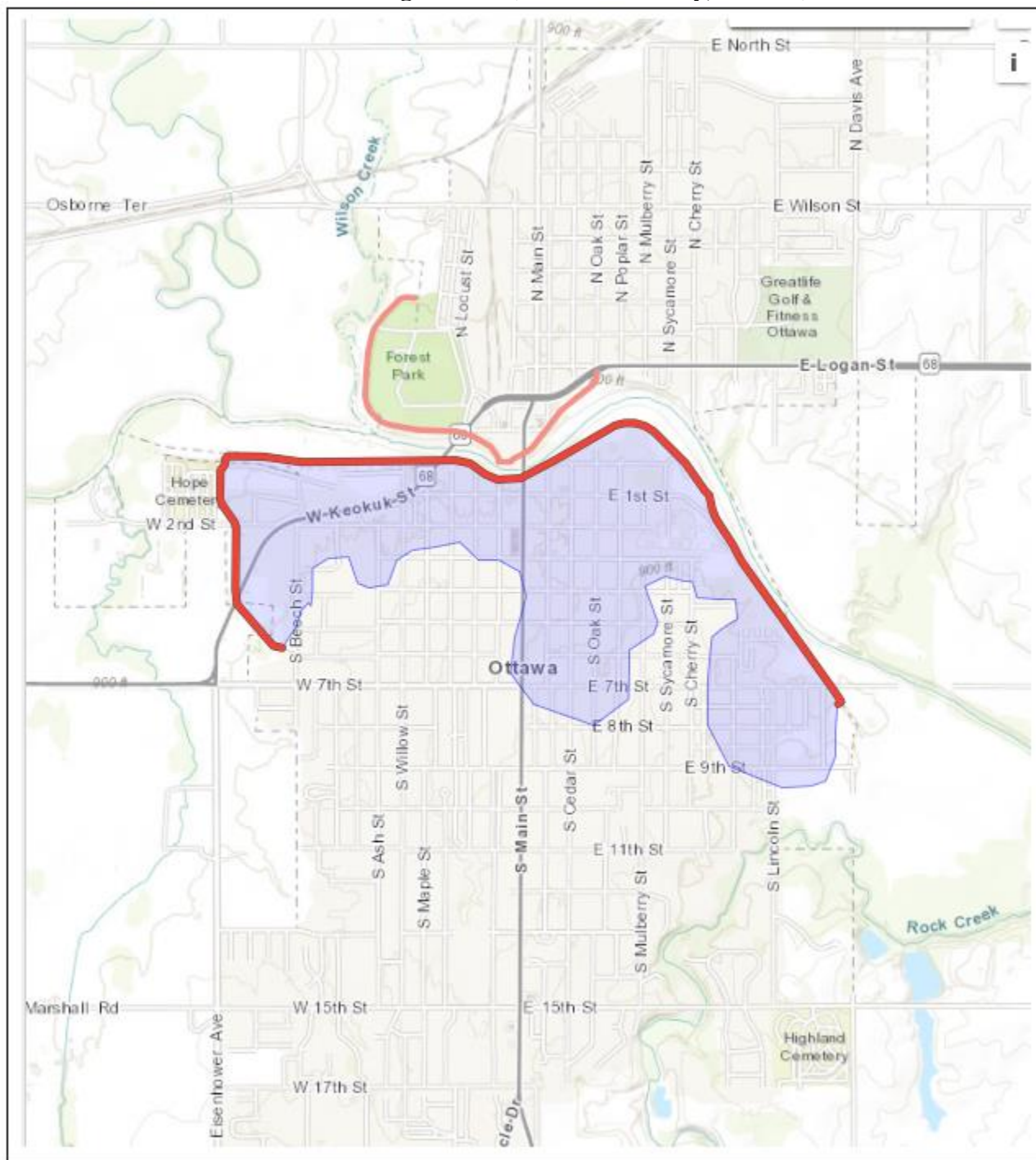
The following maps detail select individual levees. Additionally, both the county and jurisdiction for the levee are noted in parenthesis.

Ottawa KS Left Bank (Franklin County, Ottawa)



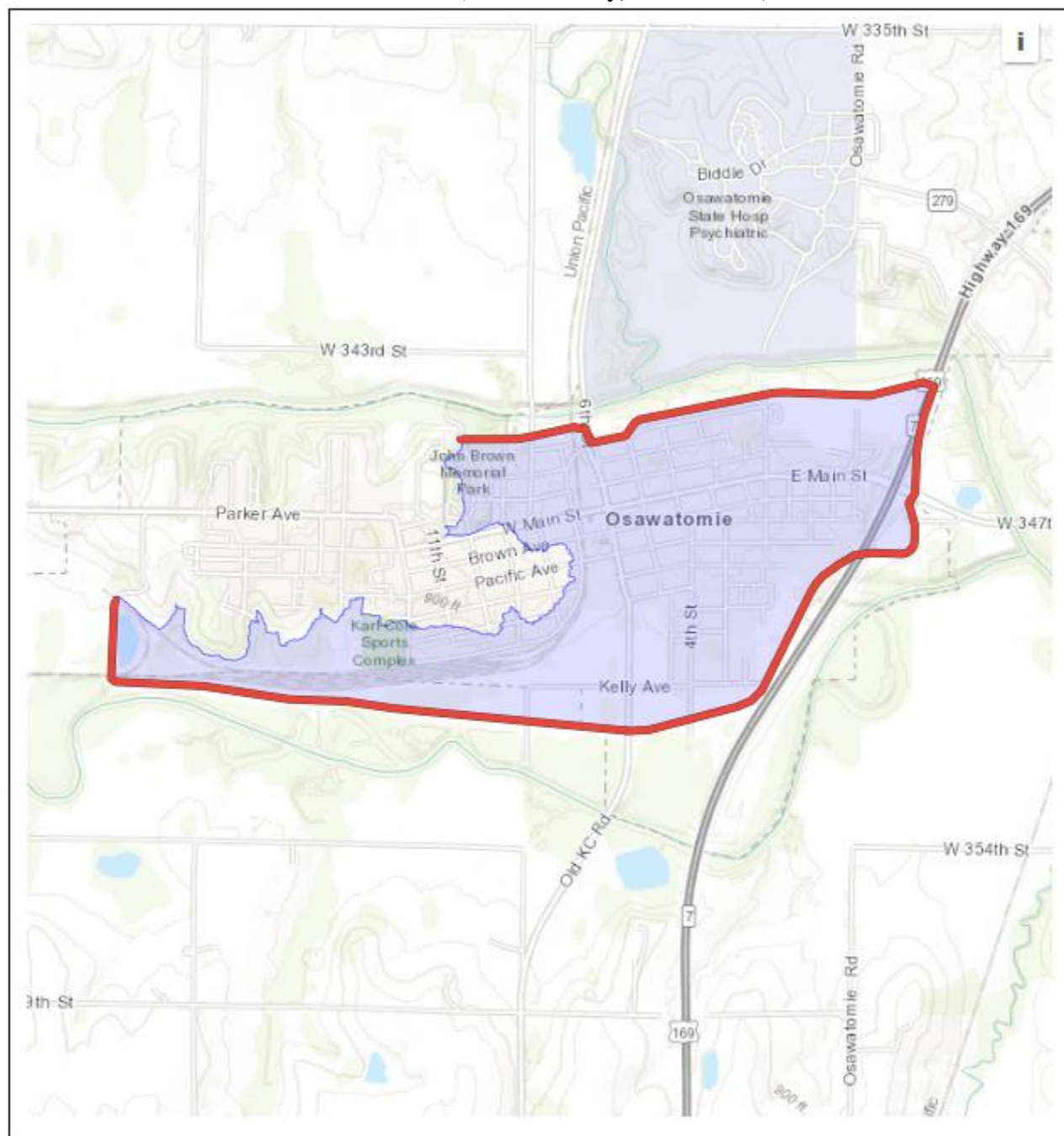


Ottawa KS Right Bank (Franklin County, Ottawa)



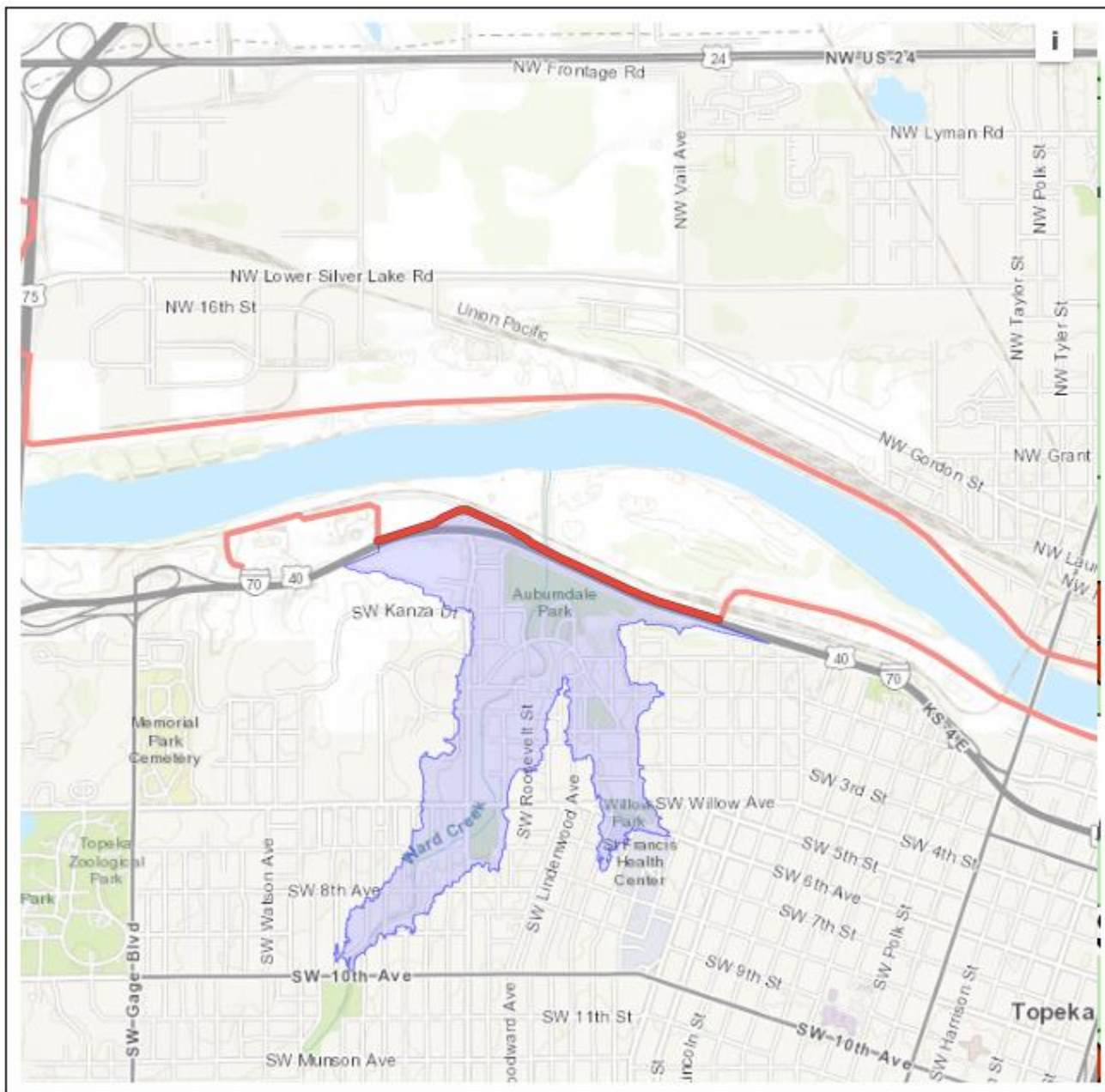


Osawatomie (Miami County, Osawatomie)



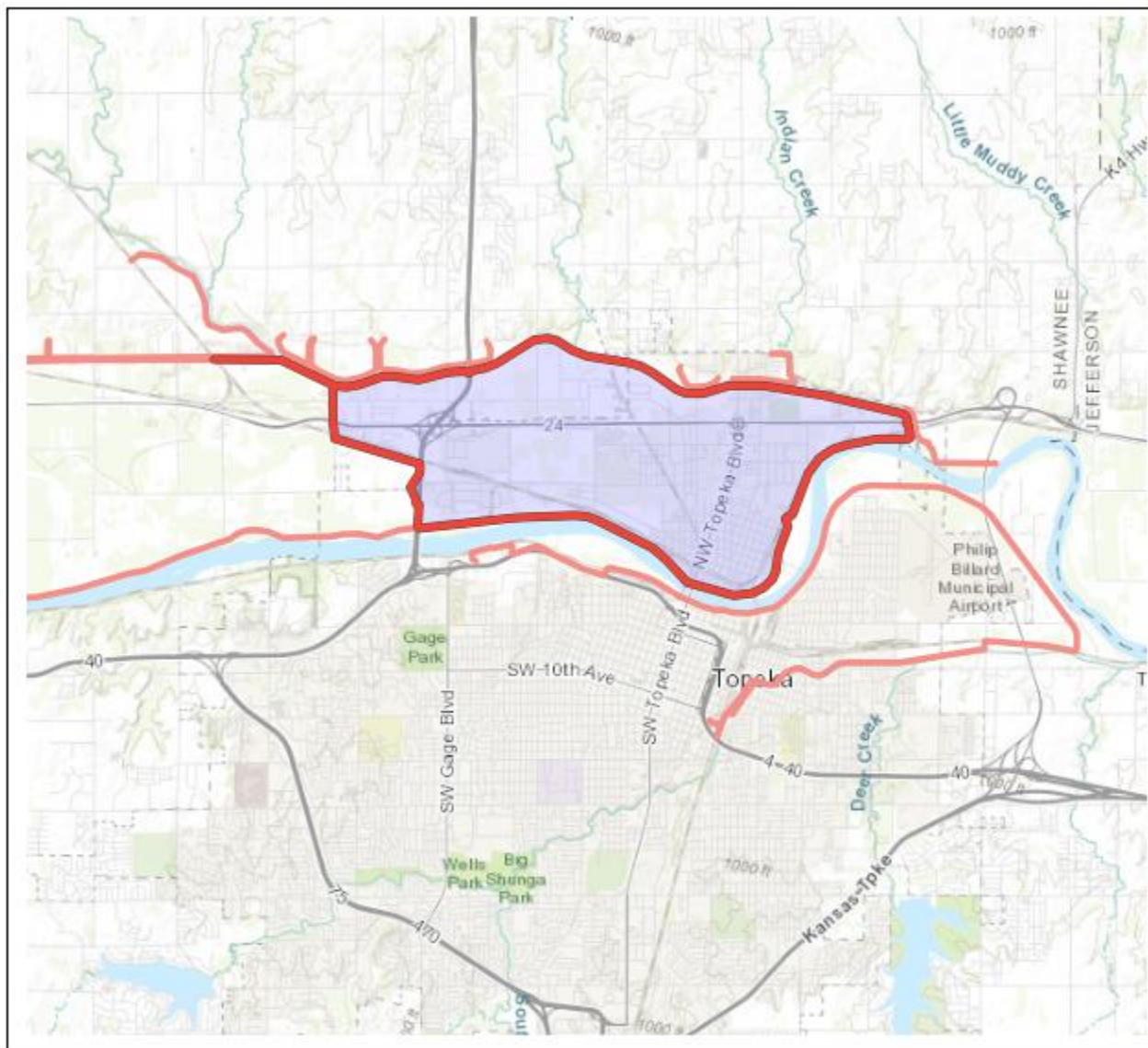


Auburndale Unit S. Topeka (Shawnee County, Topeka)



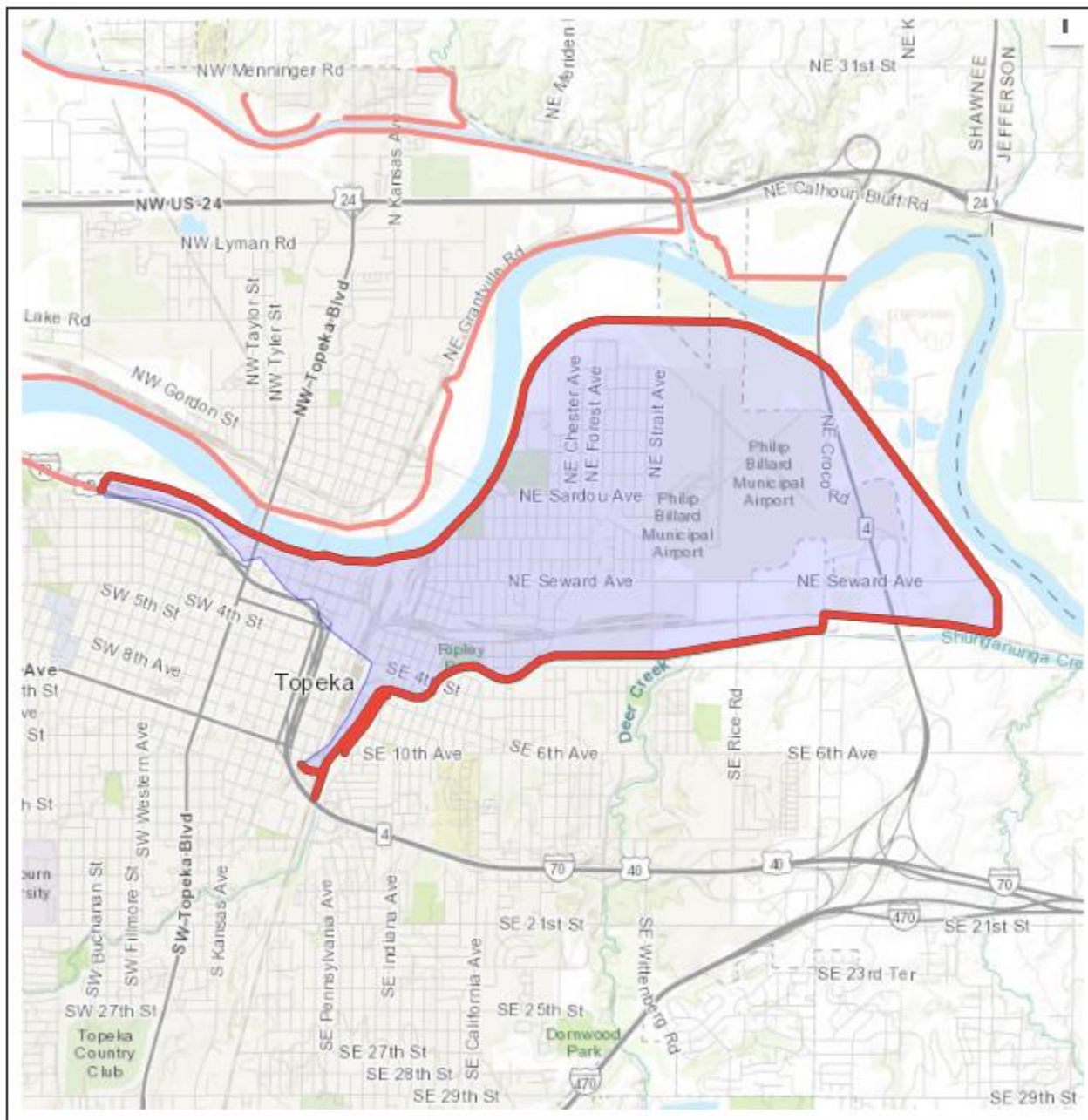


North Topeka Unit - Soldier Creek RB2 (Shawnee County, Topeka)





South Topeka Oakland Unit (Shawnee County, Topeka)



4.8.3 – Previous Occurrences

Kansas Region J has been fortunate enough to not have any catastrophic dam failures. Below are the reported dam failures for the region for the 20-year period from 1999-2018.





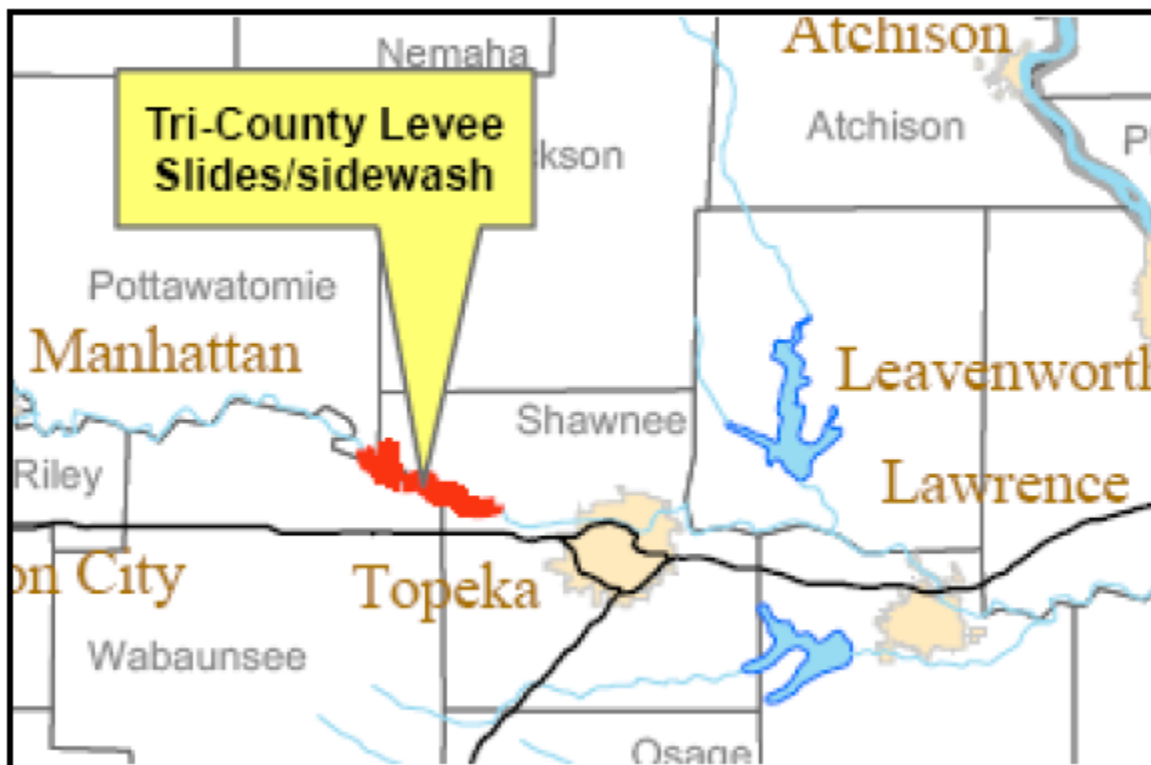
Table 4.12: Kansas Region J Dam Incidents

County	Dam Name	Incident Type	Failure	Incident Date	Deaths
Miami	KS02504	Head cut in the emergency spillway; submerged outlet; principal spillway pipe leakage; hydrologically inadequate	No	07/25/2001	None Reported
Shawnee	Ksname 2885	Concrete Deterioration	No	01/23/2001	None Reported

Source: National Inventory of Dams

The following details notable or reported levee failures in Kansas Region J in the past 20 years.

2010: Regional: Flooding in 2010 damaged the federal Tri-County levee.



June and July 2007: Regional: Heavy rains in the region caused widespread flooding. The following map shows damaged regional levees in Kansas that are under the jurisdiction of the USACE Kansas City District.





Regional Levees Impacted by 2007 Flooding



Source: USACE KC District Website

4.8.4 – Hazard Probability Analysis

Due to the variability of the size and construction of the dams in Region J, estimating the probability of dam failure is difficult on any scale greater than a case-by-case basis. Historically, the limited available data indicates there have been three reported dam failure events in Kansas Region J over a 20-year period. Using the binomial probability equation (number of years with an event divided by total number of years in reporting period) we derive a probability 15% of a dam failure in a given year. However, it is worth noting that none of the historically reported event resulted in a catastrophic failure, had no loss of life, and no property damages.

Historically, the limited available data indicates there have been no reported levee failure events in Kansas Region J over a 20-year period. Using the binomial probability equation, we derive a probability of 10% for levee damages in a given year. However, because past non-occurrence does not guarantee future non-occurrence, both federal and nonfederal levees may be damaged in future catastrophic regional flood events.

4.8.5 – Vulnerability Assessment, Dams

Following the metric established in the State of Kansas 2018 Hazard Mitigation Plan, an analysis of vulnerability to dam failure was completed by points being assigned to each type of dam and then aggregated for a total point score for each county. This analysis does not intend to demonstrate vulnerability in terms dam structures that are likely to fail, but rather provides a general overview of the counties that have a high number of dams, with weighted consideration given to dams whose failure would result in greater damages. Points were assigned as follows:





- Low Hazard Dams: 1 point
- Significant Hazard Dams: 2 point
- High Hazard Dams: 3 points
- High Hazard Dams without an EAP: 2 points
- Federal Reservoir Dams: 3 points.

Based on these categories, an awarded point total was determined for each participating county and a vulnerability rating assigned based on the following schedule.

Table 4.13: Dam Vulnerability Rating Schedule

	Low	Medium-Low	Medium	Medium-High	High
Awarded Point Range	0 – 26	27 – 50	51 – 100	101 – 200	201 - 327

The following table presents the dam failure vulnerability rating for each Kansas Region J participating county.

Table 4.14: Kansas Region J County Vulnerability Assessment for Dam Failure

County	Low Hazard Dams	Significant Hazard Dams	High Hazard Dams	High Hazard Dams Without EAP	Federal Reservoirs	Vulnerability Rating	Vulnerability Level
Anderson	44	0	1	0	0	47	Medium-Low
Coffey	46	2	1	1	1	58	Medium
Franklin	59	2	2	0	0	69	Medium
Linn	45	1	12	0	1	86	Medium
Miami	44	0	3	1	1	58	Medium
Osage	28	6	4	1	2	60	Medium
Shawnee	99	2	11	0	0	136	Medium-High

Source: Analysis by KDEM utilizing data from: Kansas Department of Agriculture, Division of Water Resources, Water Structures program; U.S. Army Corps of Engineers; Bureau of Reclamation; U.S. Army, U.S. Fish and Wildlife.

Counties with a higher identified population are to be considered to have a potentially greater vulnerability to potential dam failure events. The following table indicates the total county population and registered growth over the period 2000 to 2017.

Table 4.15: Kansas Region J Population Vulnerability Data for Dam Failure

County	2017 Population	Percent Population Change 2000 to 2017
Anderson	7,840	-3.3%
Coffey	8,328	-6.1%
Franklin	25,599	3.3%
Linn	9,602	0.3%
Miami	4,625	16.3%
Osage	15,894	-4.9%
Shawnee	178,392	5.0%

Source: US Census Bureau





Local Concerns

The following detail specific local concerns as related to dam and levee failure:

- In Coffey County, a failure of the John Redmond Reservoir Dam could inundate the cities of Burlington and LeRoy.
- In Miami County, the City of Paola is potentially at risk from a failure of the Heatherwood Estates Dam.
- In Osage County, approximately 10 structures near the City of Melvern are potentially at risk from a dam failure event.
- In Shawnee County, a failure of Milford Lake Dam could result in flood waters reaching the City of Rossville in 14-hours, the City of Silver Lake in 15-hours, and the City of Topeka in 17 hours. A failure of Tuttle Creek Lake Dam could result in flood waters reaching the City of Rossville in 7 hours, the City of Silver Lake in 9 hours, and the City of Topeka in 11 hours. Flood waters could potentially affect residential, commercial, and agricultural areas downstream.
- In Shawnee County, Lake Vaquero dam contains a manmade lake and was built in the early 1960s. The lake is surrounded by residences. It has been determined that the dam will require significant work to receive a permit and reach high safety standards necessitated by recent growth.

4.8.6 – Vulnerability Assessment, Levees

Data was obtained from the USACE NLD to help determine the vulnerability of participating jurisdictions to potential levee failure. Available data includes:

- Number of people at risk
- Structures at risk
- Property value for structures at risk
- Levee safety action risk classification

Additionally, for the NFIP, FEMA will only recognize a levee system in its flood risk mapping effort that meet minimum design, operation, and maintenance standards as established by 44 CFR 65.10 – Mapping of Areas Protected by Levee Systems. In general, evaluated levees are assigned to one of these categories:

- **Accredited Levee:** Area behind the levee is mapped as a moderate-risk, with no mandatory flood insurance requirement.
- **To Be Accredited:** A levee system that has been approved for accreditation.
- **Provisionally Accredited Levee (PAL):** Area behind the levee is mapped as a moderate-risk, with no mandatory flood insurance requirement, for a two-year grace period while compliance with 44 CFR 65.10 is sought
- **Non-Accredited Levee:** Area behind the levee is mapped according to FEMA protocols, likely resulting in a high-risk area designation and associate flood insurance requirements
- **To Be Non-Accredited:** A levee system that no longer meets the requirements stipulated in 44 CFR 65.10 and is scheduled to lose accredited status





The following table presents the above information for each vulnerable jurisdiction.

Table 4.16: Kansas Region J Levee Failure Vulnerability Data

County(ies)	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value	Levee Safety Action Risk Classification	Levee System Status on Effective FIRM
Anderson	Greeley	LAN-0003	0	0	\$0	Not Screened	-
Anderson	Garnett	LAN-0009	0	0	\$0	Not Screened	-
Franklin	Ottawa	LFR-0001	6	3	\$1,080,000	Not Screened	-
Franklin	Lane	LFR-0004	0	0	\$0	Not Screened	-
Franklin	Pomona	LFR-0006	0	0	\$0	Not Screened	-
Franklin	Ottawa	Ottawa KS Left Bank	164	90	\$37,000,000	Low	PAL
Franklin	Ottawa	Ottawa KS Right Bank	1,970	939	\$219,000,000	Moderate	PAL
Linn	La Cygne	LLN-0004	0	10	\$18,000,000	Not Screened	-
Linn	La Cygne	LLN-0007	0	0	\$0	Not Screened	-
Linn	La Cygne	LLN-0012	0	10	\$18,000,000	Not Screened	-
Linn	La Cygne	LLN-0015	0	0	\$0	Not Screened	-
Linn	Pleasanton	LLN-0021	0	10	\$18,000,000	Not Screened	-
Linn	La Cygne	LLN-0026	0	0	\$0	Not Screened	-
Linn	Pleasanton	LLN-0031	0	0	\$0	Not Screened	-
Linn	Pleasanton	LLN-0033	0	1	\$300,000	Not Screened	-
Linn	Pleasanton	LLN-0034	1	1	\$230,000	Not Screened	-
Linn	La Cygne	LLN-0045	0	0	\$0	Not Screened	-
Linn, Miami	La Cygne	LLN-0013	0	10	\$18,000,000	Not Screened	-
Miami	Edgerton	LMI-0022-S	0	0	\$0	Not Screened	-
Miami	Spring Hill	LMI-0024	0	0	\$0	Not Screened	-
Miami	Fontana	LMI-0026	0	0	\$0	Not Screened	-
Miami	Osawatomie	Osawatomie	2,355	1,230	\$244,000,000	Low	PAL
Shawnee	Topeka	Auburndale Unit (S. Topeka)	1,824	634	\$125,000,000	Low	PAL
Shawnee	Topeka	Kaw River Drainage District	158	100	\$31,400,000	Low	Non-Accredited
Shawnee	Topeka	North Topeka Unit - Soldier Creek RB2	6,687	3,921	1,650,000,000	Moderate	PAL
Shawnee	Silver Lake	Silver Lake Ditch Levee	7	3	\$1,190,000	Not Screened	Non-Accredited
Shawnee	Topeka	Silver Lake Ditch Levee B	6	2	\$835,000	Not Screened	Non-Accredited





Table 4.16: Kansas Region J Levee Failure Vulnerability Data

County(ies)	Jurisdiction	Name	People at Risk	Structures at Risk	Property Value	Levee Safety Action Risk Classification	Levee System Status on Effective FIRM
Shawnee	Topeka	Silver Lake Ditch Levee C	17	6	\$2,500,000	Not Screened	Non-Accredited
Shawnee	Silver Lake	Silver Lake Ditch Levee D	0	0	\$0	Not Screened	Non-Accredited
Shawnee	Silver Lake	Silver Lake Ditch Levee E	19	6	\$2,350,000	Not Screened	Non-Accredited
Shawnee	Silver Lake	Silver Lake Ditch Levee F	40	13	\$4,830,000	Not Screened	Non-Accredited
Shawnee	Silver Lake	Silver Lake Ditch Levee South	20	7	\$2,520,000	Not Screened	Non-Accredited
Shawnee	Topeka	Soldier Creek Unit LB1	0	0	\$0	Low	PAL
Shawnee	Topeka	Soldier Creek Unit LB2	8	4	\$172,000	Low	PAL
Shawnee	Topeka	Soldier Creek Unit LB3	0	0	\$0	Low	PAL
Shawnee	Topeka	Soldier Creek Unit LB4	7	3	\$58,900	Low	PAL
Shawnee	Topeka	Soldier Creek Unit LB5	334	137	\$20,300,000	Low	PAL
Shawnee	Topeka	Soldier Creek Unit LB6	1	1	\$1,140,000	Low	PAL
Shawnee	Topeka	Soldier Creek Unit RB1	0	0	\$0	Low	PAL
Shawnee	Topeka	South Topeka Oakland Unit	12,275	3,253	\$1,050,000,000	Moderate	PAL
Shawnee	Maple Hill	Tri-County Drainage District No.1, Section 1	0	0	\$0	Low	Non-Accredited
Shawnee	Rossville	Tri-County Drainage District No.1, Section 2	49	27	\$5,340,000	Low	Non-Accredited
Shawnee	Willard	Tri-County Drainage District No.1, Section 3	1,337	637	\$181,000,000	Low	Accredited
Shawnee	Topeka	Water Works Unit (South Topeka)	80	9	\$65,000,000	Low	PAL

Source: USACE NLD





The following table indicates the total number of county structures and the associated percentage of the total number of county structures, and the total population and associated percentage of the total county population identified as at risk to levee failure.

Table 4.17: Kansas Region J Population Vulnerability Data for Levee Failure

County	Structures Identified as at Risk to Levee Failure	Percentage of Structures Identified at Risk	Population Identified as at Risk to Levee Failure	Percentage of Population Identified at Risk
Anderson	0	0.0%	0	0.0%
Coffey	0	0.0%	0	0.0%
Franklin	2,134	19.0%	1,029	0.0%
Linn	1	0.0%	32	6.2%
Miami	2,355	17.5%	1,230	0.0%
Osage	0	0.0%	0	0.0%
Shawnee	14,139	17.7%	4,105	0.0%

Source: US Census Bureau and FEMA

Local Concerns

The following detail specific local concerns as related to levee failure:

- In Franklin County, the northern section of the City of Ottawa is protected by a levee system from the Marais des Cygnes River.
- In Miami County, the City of Osawatomie has areas on the north and south sides of the city that are protected by levee systems. The levee along the north protects the city from the Marias des Cygnes River, and the levee to the south protects the city from Pottawatomie Creek.

4.8.7 – Impact and Consequence Analysis

As per EMAP standards, the information in the following table provides the Consequence Analysis.

Table 4.18: Dam and Levee Failure Consequence Analysis

Subject	Impacts of Dam and Levee Failure
Health and Safety of the Public	In areas of inundation, the impact to the public is expected to be severe. Impacts to the public in adjacent areas is expected to be minimal to moderate.
Health and Safety of Responders	Impact to responders is expected to be minimal with proper training. Impact could be severe if there is lack of training.
Continuity of Operations	Temporary relocation may be necessary if facilities or infrastructure is damaged.
Property, Facilities, and Infrastructure	In areas of inundation, impacts could be severe to facilities and infrastructure.
Environment	In areas of inundation, impact to the environment are expected to be severe. Impact will lessen as distance increases.
Economic Conditions	In areas of inundation, impacts to the economy will depend on the scope of the inundation and the time it takes for the water to recede.
Public Confidence in the Jurisdiction’s Governance	Perception of whether the failure could have been prevented, warning time, and response and recovery time will greatly impact the public’s confidence.





4.9 – Drought

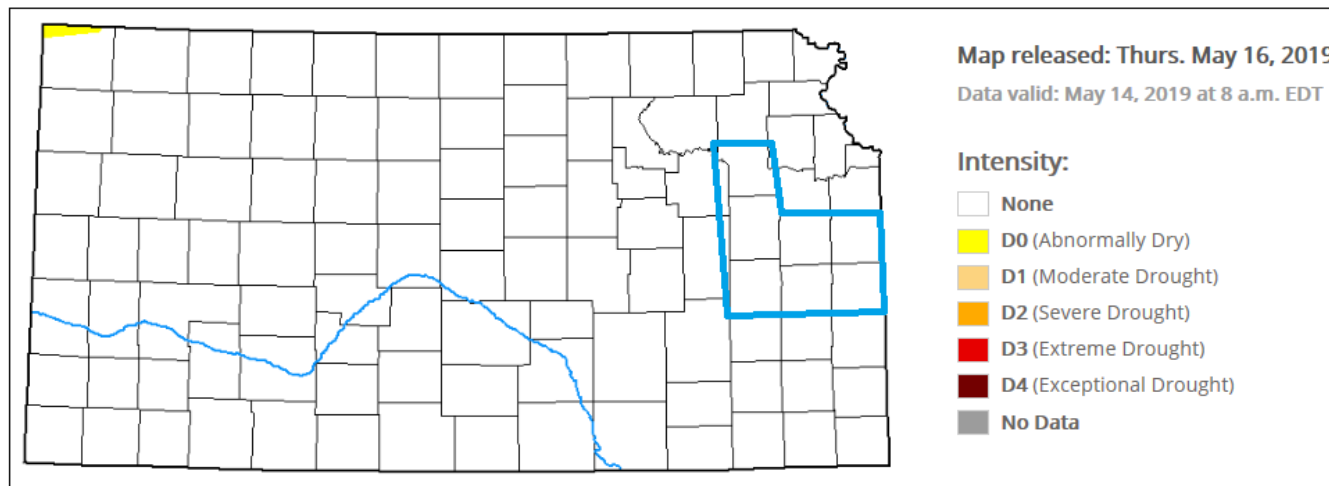
Drought is an abnormally dry period lasting months or years when an area has a deficiency of water and precipitation in its surface and/or underground water supply. The hydrological imbalance can be grouped into the following non-exclusive categories.



- **Agricultural:** When the amount of moisture in the soil no longer meets the needs of previously grown crops.
- **Hydrological:** When surface and subsurface water levels are significantly below their normal levels.
- **Meteorological:** When there is a significant departure from the normal levels of precipitation.
- **Socio-Economic:** When the water deficiency begins to significantly affect the population.

4.9.1 – Location and Extent

While all of Kansas Region J is vulnerable to drought, it is most disastrous in the rural areas where the majority of agricultural businesses are located. The most commonly used drought index to determine the onset and the severity of a drought is the Palmer Drought Severity Index. The map below indicates the drought conditions for Kansas Region J through May 14, 2019.



4.9.2 – Previous Occurrences

One of the best indicators of historic drought periods is provided by the U.S. Drought Monitor, which lists weekly drought conditions for the State of Kansas. The following table details the U.S. Drought Monitor categories.





Table 4.19: U.S. Drought Monitor Categories

Rating	Described Condition
None	No drought conditions
D0	Abnormally Dry
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

Source: U.S. Drought Monitor

Historical data was gathered from the U.S. Drought Monitor weekly reports from the 10-year period 2009 through 2018 (with 2009 and 2018 being full data set years). This data was compiled and aggregated to provide a yearly estimate of the percentage of the year Kansas Region J was in each Drought Monitor category.

Table 4.20: Percentage of Kansas Region J in U.S. Drought Monitor Category, 2009-2018

Year	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2019*	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2018	21.6%	78.4%	57.4%	21.7%	1.5%	0.0%
2017	61.3%	38.7%	9.4%	0.0%	0.0%	0.0%
2016	90.3%	9.7%	0.0%	0.0%	0.0%	0.0%
2015	60.4%	39.6%	0.0%	0.0%	0.0%	0.0%
2014	32.3%	67.7%	36.3%	1.4%	0.0%	0.0%
2013	9.2%	90.8%	50.8%	35.6%	2.5%	0.0%
2012	18.9%	81.1%	56.8%	50.6%	26.8%	10.8%
2011	19.4%	80.6%	49.4%	9.7%	0.0%	0.0%
2010	95.1%	4.9%	1.4%	0.0%	0.0%	0.0%
2009	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: U.S. Drought Monitor

*: Data through March 16, 2019

Another good indicator of historical droughts is USDA Disaster Declarations. The following table details USDA Drought Declarations during the five-year period 2014 through 2018 (with 2014 and 2018 being full data set years) for Kansas Region J.

Table 4.21: Kansas Region J Secretarial Drought Declarations, 2009-2018

Year	Number of Secretarial Drought Disaster Declarations
2018	6
2017	0
2016	0
2015	0
2014	1

Source: USDA

Crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of drought on the region’s agricultural base. Crop loss data for the ten-





year period of 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicates 604 claims on 875,532 acres for \$145,315,320.

Table 4.22: USDA Risk Management Agency Cause of Loss Indemnities 2009-2018, Drought

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Anderson	85	182,593	\$33,723,679
Coffey	112	129,704	\$21,323,243
Franklin	91	130,164	\$22,539,355
Linn	77	124,307	\$18,054,722
Miami	64	89,109	\$14,526,564
Osage	93	156,167	\$25,939,319
Shawnee	82	63,488	\$9,208,439

Source: USDA

4.9.3 – Hazard Probability Analysis

Reviewing historical data from the U.S. Drought Monitor weekly reports from the ten-year period of 2009 through 2018 (with 2009 and 2018 being full data set years) a yearly average can be created indicating the percentage of the region in each Drought Monitor category. This average can be used to extrapolate the potential likelihood of future drought conditions.

Table 4.23: Kansas Region J Estimated Probability of Being in U.S. Drought Monitor Category

None	D0-D4	D1-D4	D2-D4	D3-D4	D4
50.9%	49.2%	26.2%	11.9%	3.1%	1.1%

Source: U.S. Drought Monitor

Additionally, over the five-year period 2014 to 2018 two years recorded a USDA Declared Secretarial Drought Disaster, equating to 40% chance of occurrence.

Data was reviewed from the USDA Risk Management agency to determine vulnerability to drought. The following table summarizes drought event data for **Anderson County**

Table 4.24: Anderson County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	85
Average Number of Claims per Year	9
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	182,593
Average Number of Acres Damaged per Year	18,259
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$33,723,679
Average Crop Damage per Year	\$3,372,368

Source: USDA

According to the USDA Risk Management Agency, Anderson County can expect on a yearly basis, relevant to drought occurrences:

- Nine insurance claims





- 18,259 acres impacted
- \$23,372,368 in insurance claims

The following table summarizes drought event data for **Coffey County**.

Table 4.25: Coffey County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	112
Average Number of Claims per Year	11
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	129,704
Average Number of Acres Damaged per Year	12,970
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$21,323,243
Average Crop Damage per Year	\$2,132,324

Source: USDA

According to the USDA Risk Management Agency, Coffey County can expect on a yearly basis, relevant to drought occurrences:

- 11 insurance claims
- 12,970 acres impacted
- \$2,132,324 in insurance claims

The following table summarizes drought event data for **Franklin County**.

Table 4.26: Franklin County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	112
Average Number of Claims per Year	11
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	130,164
Average Number of Acres Damaged per Year	13,016
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$22,539,355
Average Crop Damage per Year	\$2,253,935

Source: USDA

According to the USDA Risk Management Agency, Franklin County can expect on a yearly basis, relevant to drought occurrences:

- 11 insurance claims
- 13,016 acres impacted
- \$2,253,935 in insurance claims

The following table summarizes drought event data for **Linn County**.





Table 4.27: Linn County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	77
Average Number of Claims per Year	8
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	124,307
Average Number of Acres Damaged per Year	12,431
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$18,054,722
Average Crop Damage per Year	\$1,805,472

Source: USDA

According to the USDA Risk Management Agency, Linn County can expect on a yearly basis, relevant to drought occurrences:

- Eight insurance claims
- 12,431 acres impacted
- \$1,805,472 in insurance claims

The following table summarizes drought event data for **Miami County**.

Table 4.28: Miami County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	64
Average Number of Claims per Year	6
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	89,109
Average Number of Acres Damaged per Year	8,911
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$14,526,564
Average Crop Damage per Year	\$1,452,656

Source: USDA

According to the USDA Risk Management Agency, Miami County can expect on a yearly basis, relevant to drought occurrences:

- Six insurance claims
- 8,911 acres impacted
- \$1,452,656 in insurance claims

The following table summarizes drought event data for **Osage County**.





Table 4.29: Osage County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	93
Average Number of Claims per Year	9
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	156,167
Average Number of Acres Damaged per Year	15,617
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$25,939,319
Average Crop Damage per Year	\$2,593,932

Source: USDA

According to the USDA Risk Management Agency, Osage County can expect on a yearly basis, relevant to drought occurrences:

- Nine insurance claims
- 15,617 acres impacted
- \$2,593,932 in insurance claims

The following table summarizes drought event data for **Shawnee County**.

Table 4.30: Shawnee County Drought Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	82
Average Number of Claims per Year	8
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	63,488
Average Number of Acres Damaged per Year	6,349
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$9,208,439
Average Crop Damage per Year	\$920,844

Source: USDA

According to the USDA Risk Management Agency, Shawnee County can expect on a yearly basis, relevant to drought occurrences:

- Eight insurance claims
- 6,349 acres impacted
- \$920,844 in insurance claims

4.9.4 Vulnerability Analysis

In general, structures and populations are not directly vulnerable to losses as a result of drought. However, there is a small potential that bridges could be impacted by shrinking soil as a result of drought conditions that could cause foundational or support damages.

The USDA 2017 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region J County. USDA Risk Management Agency crop loss data (for the five-year period from 2014 – 2018) allows us to quantify the monetary





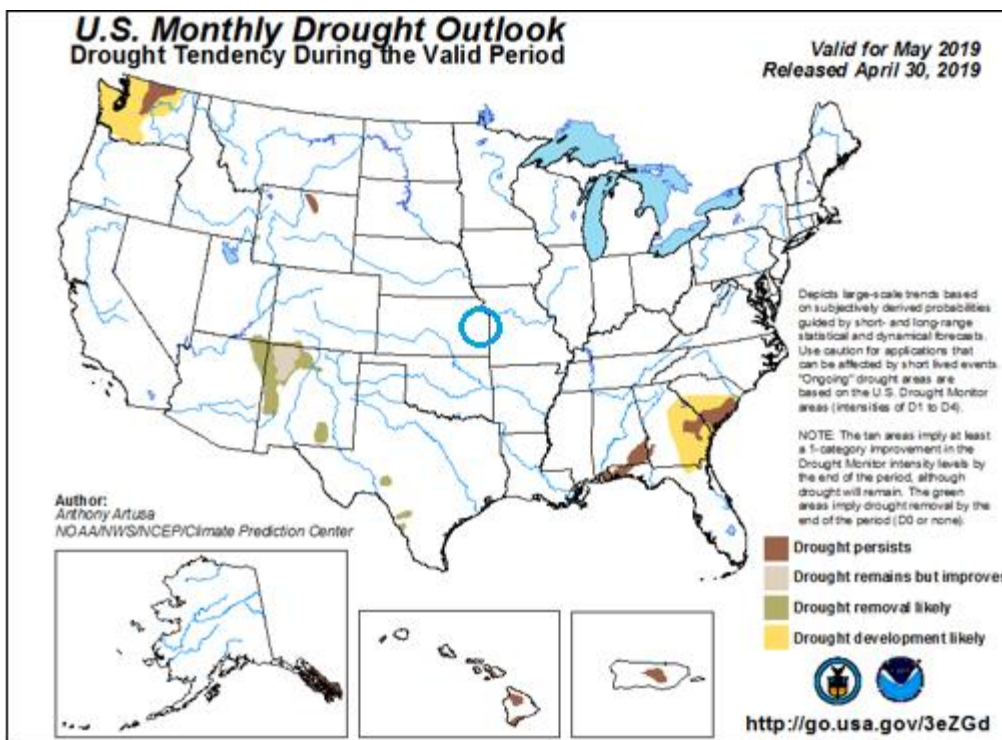
impact of drought conditions on the agricultural sector. The higher the percentage loss, the higher the vulnerability the county has to drought events.

Table 4.31: Drought Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	242,149	18,259	7.54%	\$80,868,000	\$3,372,368	4.17%
Coffey	218,978	12,970	5.92%	\$46,874,000	\$2,132,324	4.55%
Franklin	222,549	13,016	5.85%	\$75,773,000	\$2,253,935	2.97%
Linn	156,904	12,431	7.92%	\$41,143,000	\$1,805,472	4.39%
Miami	181,564	8,911	4.91%	\$53,030,000	\$1,452,656	2.74%
Osage	252,612	15,617	6.18%	\$66,913,000	\$2,593,932	3.88%
Shawnee	126,486	6,349	5.02%	\$39,209,000	\$920,844	2.35%
Reno	242,149	18,259	7.54%	\$80,868,000	\$3,372,368	4.17%
Rice	218,978	12,970	5.92%	\$46,874,000	\$2,132,324	4.55%
Sedgwick	222,549	13,016	5.85%	\$75,773,000	\$2,253,935	2.97%
Sumner	156,904	12,431	7.92%	\$41,143,000	\$1,805,472	4.39%

Source: USDA

Additional predictions about drought vulnerability can be made by reviewing data with the National Weather Service (NWS) Climate Prediction Center at www.cpc.ncep.noaa.gov/products/expert_assessment/sdo_summary.php. The following map was the latest published data at the time of this report and indicates no predicted drought conditions for the region.





Drought can severely challenge a public water supplier through depletion of the raw water supply and greatly increased customer water demand. Even if the raw water supply remains adequate, problems due to limited treatment capacity or limited distribution system capacity may be encountered. In addition, the water for cropland and livestock can be greatly impacted. The following are the potential water supply limitations that may result from drought conditions:

- **Basic Source Limitation** - The supplier's primary raw water source is particularly sensitive to drought as evidenced by depleted streamflow, depleted reservoir inflow and storage, or by declining water levels in wells. Restrictions imposed due to inability to use a well(s) because water quality problems were considered indicative of a basic source limitation.
- **Contractual Limitation** - The supplier's sole water source is purchased from another system that is drought vulnerable and there is a drought-cut-off clause in their water purchase contract. In such situations where there is not a drought cut-off clause, the purchaser is considered drought vulnerable under the same limitation category as the seller.
- **Distribution System Limitation** - The supplier has difficulty or is unable to meet drought-induced customer demand for water because of inadequate finished water storage capacity, inadequate finished water pumping capacity, inadequate transmission line sizes.
- **Minimum Desirable Streamflow** - The supplier reported imposing restrictions because of minimum desirable streamflow administration. Water rights junior to those granted for maintenance of established minimum desirable flows are subject to such administration.
- **Single Well Source** - The supplier relies upon a single well as its sole source for raw water. Suppliers with one active well and one emergency well were considered drought vulnerable because emergency wells are not a dependable long-term water source. Excessive hours of operation to meet drought-induced customer demand for water will result in the increased likelihood of mechanical breakdown with no alternative water supply source available.
- **Treatment Capacity Limitation** - The supplier has difficulty or is unable to meet drought-induced customer demand for water due to inadequate raw water treatment capacity.
- **Water Right Limitation** - The supplier reported imposing restrictions because the quantity of water they are authorized to divert under their water right(s) was insufficient to meet customer demands.

Water supply planning is the key to minimizing the effects of drought on the population and economy of the region. State of Kansas agencies have worked with public water suppliers to identify vulnerabilities and develop infrastructure, conservation plans, and partnerships to reduce the likelihood of running out of water during a drought. Information concerning these plans, and any current water supply limitations, may be found with the Kansas Water Office.

4.9.5 – Impact and Consequence Analysis

As per EMAP standards, the following table provides the consequence analysis for drought conditions.





Table 4.32: Drought Consequence Analysis

Subject	Impacts of Drought
Health and Safety of the Public	Drought impact tends to be agricultural however, because of the lack of precipitation water supply disruptions can occur which can affect people. Impact is expected to be minimal.
Health and Safety of Responders	Impact to responders is expected to be minimal.
Continuity of Operations	Minimal expectation for utilization of the COOP.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the length and intensity of the drought. Structural integrity of buildings, and buckling of roads could occur.
Environment	The impact to the environment could be severe. Drought can severely affect farming, ranching, wildlife and plants due to the lack of precipitation.
Economic Conditions	Impacts to the economy will be dependent on how extreme the drought is and how long it lasts. Communities that depend on an agricultural economic engine will likely be severely stressed.
Public Confidence in the Jurisdiction's Governance	Confidence could be an issue during periods of extreme drought if planning is not in place to address intake needs and loss of crops.





4.10 – Earthquake

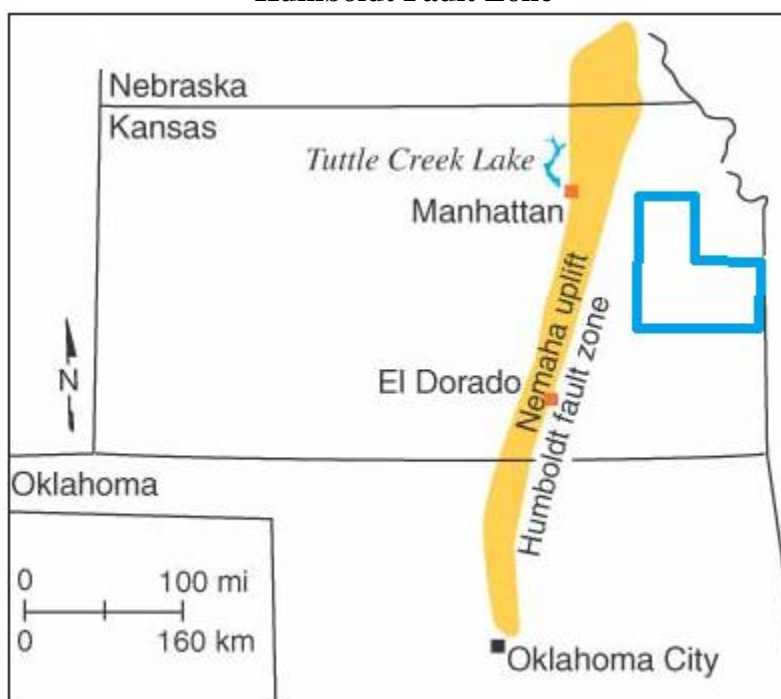
An earthquake is the result of a sudden release of energy in the Earth's crust that creates seismic waves that are typically caused by the rupturing of geological faults.

4.10.1 – Location and Extent

Kansas Region J is in an area of low potential seismic activity, with the Humboldt Fault (also known as the Nemaha Uplift) passing to the west of the region. Most earthquakes in the Humboldt Fault Zone are small and are detected only with instruments.



Humboldt Fault Zone



Two scales are used when referring to earthquake activity. Estimating the total force of an earthquake is the Richter scale, and the observed damage from an earthquake is the Modified Mercalli Intensity Scale. Additionally, both Acceleration (%g) and Velocity (cm/s) can be used to measure and quantify force and movement.

The following table equates the above referenced earthquake scales.





Table 4.33: Earthquake Magnitude Scale Comparison

Mercalli Scale Intensity	Verbal Description	Richter Scale Magnitude	Acceleration (%g)	Velocity (cm/s)	Witness Observations
I	Instrumental	1 to 2	0.17%	<0.1	None
II	Feeble	2 to 3	1.40%	1.1	Noticed only by sensitive people
III	Slight	3 to 4	1.40%	1.1	Resembles vibrations caused by heavy traffic
IV	Moderate	4	3.90%	3.4	Felt by people walking; rocking of free-standing objects
V	Rather Strong	4 to 5	9.20%	8.1	Sleepers awakened; bells ring
VI	Strong	5 to 6	18.00%	16	Trees sway, some damage from falling objects
VII	Very Strong	6	34.00%	31	General alarm, cracking of walls
VIII	Destructive	6 to 7	65.00%	60	Chimneys fall and some damage to building
IX	Ruinous	7	124.00%	116	Ground crack, houses begin to collapse, pipes break
X	Disastrous	7 to 8	>124.0%	>116	Ground badly cracked, many buildings destroyed. Some landslides
XI	Very Disastrous	8	>124.0%	>116	Few buildings remain standing, bridges destroyed.
XII	Catastrophic	8 or greater	>124.0%	>116	Total destruction; objects thrown in air, shaking and distortion of ground

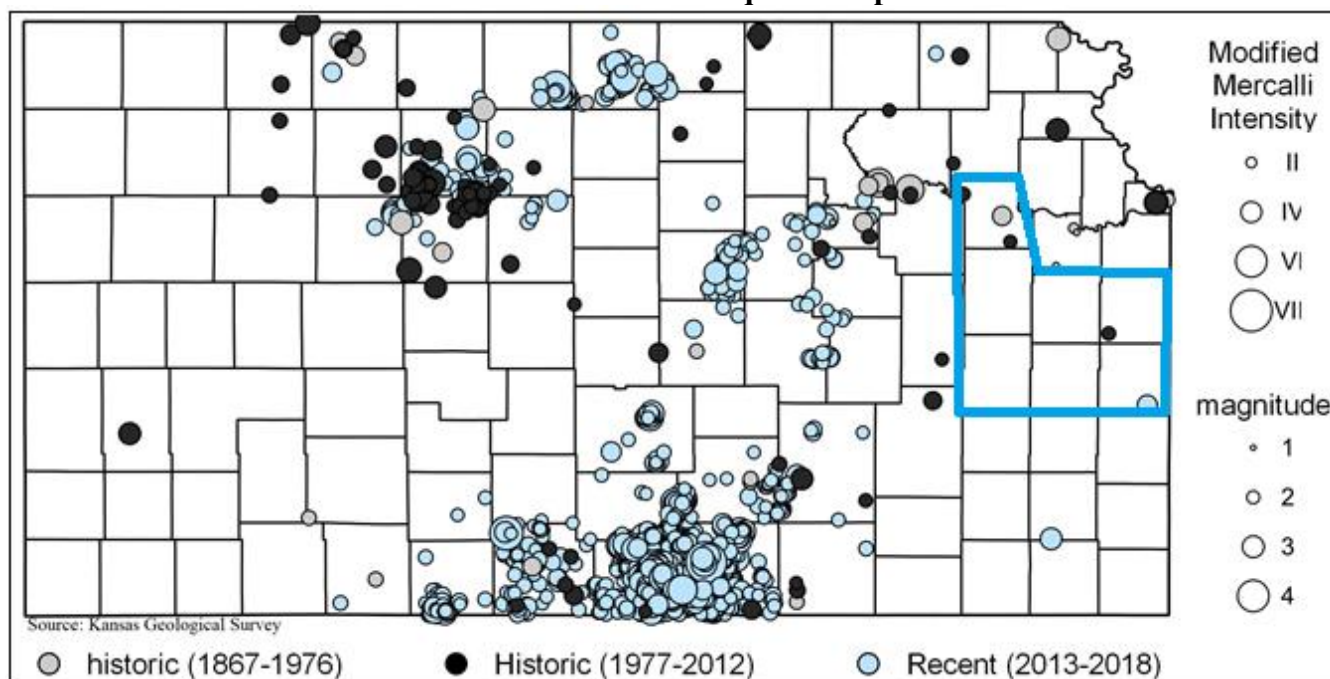
4.10.2 – Previous Occurrences

The following map, from the KGS, shows all recorded earthquakes from 1867 through 2018.





KGS Historic Earthquake Map



The KGS Earthquake Catalog records earthquake events from 1979 through present. The following table details the Richter Scale Magnitude of any recorded events in the catalog.

Table 4.34: Region J Number of Earthquakes by Richter Scale Magnitude, 1979 - 2018

	0.1 -3.9	4.0 – 4.9	5.0 – 5.9	6.0 – 6.9	7.0- 7.9	8.0 +	Highest
Anderson	0	0	0	0	0	0	-
Coffey	0	0	0	0	0	0	-
Franklin	0	0	0	0	0	0	-
Linn	1	0	0	0	0	0	2.8
Miami	1	0	0	0	0	0	2.1
Osage	0	0	0	0	0	0	-
Shawnee	2	0	0	0	0	0	2.1

Source: KGS

According to this archive, Kansas Region J has had four earthquake under magnitude 3.0 (with the highest being recorded at a magnitude 2.8) earthquakes since 1979.

Recently, concern about earthquakes caused by oil and gas exploration and production operations, has grown. Commonly, detected seismic activity associated with oil and gas operations, also known as induced seismicity, is thought to be triggered when wastewater is injected into disposal wells. According to the KGS, linking earthquakes to wastewater injection is difficult. Complex subsurface geology and limited data about that geology make it hard to pinpoint the cause seismic events. However, an established pattern of increased earthquake activity in an area over time may indicate a correlation between injection and seismic events.

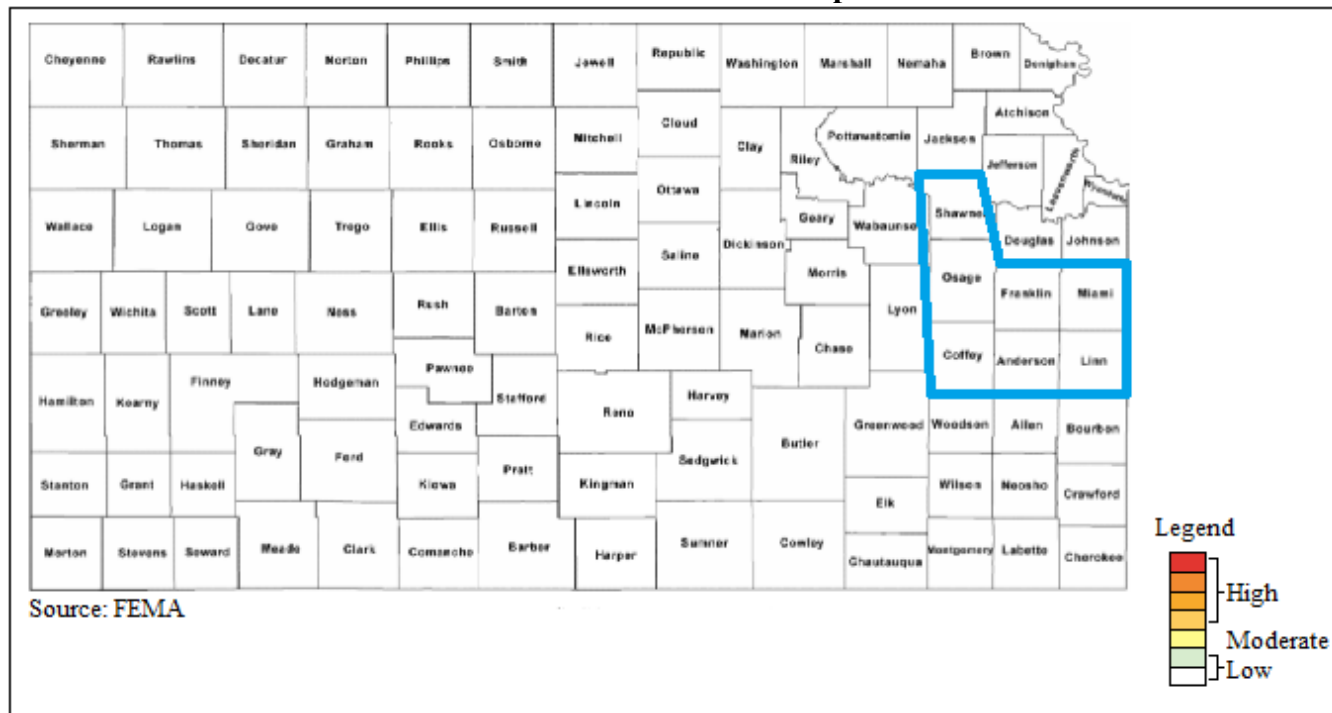




4.10.3 – Hazard Probability Analysis

The following FEMA Seismic Risk Map for the United States indicates that all of the State of Kansas, including Kansas Region J, falls into the low hazard rankings.

FEMA Seismic Risk Map

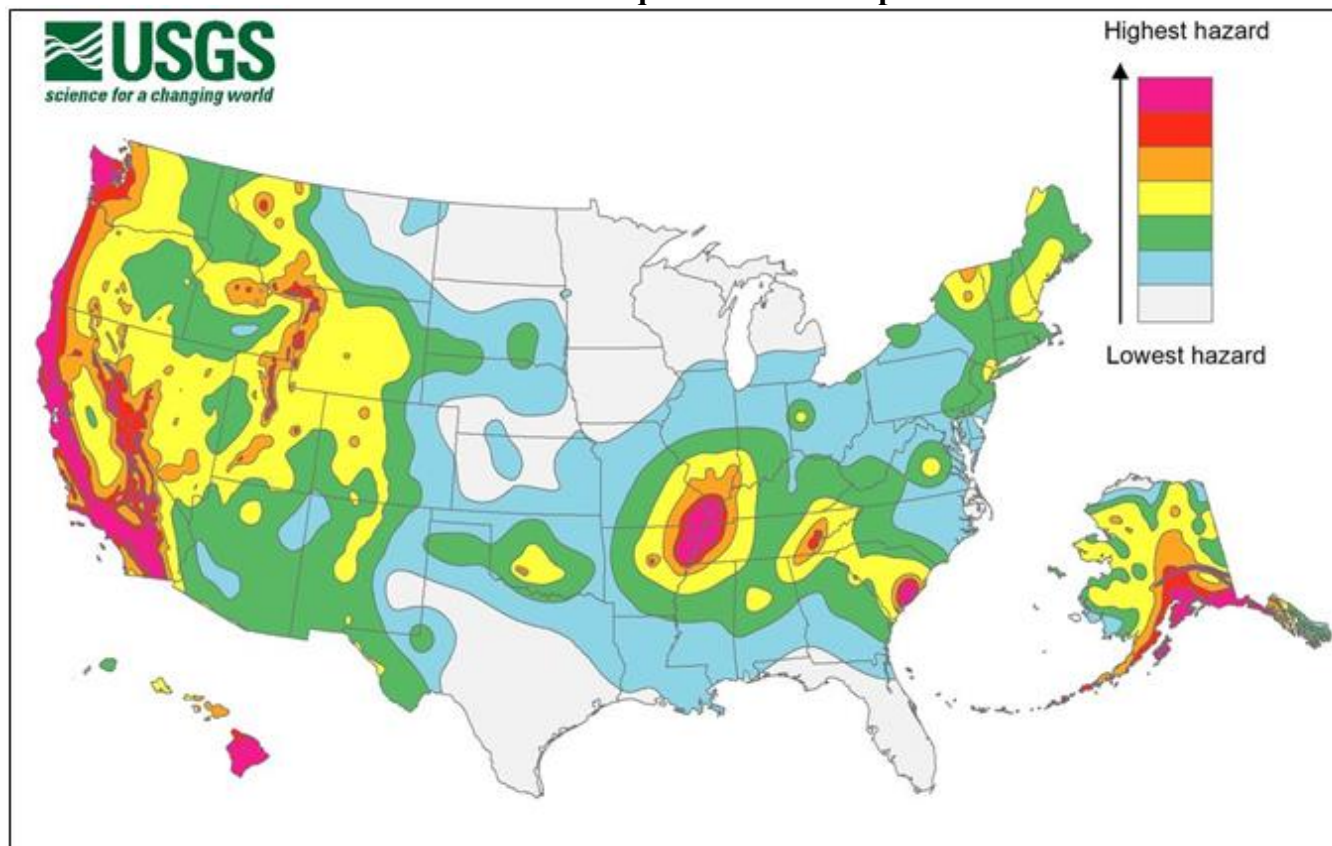


The USGS also published a map that indicates hazard rankings based on acceleration (%g) for the United States, with the data correlating with the indicated FEMA risk. This map indicates the probability that ground shaking will exceed a certain level over a 50-year period. The low-hazard areas have a 2% chance of exceeding a designated low level of shaking and the high-hazard areas have a 2% chance of topping a much greater level.





USGS Earthquake Hazard Map



New research by Stanford University shows that oil and gas production injection limits enacted by the State Legislature has reduced the frequency of induced seismicity. Current modelling predicts that at current injection rates the number of widely felt earthquakes in Kansas will decrease to as few as 100 by 2020.

4.10.4 – Vulnerability Analysis

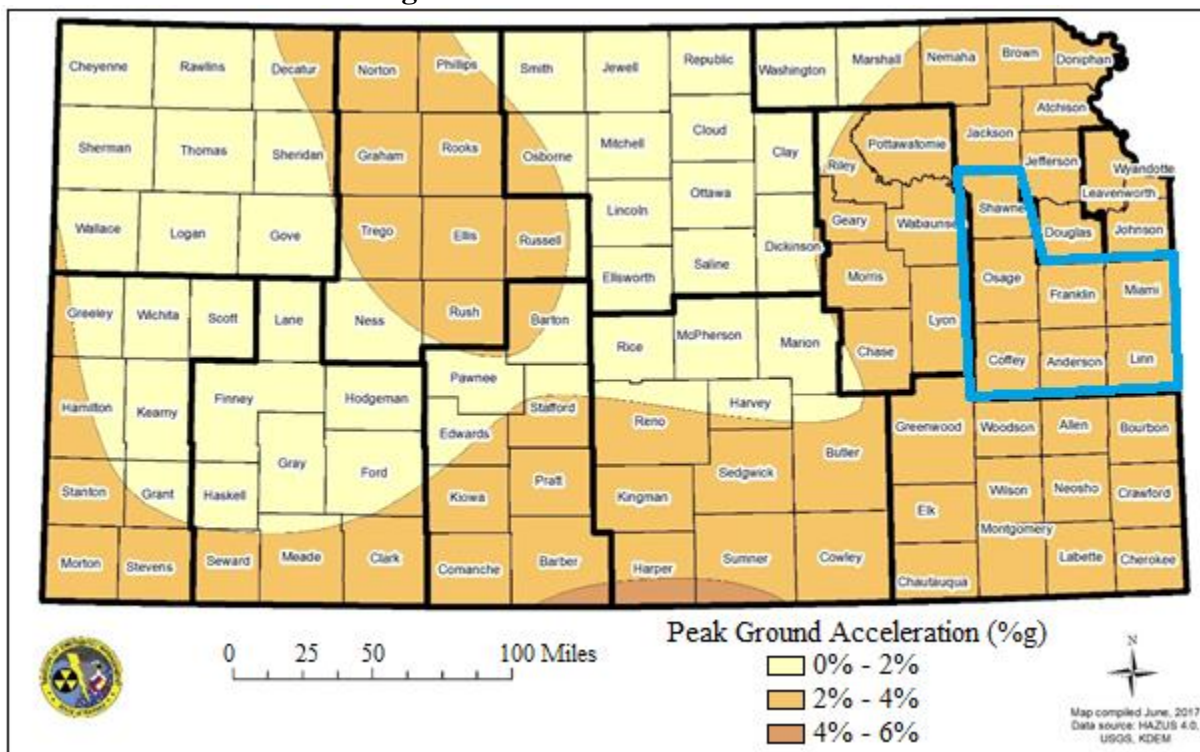
HAZUS, using the default inventory 2010 building valuations, was used to analyze vulnerability and estimate potential losses to earthquakes. A probabilistic, 2,500 Year 6.7 magnitude earthquake scenario was chosen to reveal areas of the region and state that are most vulnerable. These results are not meant to indicate annualized losses or damages as a result of a more typical low-magnitude event, but rather reveal vulnerabilities and losses for the worst-case scenario.

The following map, created using available HAZUS data, shows the ground shaking potential of a worst-case scenario 2,500-year 6.7 magnitude earthquake.





Regional Peak Ground Acceleration



Using available HAZUS data, the following potential losses from a worst-case scenario 2,500-year 6.7 Magnitude earthquake. However, these assumed vulnerabilities should be viewed as theoretical due to the tremendous number of variables involved in a potential earthquake event.

Table 4.35: Kansas Region J Probabilistic 6.7 Magnitude Earthquake Damages

County	Total Earthquake Losses	Displaced Households
Anderson	\$5,252	1
Coffey	\$5,633	1
Franklin	\$15,569	6
Linn	\$6,952	1
Miami	\$20,820	8
Shawnee	\$8,331	3
Osage	\$112,570	64

Source: KDEM and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability to earthquake events. The following table indicates the total county population and the percentage change over the period 2000 to 2017.





Table 4.36: Kansas Region J Population Vulnerability Data for Earthquakes

County	2017 Population	Percent Population Change 2000 to 2017
Anderson	7,840	-3.3%
Coffey	8,328	-6.1%
Franklin	25,599	3.3%
Linn	9,602	0.3%
Miami	4,625	16.3%
Osage	15,894	-4.9%
Shawnee	178,392	5.0%

Source: US Census Bureau

Counties with a higher number of structures are to be considered to have a potentially greater vulnerability. The following table indicates the total number of housing units in each county (used as a representative figure for the total number of structures in each county, as housing numbers are closely tied to commercial structures) and the percentage change over the period 2000 to 2017.

Table 4.37: Kansas Region J Structure Vulnerability Data for Earthquakes

County	2017 Housing Units	Percent Change 2000 to 2017
Anderson	3,743	4.1%
Coffey	4,056	4.6%
Franklin	11,213	9.6%
Linn	5,558	17.8%
Miami	13,473	22.7%
Osage	7,553	7.6%
Shawnee	79,858	8.3%

Source: US Census Bureau

4.10.5 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis

Table 4.38: Earthquake Consequence Analysis

Subject	Impacts of Earthquake
Health and Safety of the Public	Severity and location dependent. Impacts on persons near the epicenter are expected to be severe.
Health and Safety of Responders	Severity and location dependent. Impacts on persons near the epicenter are expected to be severe.
Continuity of Operations	Severity and location dependent. Event will likely require relocation, essential function prioritization based on capabilities and severe disruption of services.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location of the facility and the severity of the event. Loss of structural integrity of buildings and infrastructure could occur.





Table 4.38: Earthquake Consequence Analysis

Subject	Impacts of Earthquake
Environment	The impact to the environment could be severe, including topological changes and severe destruction.
Economic Conditions	Impacts to the economy will be dependent severity of earthquake and proximity to the epicenter. Impacts will likely be long lasting and possibly permanent for most severely impacted businesses.
Public Confidence in the Jurisdiction's Governance	Confidence could be an issue if planning is not in place to address need of population, including mass sheltering and mass care.





4.11 – Expansive Soils

Expansive soils are slow to develop and do not usually pose a risk to public safety. The slow expansion and contraction of the clays and soils places pressure on structural foundations and subsurface dwellings. This pressure can become so great it damages foundations, cracks walls, and deforms structures.

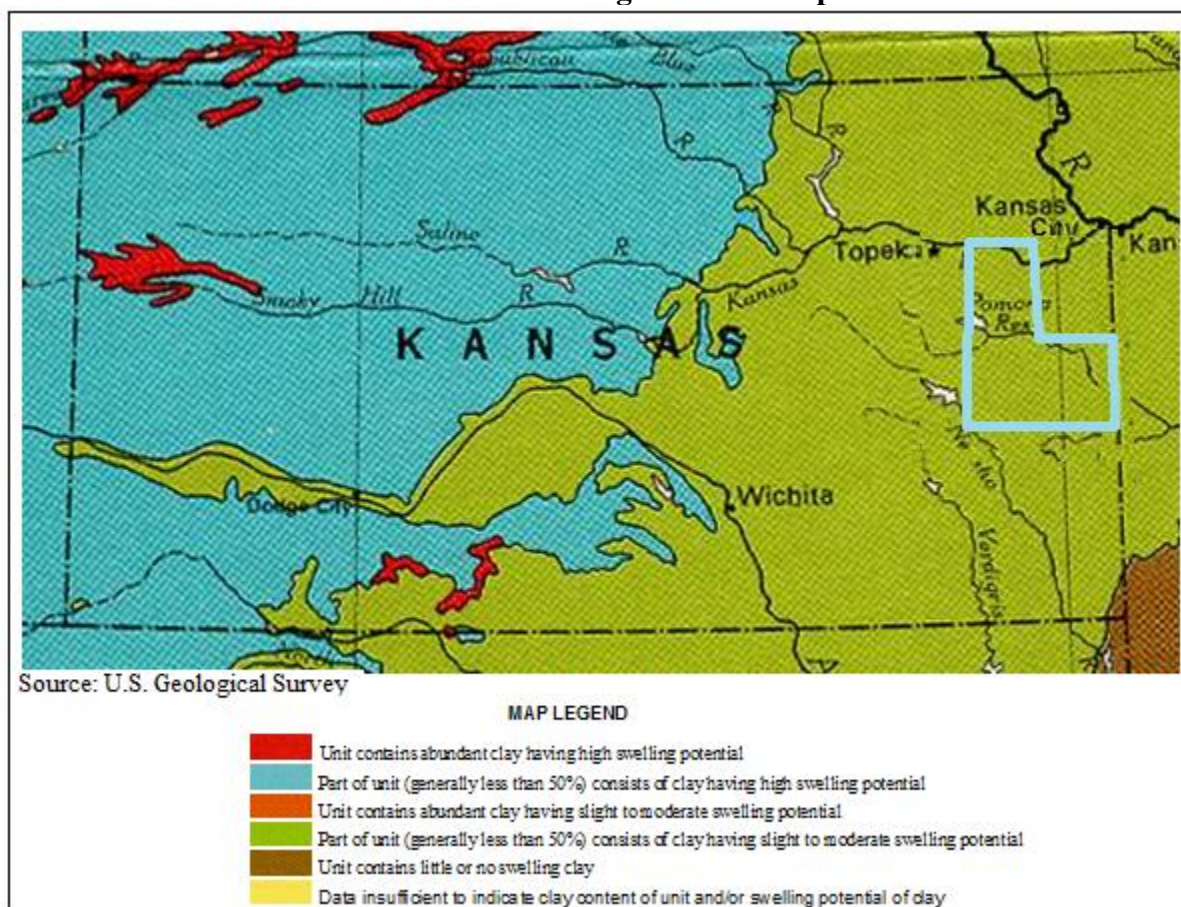


4.11.1 – Location and Extent

Kansas Region J possesses a wide array of soils with a range of permeability from moderate to low. Generally, the permeability of the soils is related to the clay content. Clay soils tend to shrink when dry and swell when wet which has large implications on underground utility infrastructure and home foundations.

The map shows the swelling potential of soils in Kansas Region J, indicating it is located in an area where the majority of the soil unit consists of clay having slight to moderate swelling potential.

USGS Soil Swelling Potential Map





4.11.2 – Previous Occurrences

No statewide database of expansive soils events is available.

Locally, there have been no reported expansive soil events within the past five years.

4.11.3 – Hazard Probability Analysis

Currently there is limited available data on this hazard, but it is held that each year in the United States, expansive soils cause billions of dollars in damage to buildings, roads, pipelines, and other structures. But, as expansive soils cause damage over extended periods of time damages caused may be attributed to other factors such as extended drought or heavy periods of moisture, both of which may exacerbate the hazard.

Because there is high clay content, high swell soils in the region, the probability of shrink/swell occurrence is 100%. However, the probability of damage is so poorly documented that is presently not possible to quantify the potential occurrence of a major damaging expansive soils event.

4.11.4 – Vulnerability Analysis

Physical structures are potentially vulnerable to highly expansive soil. It is estimated by KDEM that approximately 10% of the homes built on expansive soils could experience significant damage. Based on this, and using current available building valuations, the following table estimates the potential damages assuming a 50% impact on the value of the structure.

Table 4.39: Kansas Region J Estimated Potential Structural Damages, Expansive Soil

County	Property Valuation	Property Valuation for 10% of Building Stock	Estimated 50% Damage
Anderson	\$879,410,000	\$87,941,000	\$43,970,500
Coffey	\$1,053,574,000	\$105,357,400	\$52,678,700
Franklin	\$2,853,762,000	\$285,376,200	\$142,688,100
Linn	\$1,172,469,000	\$117,246,900	\$58,623,450
Miami	\$3,706,416,000	\$370,641,600	\$185,320,800
Osage	\$1,695,650,000	\$169,565,000	\$84,782,500
Shawnee	\$20,465,546,000	\$2,046,554,600	\$1,023,277,300

Source: US Census Bureau

4.11.5 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.





Table 4.40: Expansive Soils Consequence Analysis

Subject	Impacts of Expansive Soils
Health and Safety of the Public	Minimal impact.
Health and Safety of Responders	Minimal impact.
Continuity of Operations	Minimal expectation for utilization of COOP unless structures have extensive damage.
Property, Facilities, and Infrastructure	Localized impact could be moderate, including structural integrity to be lost, and roadways, railways to buckle.
Environment	Expansive soils could cause moderate damage to dams, levees, watersheds.
Economic Conditions	Economic impacts include rebuilding of the properties and infrastructure. Drought and extreme rain events could increase impact.
Public Confidence in the Jurisdiction's Governance	Confidence will be dependent on development trends and mitigation efforts at reducing the effect of expansive soils on new construction.





4.12 – Extreme Temperatures

Extreme temperature events occur when climate conditions produce temperatures well outside of the predicted norm. These extremes can have severe impacts on human health and mortality, natural ecosystems, agriculture, and other economic sectors.

4.12.1 – Location and Extent

The Midwest climate region is known for extremes in temperature. Specifically, Kansas lacks any mountain ranges that could act as a barrier to cold air masses from the north or hot, humid air masses from the south or any oceans or large bodies of water that could provide a moderating effect on the climate. The polar jet stream is often located over the region during the winter, bringing frequent storms and precipitation. Kansas summers are generally warm and humid due to the clockwise air rotation caused by Atlantic high-pressure systems bringing warm humid air up from the Gulf of Mexico.

All of Kansas Region J is vulnerable to both extreme heat and extreme cold, defined as follows.

Table 4.41: Extreme Temperature Definitions

Term	Definition
Extreme Heat	Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Ambient air temperature is one component of heat conditions, with relative humidity being the other. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when an area of high atmospheric pressure traps moisture laden air near the ground.
Extreme Cold	Although no specific definition exists for extreme cold, an extreme cold event can generally be defined as temperatures at or below freezing for an extended period of time. Extreme cold events are usually part of Winter Storm events but can occur during anytime of the year and can have devastating effects on agricultural production.

Data from the following High Plains Regional Climate Center weather stations from the first available date to present was obtained to illustrate regional temperature norms.

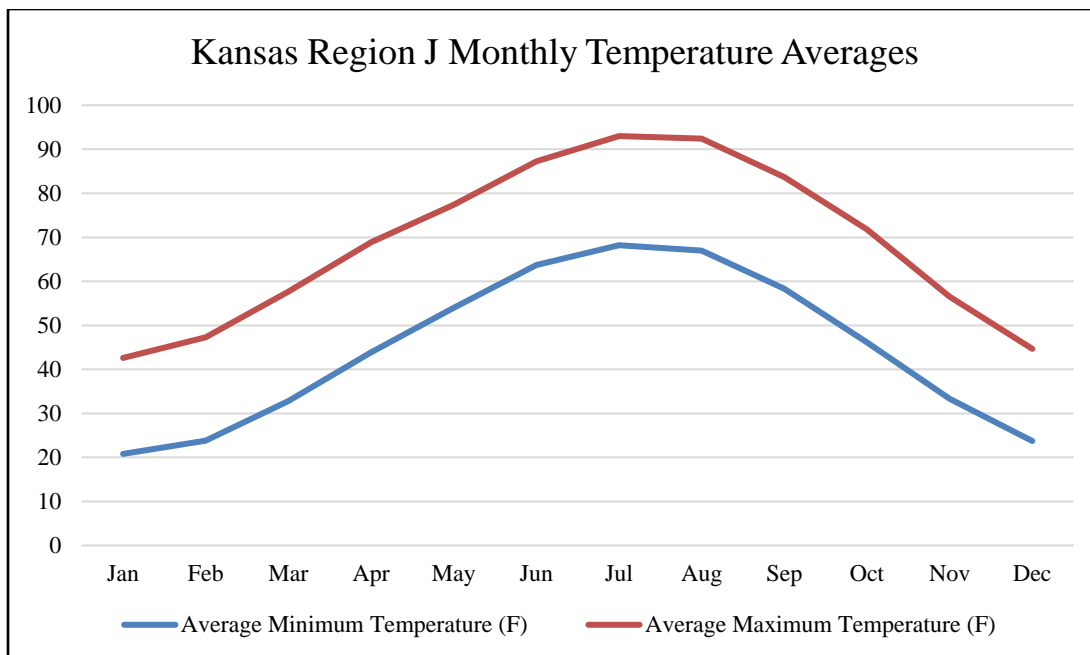
Table 4.42: Regional Average Temperatures

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Minimum Temperature (F)	19.6	23.6	32.9	43.7	53.7	63.0	67.4	65.7	57.1	45.6	33.4	23.6	44.1
Average Maximum Temperature (F)	40.5	45.9	56.8	68.1	76.7	85.2	90.7	89.9	81.8	71.0	56.0	43.6	67.2

Source: High Plains Regional Climate Center

The following graph illustrates the above data.





When discussing weather patterns climate change should be taken into account as it may markedly change future weather-related events. There is a scientific consensus that climate change is occurring, and recent climate modeling results indicate that extreme weather events may become more common. Rising average temperatures produce a more variable climate system which may result in an increase in the frequency and severity of some extreme weather events including longer and hotter heat waves (and by correlation, an increased risk of wildfires), higher wind speeds, greater rainfall intensity, and increased tornado activity.

4.12.2 – Previous Occurrences

Data from the High Plains Regional Climate Center indicates the following historic high and low temperatures.

Table 4.43: Kansas Region J Historic Temperatures

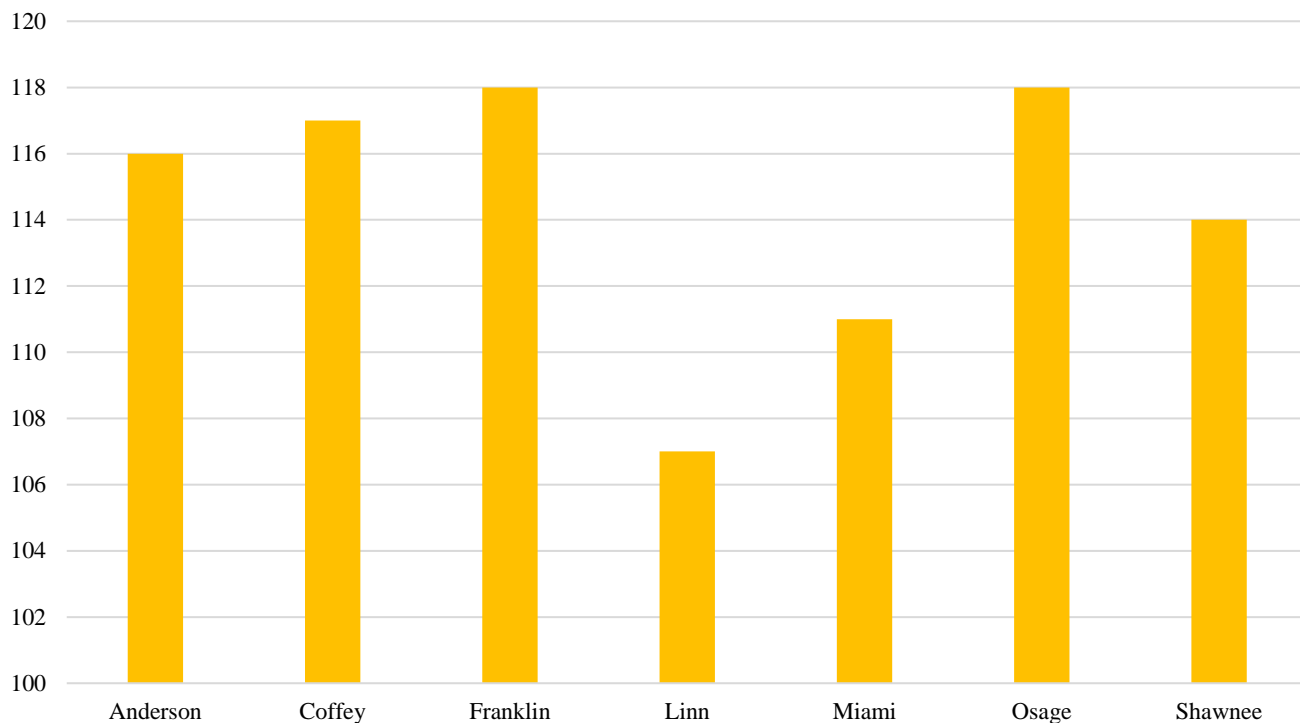
County	Historic Low Temperature (F)	Historic High Temperature (F)
Anderson	-19 (1912)	116 (1954)
Coffey	-27 (1905)	117 (1936)
Franklin	-28 (1905)	118 (1954)
Linn	-23 (1905)	107 (1913)
Miami	-22 (1903)	111 (1980)
Osage	-26 (1899)	118 (1936)
Shawnee	-23 (1892)	114 (1936)

Source: High Plains Regional Climate Center

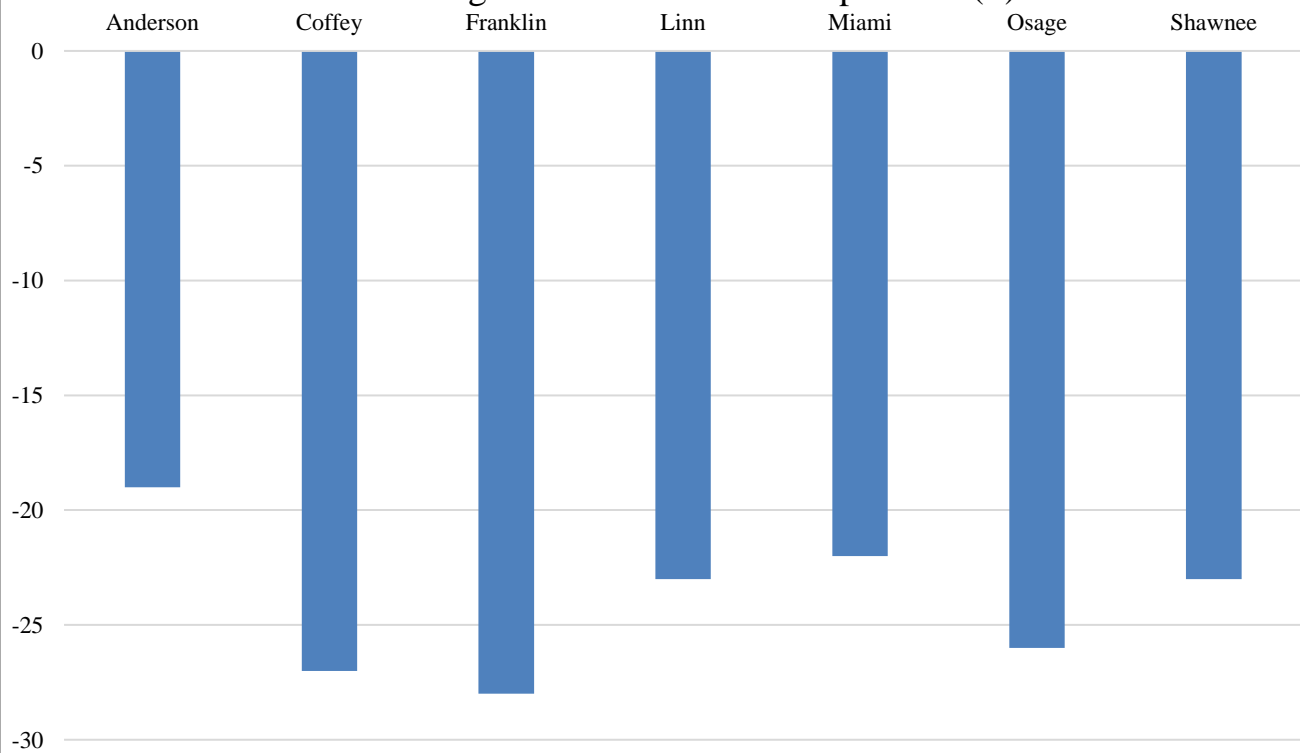




Kansas Region J Historic High Temperature (F)



Kansas Region J Historic Low Temperature (F)





The following table presents National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI) identified extreme temperature events (Excessive Heat and Extreme Cold/Wind Chill) and the resulting damage totals in Kansas Region J from the period 2009-2018.

Table 4.44: Kansas Region J NCEI Extreme Temperature Events, 2009 - 2018

County	Event Type	Number of Events	Property Damage	Deaths	Injuries
Anderson	Cold	0	\$0	0	0
	Heat	9	\$0	0	0
Coffey	Cold	0	\$0	0	0
	Heat	9	\$0	0	0
Franklin	Cold	1	\$0	0	0
	Heat	9	\$0	0	0
Linn	Cold	0	\$0	0	0
	Heat	1	\$0	0	0
Miami	Cold	0	\$0	0	0
	Heat	1	\$0	0	0
Osage	Cold	1	\$0	0	0
	Heat	9	\$0	0	0
Shawnee	Cold	2	\$0	0	0
	Heat	9	\$0	0	0

Source: NOAA NCEI

Crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of extreme temperatures on the region’s agricultural base. Crop loss data for the ten-year period of 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicates 325 claims on 219,142 acres for \$35,339,474.

Table 4.45: USDA Risk Management Agency Cause of Loss Indemnities 2009-2018, Extreme Temperatures

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Anderson	40	41,770	\$8,345,578
Coffey	52	34,974	\$6,358,577
Franklin	56	51,440	\$9,586,370
Linn	41	12,373	\$1,494,919
Miami	41	12,373	\$1,494,919
Osage	48	33,359	\$4,920,204
Shawnee	47	32,853	\$3,138,908
Reno	40	41,770	\$8,345,578
Rice	52	34,974	\$6,358,577
Sedgwick	56	51,440	\$9,586,370

Source: USDA Farm Service Agency

4.12.3 – Hazard Probability Analysis

Although periods of extreme heat and cold occur on an annual basis, events that create a serious public health risk or threaten infrastructure capacity occur less often. An extreme heat event is more likely to





occur in the months of June, July, August, and September, and an extreme cold event is more likely to occur in the months of November, December, January, February, and March. Also, the EPA has projected that with climate changes in the Great Plains, temperatures will continue to increase and impact all Kansas Region J communities.

As the reported extreme temperature events are regional, and not just county based, the following table summarizes extreme temperature event data for **Kansas Region J**.

Table 4.46: Kansas Region J Extreme Temperature Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	11
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Kansas Region J can expect on a yearly basis, relevant to extreme temperature events:

- One event
- No deaths or injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to extreme temperatures. The following table summarizes extreme temperature event data for **Anderson County**

Table 4.47: Anderson County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	40
Average Number of Claims per Year	4
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	41,770
Average Number of Acres Damaged per Year	4,177
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$8,345,578
Average Crop Damage per Year	\$834,558

Source: USDA

According to the USDA Risk Management Agency, Anderson County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Four insurance claims
- 4,177 acres impacted
- \$834,558 in insurance claims

The following table summarizes extreme temperatures event data for **Coffey County**.





Table 4.48: Coffey County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	52
Average Number of Claims per Year	5
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	34,974
Average Number of Acres Damaged per Year	3,497
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$6,358,577
Average Crop Damage per Year	\$635,858

Source: USDA

According to the USDA Risk Management Agency, Coffey County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Five insurance claims
- 3,497 acres impacted
- \$635,858 in insurance claims

The following table summarizes extreme temperatures event data for **Franklin County**.

Table 4.49: Franklin County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	52
Average Number of Claims per Year	5
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	51,440
Average Number of Acres Damaged per Year	5,144
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$9,586,370
Average Crop Damage per Year	\$958,637

Source: USDA

According to the USDA Risk Management Agency, Franklin County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Five insurance claims
- 5,144 acres impacted
- \$958,637 in insurance claims

The following table summarizes extreme temperatures event data for **Linn County**.

Table 4.50: Linn County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	41
Average Number of Claims per Year	4
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	12,373
Average Number of Acres Damaged per Year	1,237
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$1,494,919
Average Crop Damage per Year	\$149,492

Source: USDA





According to the USDA Risk Management Agency, Linn County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Four insurance claims
- 1,237 acres impacted
- \$149,492 in insurance claims

The following table summarizes extreme temperatures event data for **Miami County**.

Table 4.51: Miami County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	41
Average Number of Claims per Year	4
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	12,373
Average Number of Acres Damaged per Year	1,237
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$1,494,919
Average Crop Damage per Year	\$149,492

Source: USDA

According to the USDA Risk Management Agency, Miami County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Four insurance claims
- 1,237 acres impacted
- \$149,492 in insurance claims

The following table summarizes extreme temperatures event data for **Osage County**.

Table 4.52: Osage County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	48
Average Number of Claims per Year	5
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	33,359
Average Number of Acres Damaged per Year	3,336
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$4,920,204
Average Crop Damage per Year	\$492,020

Source: USDA

According to the USDA Risk Management Agency, Osage County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Five insurance claims
- 3,336 acres impacted
- \$492,020 in insurance claims

The following table summarizes extreme temperatures event data for **Shawnee County**.





Table 4.53: Shawnee County Extreme Temperatures Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	47
Average Number of Claims per Year	5
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	32,853
Average Number of Acres Damaged per Year	3,285
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$3,138,908
Average Crop Damage per Year	\$313,891

Source: USDA

According to the USDA Risk Management Agency, Shawnee County can expect on a yearly basis, relevant to extreme temperatures occurrences:

- Five insurance claims
- 3,285 acres impacted
- \$313,891 in insurance claims

4.12.4 – Vulnerability Analysis

The primary concerns with this hazard are human health safety issues. Specific at-risk groups identified were outdoor workers, farmers, and senior citizens. Due to the potential for fatalities and the possibility for the loss of electric power due to increased strain on power generation and distribution for air conditioning, periods of extreme heat can affect the planning area.

Exposure to direct sun can increase Heat Index values by as much as 15°F. The zone above 105°F corresponds to a Heat Index that may cause increasingly severe heat disorders with continued exposure and/or physical activity. The following table discusses potential impacts on human health related to excessive heat.

Table 4.54: Extreme Heat Impacts on Human Health

Heat Index (HI) Temperature	Potential Impact on Human Health
80-90° F	Fatigue possible with prolonged exposure and/or physical activity
90-105° F	Sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and/or physical activity
105-130° F	Heatstroke/sunstroke highly likely with continued exposure

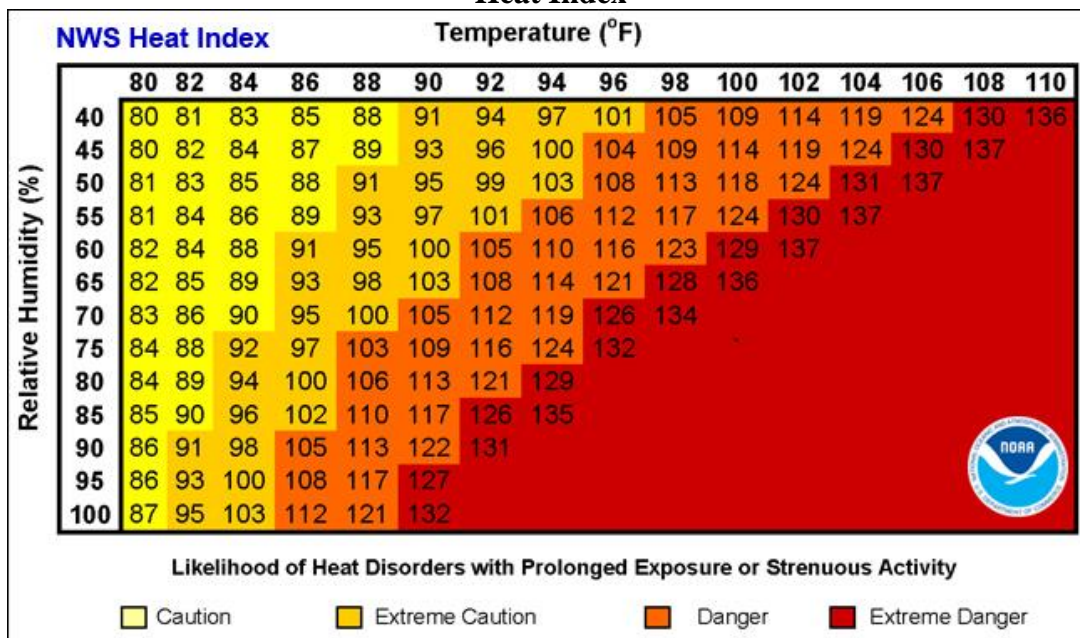
Source: National Weather Service Heat Index Program

The following graph, from the NWS, indicates Heat Index values.





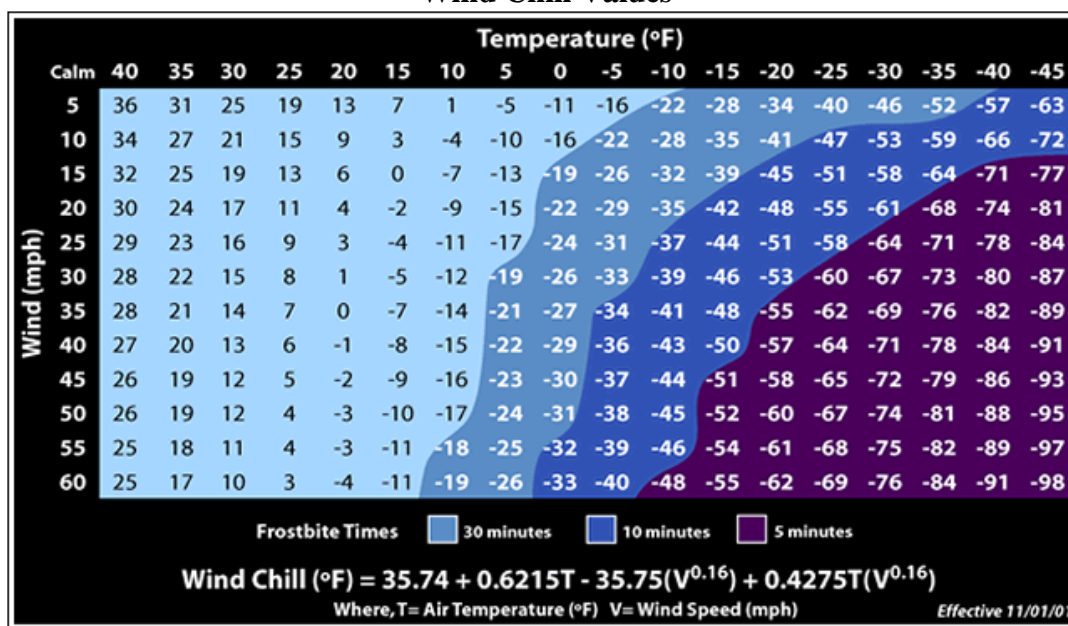
Heat Index



Extreme cold can cause hypothermia, an extreme lowering of the body’s temperature, frostbite and death. Infants and the elderly are particularly at risk, but anyone can be affected. Other impacts of extreme cold include asphyxiation from toxic fumes from emergency heaters, household fires, which can be caused by fireplaces and emergency heaters, and frozen/burst water pipes. There are no specific data sources recording cold related deaths in east-central Kansas.

The following graph, from the NWS, shows wind chill values.

Wind Chill Values





Counties with a higher identified population are to be considered to have a potentially greater vulnerability to extreme temperature events. The following table indicates the total county population and the percentage change over the period 2000 to 2017.

Table 4.55: Kansas Region J Population Vulnerability Data for Extreme Temperatures

County	2017 Population	Percent Population Change 2000 to 2017
Anderson	7,840	-3.3%
Coffey	8,328	-6.1%
Franklin	25,599	3.3%
Linn	9,602	0.3%
Miami	4,625	16.3%
Osage	15,894	-4.9%
Shawnee	178,392	5.0%

Source: US Census Bureau

Additionally, there is an increased likelihood of mortality for very young and very old populations due to extreme temperatures following table indicates the percentage of the total county population that may be considered especially vulnerable to extreme temperatures.

Table 4.56: Kansas Region J Vulnerable Population Vulnerability Data for Extreme Temperatures

County	Percentage of Population 5 and Under (2017)	Percentage of Population 65+ (2017)
Anderson	6.1%	21.6%
Coffey	5.3%	20.9%
Franklin	6.3%	16.4%
Linn	5.5%	22.1%
Miami	5.9%	16.5%
Osage	5.6%	19.4%
Shawnee	6.4%	17.6%

Source: US Census Bureau

In addition, extreme temperatures may exacerbate agricultural and economic losses. The USDA 2017 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region J County. USDA Risk Management Agency crop loss data for the five-year period 2009 - 2018 (data set includes full years for 2014 and 2018) allows us to quantify the monetary impact of extreme temperature conditions on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to extreme temperature events.





Table 4.57: Extreme Temperature Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	242,149	4,177	1.72%	\$80,868,000	\$834,558	1.03%
Coffey	218,978	3,497	1.60%	\$46,874,000	\$635,858	1.36%
Franklin	222,549	5,144	2.31%	\$75,773,000	\$958,637	1.27%
Linn	156,904	1,237	0.79%	\$41,143,000	\$149,492	0.36%
Miami	181,564	1,237	0.68%	\$53,030,000	\$149,492	0.28%
Osage	252,612	3,336	1.32%	\$66,913,000	\$492,020	0.74%
Shawnee	126,486	3,285	2.60%	\$39,209,000	\$313,891	0.80%

Source: USDA

4.12.5 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.58: Extreme Temperature Consequence Analysis

Subject	Impacts of Expansive Soils
Health and Safety of the Public	Depending on the duration of the event, impact is expected to be severe for unprepared and unprotected persons. Impact will be minimal to moderate for prepared and protected persons.
Health and Safety of Responders	Impact could be severe if proper precautions are not taken, i.e. hydration in heat, clothing in extreme cold. With proper preparedness and protection, the impact would be minimal.
Continuity of Operations	Minimal expectation for utilization of the COOP.
Property, Facilities, and Infrastructure	Impact to infrastructure could be minimal to severe depending on the temperature extremes.
Environment	The impact to the environment could be severe. Extreme heat and or cold could seriously damage wildlife and plants, trees and crops.
Economic Conditions	Impacts to the economy will be dependent on how extreme the temperatures get, but only in the sense of whether people will venture out to spend money. Utility bills could increase causing more financial hardship.
Public Confidence in the Jurisdiction’s Governance	Confidence will be dependent on how well utilities hold up as they are stretched to provide heat and cool air, depending on the extreme. Planning and response could be challenged.





4.13 – Flood

Floods are most common in seasons of rain and thunderstorms. Floods that threaten Kansas Region J can be generally classified under two categories:

- **Flash Flood:** The product of heavy, localized precipitation in a short time period over a given location
- **Riverine Flood:** Occurs when precipitation over a given river basin for a long period of time causes the overflow of rivers, streams, lakes and drains



4.13.1 – Location and Extent

Flash Flooding

The NWS provides the following definitions of warnings for actual and potential flood conditions for Flash Floods:

- **Flash Flood Watch:** Issued to indicate current or developing hydrologic conditions that are favorable for flash flooding in and close to the watch area, but the occurrence is neither certain or imminent.
- **Flash Flood Warning:** Issued to inform the public, emergency management and other cooperating agencies that flash flooding is in progress, imminent, or highly likely.
- **Flash Flood Statement:** In hydrologic terms, a statement by the NWS which provides follow-up information on flash flood watches and warnings.

In general, flash flooding occurs in those locations in the planning area that are low-lying and/or do not have adequate drainage. Data from University of Kansas indicates that the average annual precipitation for Kansas Region J counties for 2017 (the latest available data):

- Anderson County: 22.26 inches
- Coffey County: 32.76 inches
- Franklin County: 34.86 inches
- Linn County: 44.79 inches
- Miami County: 39.97 inches
- Osage County: 34.56 inches
- Shawnee County: 33.39 inches

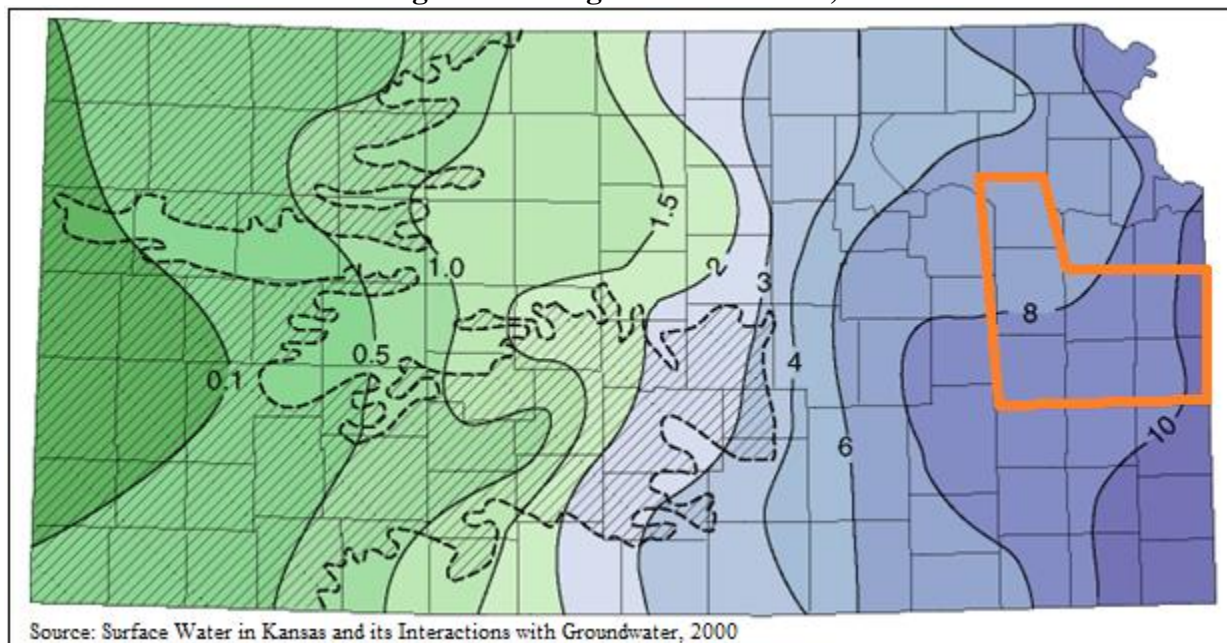
This equates to a regional average of 34.66 inches of precipitation for 2017.





The following map illustrates the distribution of water runoff in Kansas. Surface runoff is water from rain or snowmelt that flows on the surface and does not percolate into the subsurface. In general, the higher the surface runoff, the higher the potential for flash flooding.

Kansas Region J Average Annual Runoff, In Inches



Riverine Flooding

In general, riverine flooding occurs from the overflow of rivers, streams, drains, and lakes due to excessive rainfall. The NWS provides the following definitions of warnings for actual and potential flood conditions for riverine flooding:

- **Flood Potential Outlook:** In hydrologic terms, a NWS outlook that is issued to alert the public of potentially heavy rainfall that could send rivers and streams into flood or aggravate an existing flood.
- **Flood Watch:** Issued to inform the public and cooperating agencies that current and developing hydro meteorological conditions are such that there is a threat of flooding, but the occurrence is neither certain nor imminent.
- **Flood Warning:** In hydrologic terms, a release by the NWS to inform the public of flooding along larger streams in which there is a serious threat to life or property. A flood warning will usually contain river stage (level) forecasts.
- **Flood Statement:** In hydrologic terms, a statement issued by the NWS to inform the public of flooding along major streams in which there is not a serious threat to life or property. It may also follow a flood warning to give later information.

All areas of Kansas Region J located near a stream or river are at risk of riverine flooding. While riverine floods can and do occur at various levels, the one percent annual chance flood has been chosen as the basis for this risk assessment. This level is the accepted standard for flood insurance and regulatory purposes.





In general, flood probability can be expressed by recurrence interval, the average period of time for a flood that equals or exceeds a given magnitude, expressed as a period of years. The probability of occurrence of a given flood can also be expressed as the odds of recurrence of one or more similar or bigger floods in a certain number of years. Large, catastrophic floods have a very low frequency or probability of occurrence, whereas smaller floods occur more often. The larger the number of years in a recurrence interval, the smaller the chances of experiencing that flood in a year. However, the odds are never zero, even very large, uncommon floods always have a very small chance of recurring every year. When reviewing flood probability, it is important to note that once a flood occurs its chance of recurring the next year remains the same.

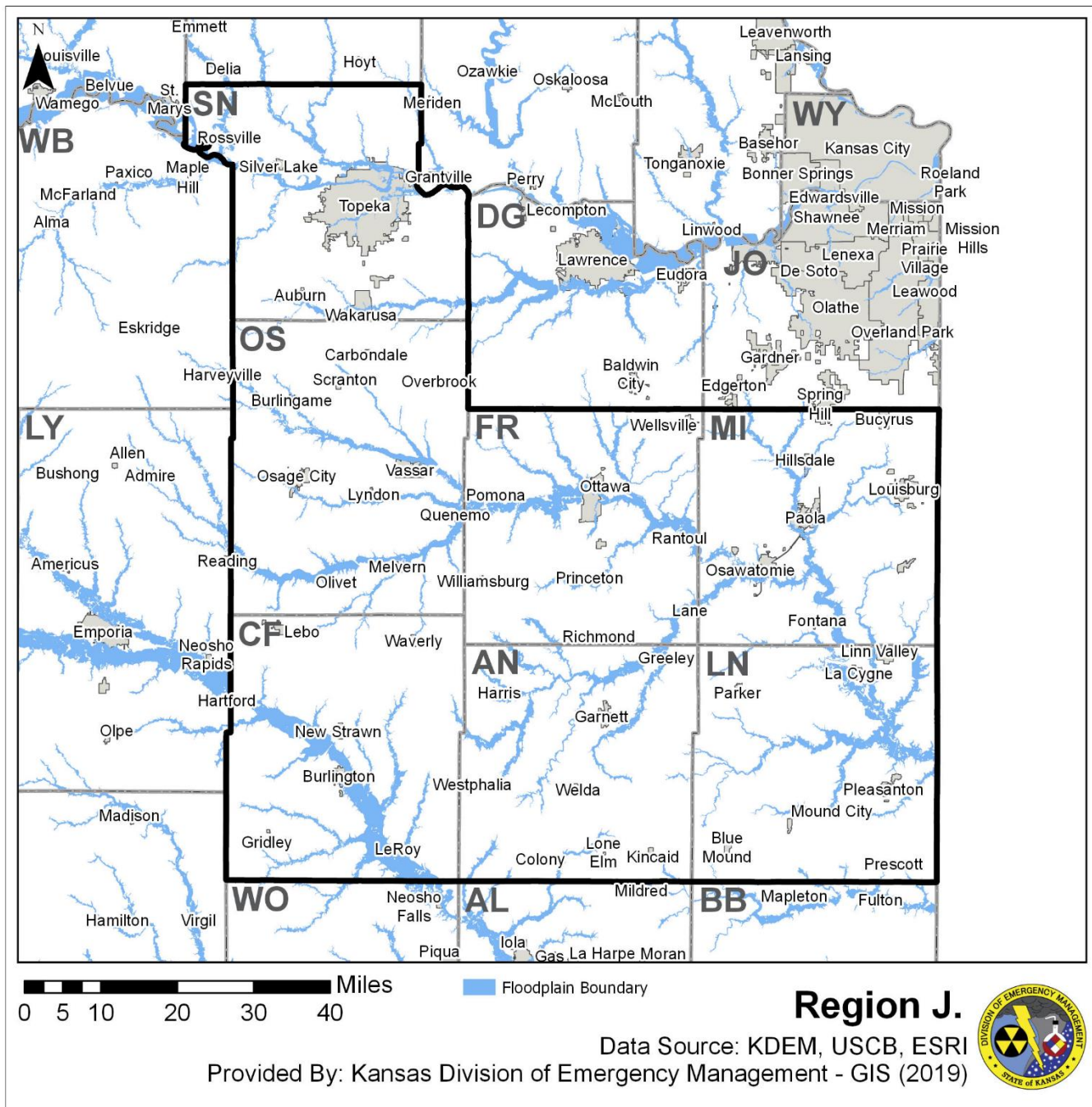
Table 4.59: Flood Recurrence Interval Probability

Recurrence Interval, in Years	Probability of Occurrence in Any Given Year	Percent Chance of Occurrence in Any Given Year
100	1 in 100	1
50	1 in 50	2
25	1 in 25	4
10	1 in 10	10
5	1 in 5	20
2	1 in 2	50

Source: FEMA

The following map, generated by KDEM using available data, depicts regional one percent annual flood areas.





Local Concerns

Many local jurisdictions are subject to areas of repeat flooding. In an effort to identify these areas the KDA, in conjunction with the USACE Silver Jackets, has created a mapping system under the Recurring Flood Identification Project. This system allows for the local mapping of known flood areas within regional jurisdictions. Three classifications of flooding areas are used, minimal moderate and severe. The following map indicates identified repeat flood areas within the region.

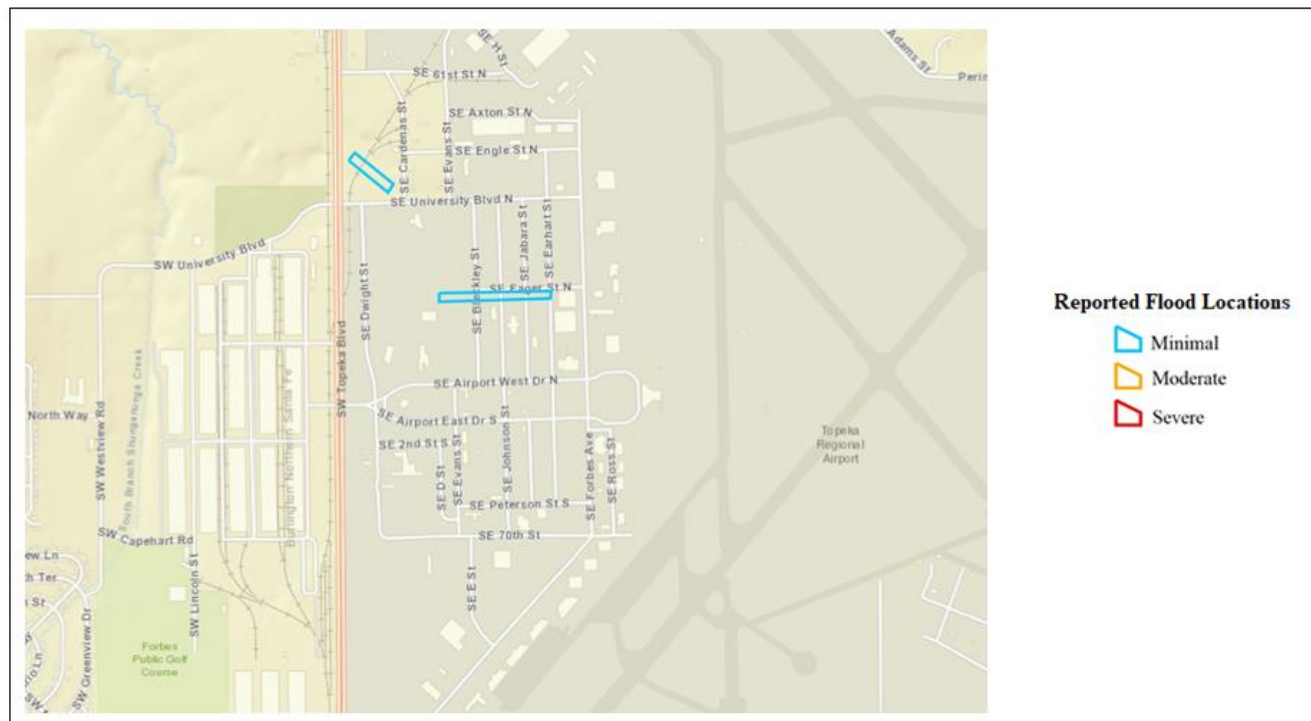




KDA/Silver Jackets Repeat Flood Location, Shawnee County



KDA/Silver Jackets Repeat Flood Location, Shawnee County

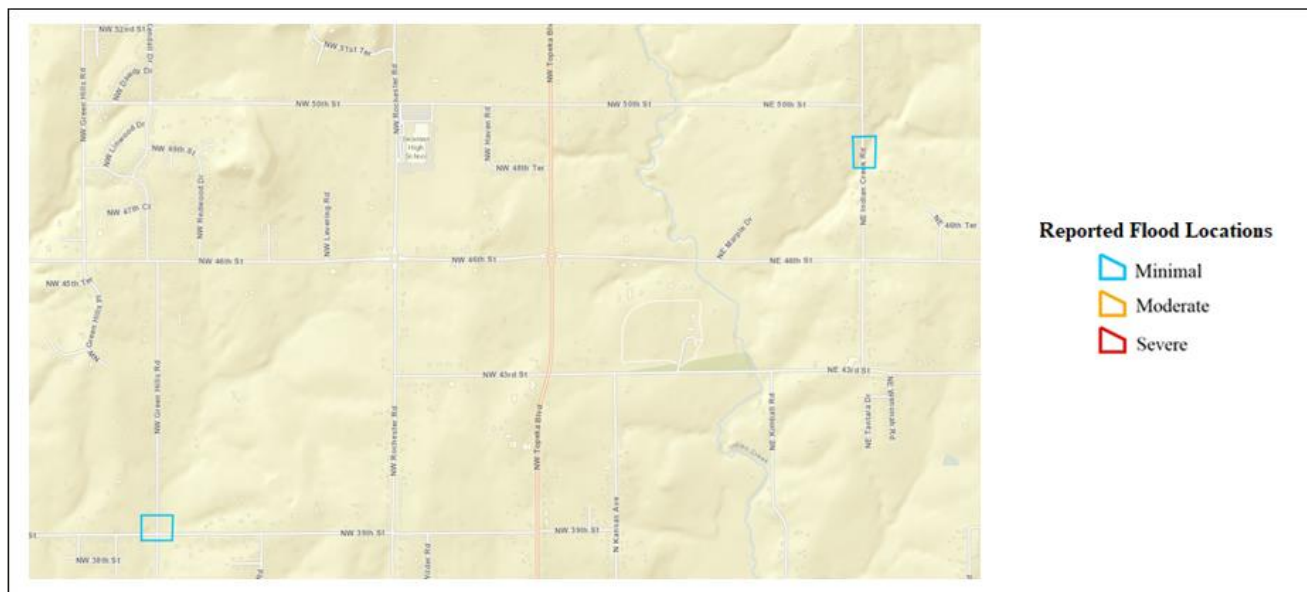




KDA/Silver Jackets Repeat Flood Location, Shawnee County

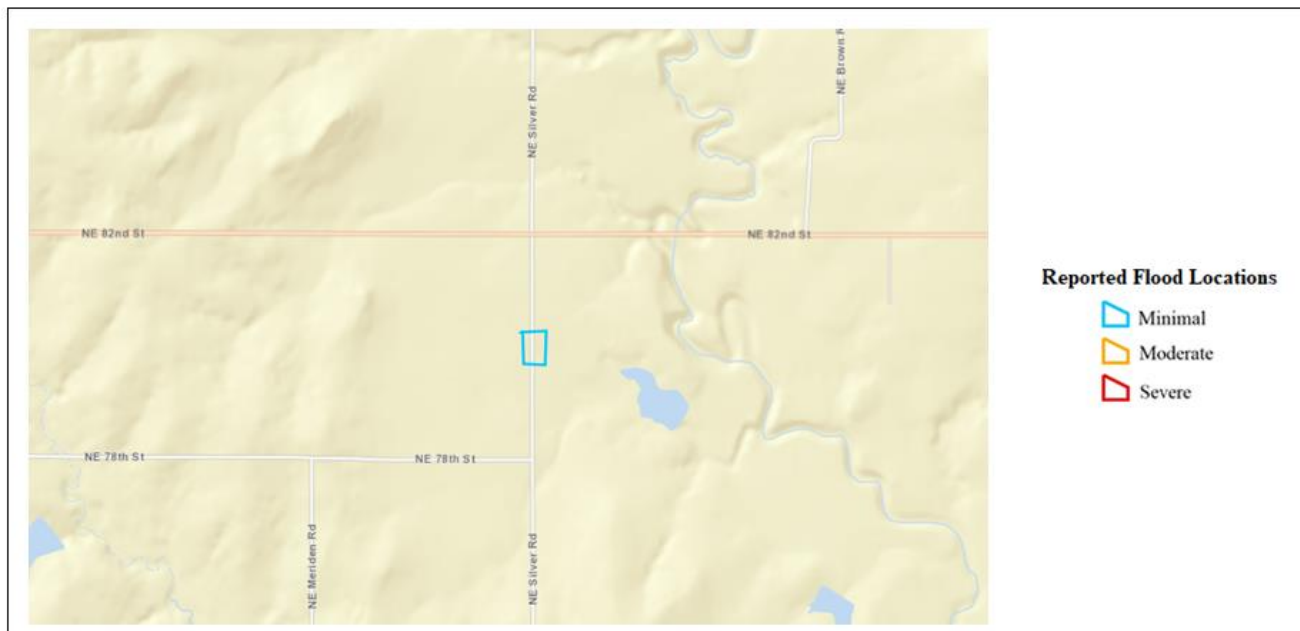


KDA/Silver Jackets Repeat Flood Locations, Shawnee County



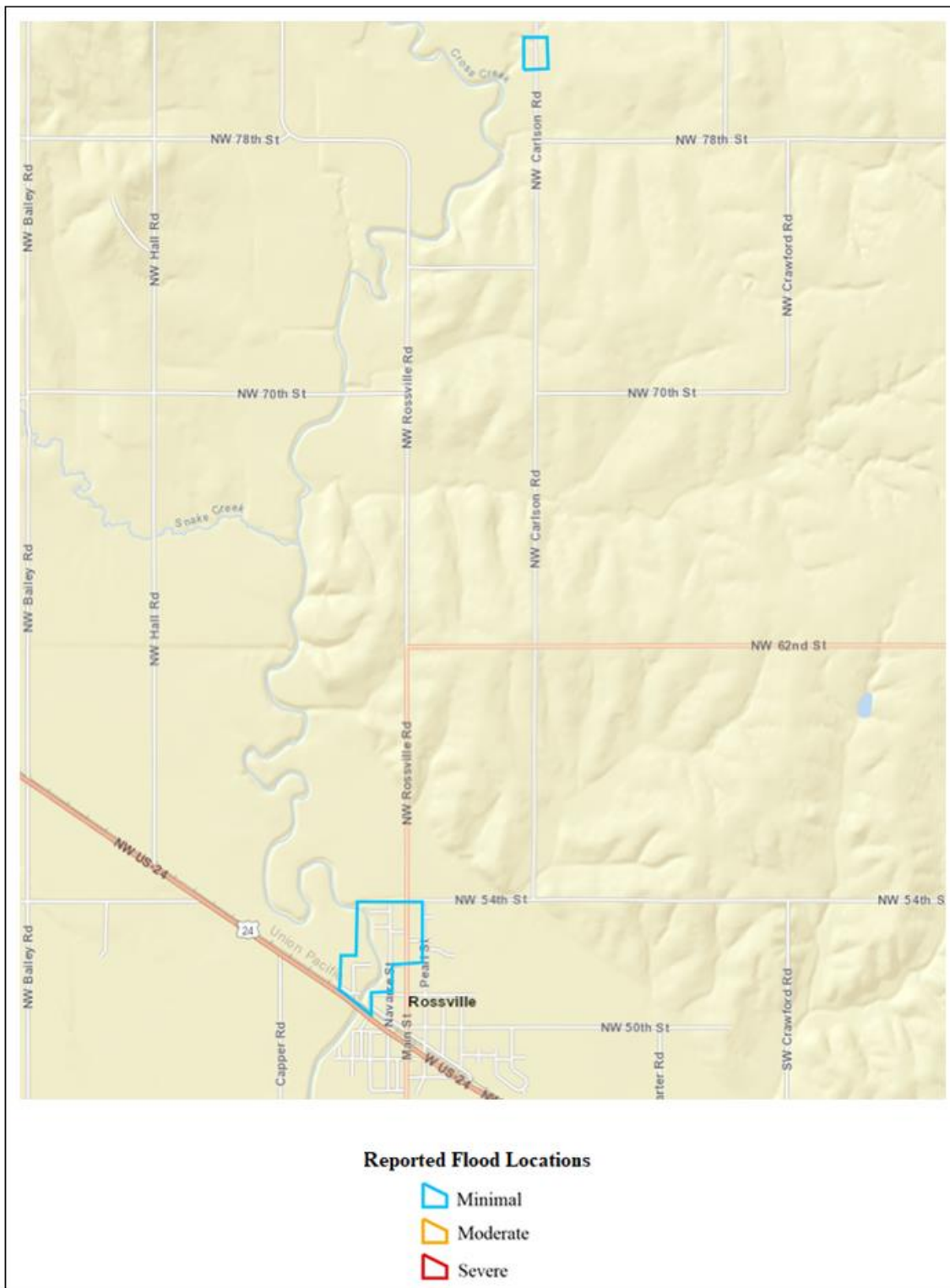


KDA/Silver Jackets Repeat Flood Locations, Shawnee County



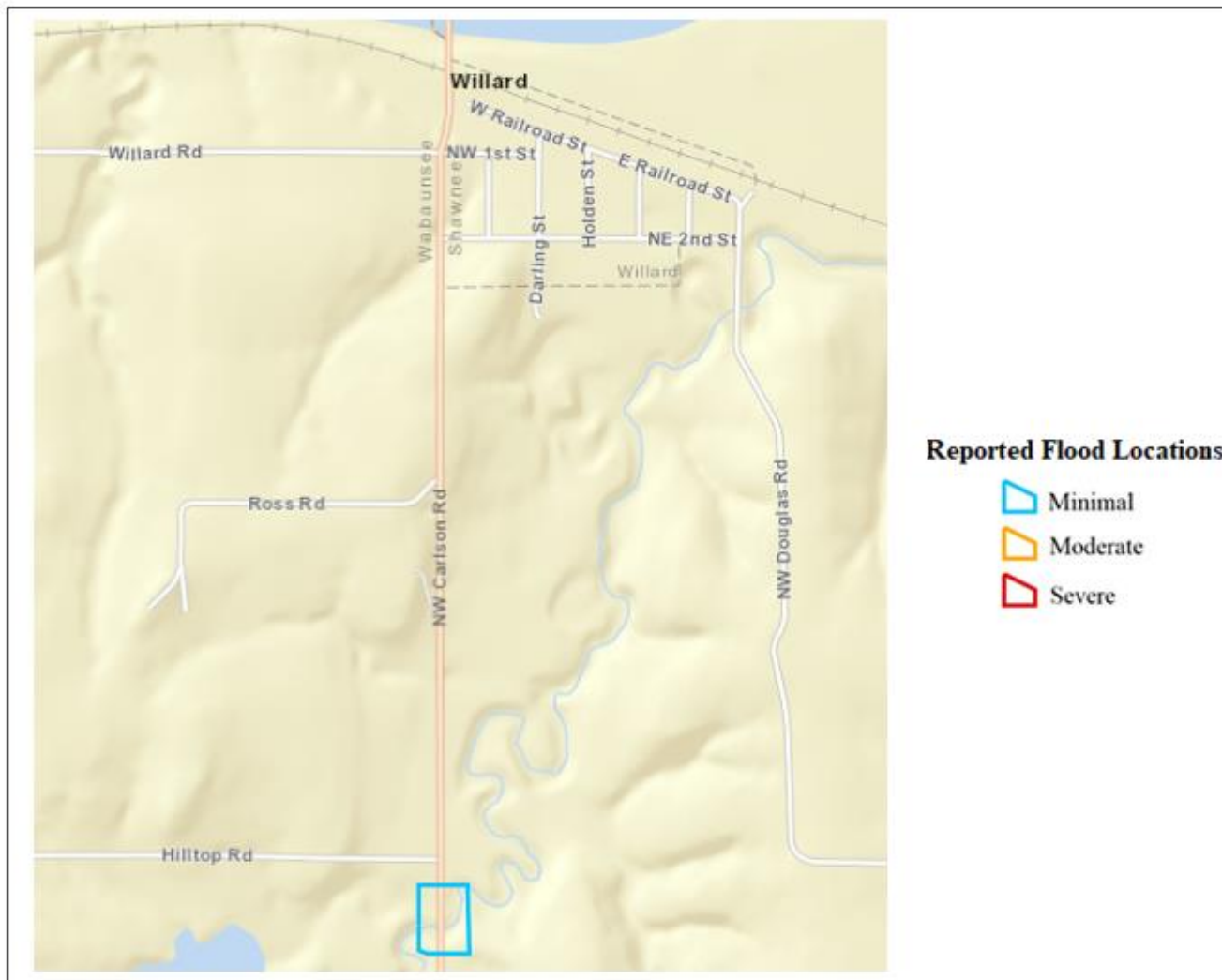


KDA/Silver Jackets Repeat Flood Locations, Shawnee County



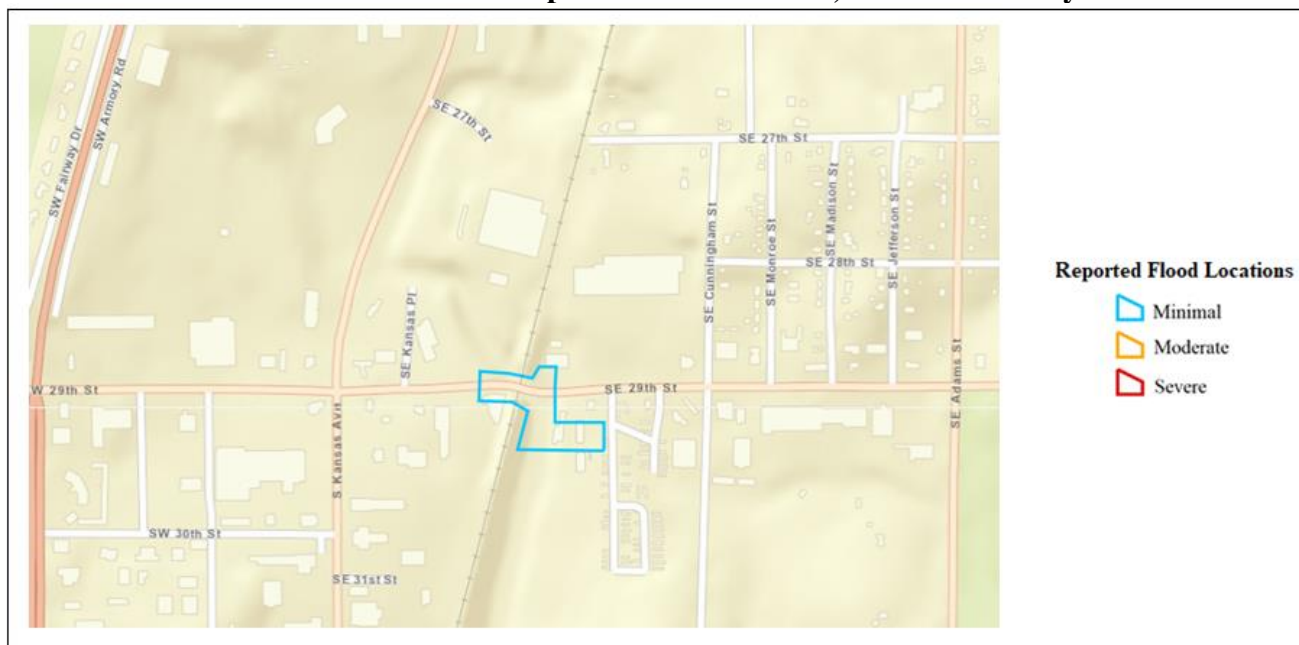


KDA/Silver Jackets Repeat Flood Locations, Shawnee County





KDA/Silver Jackets Repeat Flood Locations, Shawnee County



Coffey County has identified the following additional low water crossings of concern:

- 3rd Terr & Garner Road .6
- 3rd Road & Xeric Road .2
- 8th Road & Contour Road .2
- 13th Road & Blackbird Road .1
- 20th Road & Kafir Road .3
- 20th Road & Kafir Road .4
- 22nd Road & Xeric Road .7
- 24th Road & Milo Road .95
- 27th Road & Homestead Road .25
- 28th Road & Trefoil Road .5
- 28th Road & Xeric Road .65
- Blackbird Road & 3rd Road .0
- Blackbird Road & 5th Road .5
- Blackbird & 5th Road .6
- Contour & 4th Road .8
- Dobbin & 4th Road .5
- Dobbin & 7th Road .5
- Garner Road & 12th Road .25
- Homestead Road & 12th Road .9
- Homestead Road & 13th Road .6
- Homestead Lane & 2nd Road .9
- Juneberry Road & 26th Road .9
- Juneberry Road & 26th Road .6





- Kafir Lane & 6th Road .1
- Oxen Road & 5th Road .0
- Planter Road & 7th Road .25
- Quail Road & 27th Road .45
- Shetland Road & 15th Road .6
- Verdure Road & 11th Road .6
- Yearling Road & 3rd Road .7
- 26th Road & Xeric Road .680

4.13.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been six Presidential Disaster Declarations for Kansas Region J for floods (along with other associated hazard events such as tornados or severe storms). The following 20-year information on past declared disasters is presented to provide a historical perspective on flood events that have impacted Kansas Region J. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2013.

Table 4.60: Kansas Region J FEMA Flood Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4417	02/25/2019 (10/04/18 – 10/15/18)	Severe Storms, Straight-line Winds, and Flooding	Anderson	-
4230	07/20/2015 (05/04/2015 – 06/21/2015)	Severe Storms, Tornados, Straight-line Winds, and Flooding	Coffey, Franklin, Miami, Morris, Nemaha, Neosho, and Osage	\$13,848,325
4150	10/22/2013 (07/22/2013 – 08/15/2013)	Severe Storms, Straight-line Winds, Tornados, and Flooding	Coffey and Linn	\$11,412,827
1932	08/10/2010 (6/7-7/21/2010)	Severe Storms, Flooding , and Tornados	Franklin, Miami, and Osage	\$9,279,257
1860	09/30/2009 (7/8-7/14/2009)	Severe Storms and Flooding	Anderson, Franklin, and Linn	\$3,347,662
1849	06/25/2009 (4/25-5/16/2009)	Severe Storms, Flooding , Straight-line Winds, and Tornados	Anderson, Coffey, and Linn	\$15,013,488
1776	07/09/2008	Severe Storms, Flooding, and Tornados	Franklin and Linn	\$70,629,544
1711	7/2/2007 (6/26-30/2007)	Severe Storms and Flooding	Anderson, Coffey, Franklin, Linn, Miami and Osage	\$40,238,600
1699	5/6/2007 (5/4/2007)	Severe Storms, Tornados, and Flooding	Osage and Shawnee	\$117,565,269
1579	2/8/2005 (1/4-6/2005)	Severe Winter Storm, Heavy Rains, and Flooding	Anderson Coffey, Franklin, Osage and Shawnee	\$106,873,672
1535	8/3/2004 (6/12-7/25/2004)	Severe Storms, Flooding, and Tornados	Shawnee	\$12,845,892





Table 4.60: Kansas Region J FEMA Flood Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1462	5/6/2003 (5/4-30/2003)	Severe Storms, Tornados, and Flooding	Anderson, Miami and Osage	\$988,056

Source: FEMA

-: Data unavailable

The following provides details of the two Presidential Disaster Declarations for Kansas Region J since the last plan update in 2014.

**Kansas – Severe Storms, Straight-Line Winds, and Flooding
FEMA-4417-DR**

Declared February 25, 2019

The Federal Emergency Management Agency announced that federal disaster assistance has been made available to the state of Kansas to supplement state and local recovery efforts in the areas affected by severe storms, straight-line winds, and flooding from Oct. 4-15, 2018.

Federal funding is available to the state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by severe storms, straight-line winds, and flooding in Anderson, Barton, Cowley, Doniphan, Greenwood, Harvey, Kingman, Neosho, Pratt, Reno, Rice, and Sumner counties.

**Kansas – Severe Storms, Tornados, Straight-Line Winds, and Flooding
FEMA-4230-DR**

Declared July 20, 2015

On July 1, 2015, Governor Sam Brownback requested a major disaster declaration due to severe storms, tornados, straight-line winds, and flooding during the period of May 4 to June 21, 2015. The Governor requested a declaration for Public Assistance, including direct federal assistance for 42 counties and Hazard Mitigation statewide. During the period of May 4 to June 27, 2015, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On July 20, 2015, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms, tornados, straight-line winds, and flooding in Atchison, Barton, Brown, Anderson, Chase, Chautauqua, Cherokee, Cheyenne, Clay, Cloud, Coffey, Coffey, Doniphan, Edwards, Elk, Ellsworth, Franklin, Gray, Greenwood, Franklin, Haskell, Hodgeman, Jackson, Jefferson, Jewell, Lyon, Shawnee, Marshall, Osage, Meade, Miami, Morris, Nemaha, Neosho, Osage, Pottawatomie,





Republic, Rice, Stevens, Sumner, Wabaunsee, and Washington Counties. Direct Federal assistance was also authorized. Finally, this declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

In addition to the above reported events, the following table presents NOAA NCEI identified flood events and the resulting damage totals in Kansas Region J from the period 2009 - 2018. This data is limited to reported events.

Table 4.61: Kansas Region J NCEI Flood and Flash Flood Events, 2009 - 2018

County	Event Type	Number of Days with Events	Property Damage	Deaths	Injuries
Anderson	Flood	2	\$1,000	0	0
	Flash Flood	14	\$0	0	0
Coffey	Flood	1	\$0	0	0
	Flash Flood	5	\$0	0	0
Franklin	Flood	3	\$0	0	0
	Flash Flood	6	\$9,000	0	0
Linn	Flood	5	\$0	0	0
	Flash Flood	0	\$0	0	0
Miami	Flood	3	\$0	0	0
	Flash Flood	5	\$0	0	0
Osage	Flood	3	\$0	0	0
	Flash Flood	10	\$0	0	0
Shawnee	Flood	6	\$0	0	0
	Flash Flood	16	\$0	0	0

Source: FEMA

The following provides local accounts of notable flood events:

- **October 4-14, 2018: Anderson County**
Flooding impacted the entire county damaging county roads and causing school closures and cancellations.
- **Spring, 2018: Auburn Township (Shawnee County)**
Flooding at SW 82nd Street and SW Indian Hills Road caused a road surface washout.
- **May 27, 2016: Lyndon (Osage County)**
Flooding impacted the following sites:
 - Lyndon Community Center, 204 Topeka
 - Washington to 2nd, 2nd to Topeka
 - Topeka to Ash
 - W 10th Bridge to Corner of Jackson
 - Corner of 8th Street north on Gum to City Limits
- **April 26-27, 2016: Lyndon (Osage County)**
Flooding impacted the Lyndon Community Center.





Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of flooding on the Region’s agricultural base. Crop loss data for the years 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicate 108 flood related claims on 14,886 acres for \$1,688,807.

Table 4.62: USDA Risk Management Agency Cause of Loss Indemnities 2009-2018, Flooding

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Anderson	7	346	\$8,489
Coffey	20	2,066	\$367,738
Franklin	23	3,098	\$313,130
Linn	20	3,622	\$289,795
Miami	26	5,274	\$654,793
Osage	7	387	\$45,935
Shawnee	5	92	\$8,928
Reno	7	346	\$8,489
Rice	20	2,066	\$367,738
Sedgwick	23	3,098	\$313,130
Sumner	20	3,622	\$289,795

Source: USDA Farm Service Agency

4.13.3 – Hazard Probability Analysis

The following table summarizes riverine flood probability data for **Anderson County**.

Table 4.63: Anderson County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	2
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$1,000
Average Property Damage per Year	\$100

Source: NCEI

Data from the NCEI indicates that Anderson County can expect on a yearly basis, relevant to riverine flood events:

- <1 event
- No deaths or injuries
- \$100 in property damages

The following table summarizes flash flood probability data for **Anderson County**.





Table 4.64: Anderson County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	14
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Anderson County can expect on a yearly basis, relevant to flash flood events:

- One event
- No deaths or injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Anderson County**.

Table 4.65: Anderson County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	7
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	346
Average Number of Acres Damaged per Year	35
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$8,489
Average Crop Damage per Year	\$849

Source: USDA

According to the USDA Risk Management Agency, Anderson County can expect on a yearly basis, relevant to flooding occurrences:

- One insurance claim
- 35 acres impacted
- \$849 in insurance claims

The following table summarizes riverine flood probability data for **Coffey County**.

Table 4.66: Coffey County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	1
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI





Data from the NCEI indicates that Coffey County can expect on a yearly basis, relevant to riverine flood events:

- <1 event
- No deaths or injuries
- \$0 in property damages

The following table summarizes flash flood probability data for **Coffey County**.

Table 4.67: Coffey County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	5
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Coffey County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Coffey County**.

Table 4.68: Coffey County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	20
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	2,066
Average Number of Acres Damaged per Year	207
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$367,738
Average Crop Damage per Year	\$36,774

Source: USDA

According to the USDA Risk Management Agency, Coffey County can expect on a yearly basis, relevant to flooding occurrences:

- Two insurance claims
- 207 acres impacted
- \$36,774 in insurance claims





The following table summarizes riverine flood probability data for **Franklin County**.

Table 4.69: Franklin County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	3
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$9,000
Average Property Damage per Year	\$900

Source: NCEI

Data from the NCEI indicates that County can expect on a yearly basis, relevant to riverine flood events:

- <1 event
- No deaths or injuries
- \$900 in property damages

The following table summarizes flash flood probability data for **Franklin County**.

Table 4.70: Franklin County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	6
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Franklin County can expect on a yearly basis, relevant to flash flood events:

- One event
- No deaths or injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Franklin County**.

Table 4.71: Franklin County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	20
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	3,098
Average Number of Acres Damaged per Year	310
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$313,130
Average Crop Damage per Year	\$31,313

Source: USDA





According to the USDA Risk Management Agency, Franklin County can expect on a yearly basis, relevant to flooding occurrences:

- Two insurance claims
- 310 acres impacted
- \$31,313 in insurance claims

The following table summarizes riverine flood probability data for **Linn County**.

Table 4.72: Linn County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	5
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that County can expect on a yearly basis, relevant to riverine flood events:

- <1 event
- No deaths or injuries
- \$0 in property damages

The following table summarizes flash flood probability data for **Linn County**.

Table 4.73: Linn County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	0
Average Events per Year	0
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Linn County can expect on a yearly basis, relevant to flash flood events:

- No events
- No deaths or injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Linn County**.





Table 4.74: Linn County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	20
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	3,622
Average Number of Acres Damaged per Year	362
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$289,795
Average Crop Damage per Year	\$28,980

Source: USDA

According to the USDA Risk Management Agency, Linn County can expect on a yearly basis, relevant to flooding occurrences:

- Two insurance claims
- 362 acres impacted
- \$28,980 in insurance claims

The following table summarizes riverine flood probability data for **Miami County**.

Table 4.75: Miami County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	3
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Miami County can expect on a yearly basis, relevant to riverine flood events:

- <1 event
- No deaths or injuries
- \$0 in property damages

The following table summarizes flash flood probability data for **Miami County**.

Table 4.76: Miami County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	5
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI





Data from the NCEI indicates that Miami County can expect on a yearly basis, relevant to flash flood events:

- <1 event
- No deaths or injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Miami County**.

Table 4.77: Miami County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	26
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	5,274
Average Number of Acres Damaged per Year	527
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$654,793
Average Crop Damage per Year	\$65,479

Source: USDA

According to the USDA Risk Management Agency, Miami County can expect on a yearly basis, relevant to flooding occurrences:

- Three insurance claims
- 527 acres impacted
- \$65,479 in insurance claims

The following table summarizes riverine flood probability data for **Osage County**.

Table 4.78: Osage County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	3
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Osage County can expect on a yearly basis, relevant to riverine flood events:

- <1 event
- No deaths or injuries
- \$0 in property damages





The following table summarizes flash flood probability data for **Osage County**.

Table 4.79: Osage County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	10
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Osage County can expect on a yearly basis, relevant to flash flood events:

- One event
- No deaths or injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes flood event data for **Osage County**.

Table 4.80: Osage County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	7
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	387
Average Number of Acres Damaged per Year	39
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$45,935
Average Crop Damage per Year	\$4,593

Source: USDA

According to the USDA Risk Management Agency, Osage County can expect on a yearly basis, relevant to flooding occurrences:

- One insurance claim
- 39 acres impacted
- \$4,593 in insurance claims

The following table summarizes riverine flood probability data for **Shawnee County**.





Table 4.81: Shawnee County Riverine Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	6
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Shawnee County can expect on a yearly basis, relevant to riverine flood events:

- One event
- No deaths or injuries
- \$0 in property damages

The following table summarizes flash flood probability data for **Shawnee County**.

Table 4.82: Shawnee County Flash Flood Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	16
Average Events per Year	2
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0

Source: NCEI

Data from the NCEI indicates that Shawnee County can expect on a yearly basis, relevant to flash flood events:

- Two events
- No deaths or injuries
- \$0 in property damages

Data was reviewed from the USDA Risk Management agency to determine vulnerability to flooding. The following table summarizes drought event data for **Shawnee County**.

Table 4.83: Shawnee County Flooding Agricultural Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	5
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	92
Average Number of Acres Damaged per Year	9
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$8,928
Average Crop Damage per Year	\$893

Source: USDA





According to the USDA Risk Management Agency, Shawnee County can expect on a yearly basis, relevant to flooding occurrences:

- One insurance claim
- Nine acres impacted
- \$893 in insurance claims

In addition, Kansas Region J has had 12 Presidentially Declared Disasters relating to flooding (and other causes) in the last 20 years. This represents an average of one declared flood disaster per year.

4.13.4 – Vulnerability Analysis

The results of the HAZUS analysis were utilized to estimate potential losses for riverine flooding. The intent of this analysis was to enable Kansas Region J to estimate where flood losses could occur and the degree of severity using a consistent methodology. The HAZUS model helps quantify risk along known flood-hazard corridors as well as lesser streams and rivers that have a drainage area of 10 square miles or more.

HAZUS determines the displaced population based on the inundation area, not necessarily impacted buildings. As a result, there may be population vulnerable to displacement even if the structure is not vulnerable to damage. Individuals and households will be displaced from their homes even when the home has suffered little or no damage either because they were evacuated or there was no physical access to the property because of flooded roadways.

Flood sheltering needs are based on the displaced population, not the damage level of the structure. HAZUS determines the number of individuals likely to use government-provided short-term shelters through determining the number of displaced households as a result of the flooding. To determine how many of those households and the corresponding number of individuals will seek shelter in government-provided shelters, the number is modified by factors accounting for income and age. Displaced people using shelters will most likely be individuals with lower incomes and those who do not have family or friends within the immediate area. Since the income and age factors are taken into account, the proportion of displaced population and those seeking shelter will vary from county to county.

Additionally, HAZUS takes into account flood depth when modeling damage (based on FEMA's depth-damage functions). Generated reports capture damage by occupancy class (in terms of square footage impacted) by damage percent classes. Occupancy classes include agriculture, commercial, education, government, industrial, religion, and residential. Damage percent classes are grouped by 10 percent increments up to 50%. Buildings that sustain more than 50% damage are considered to be substantially damaged.

The following table provides the HAZUS results for vulnerable populations and the population estimated to seek short term shelter as well as the numbers of damaged and substantially damaged buildings for each Kansas Region J county.



**Table 4.84: Kansas Region J HAZUS Flood Scenario Displaced Population Building Damages**

County	Population Vulnerable to Displacement	Population with Short Term Shelter Needs	Vulnerable Buildings	Damaged Buildings	Substantially Damaged Buildings
Anderson	267	19	159	11	0
Coffey	263	16	235	13	0
Franklin	896	212	589	53	6
Linn	236	9	146	4	0
Miami	567	104	380	35	0
Osage	383	16	249	9	0
Shawnee	12809	10160	4073	2313	154

Source: FEMA and HAZUS

The HAZUS analysis also provides an estimate the repair costs for impacted buildings as well as the associated loss of building contents and business inventory. Building damage can also cause additional losses to a community by restricting a building’s ability to function properly. Income loss data accounts for losses such as business interruption and rental income losses as well as the resources associated with damage repair and job and housing losses. These losses are calculated by HAZUS using a methodology based on the building damage estimates.

The damaged building counts generated by HAZUS are susceptible to rounding errors and are likely the weakest output of the model due to the use of census blocks for analysis. Generated reports include this disclaimer: “Unlike the earthquake and hurricane models, the flood model performs its analysis at the census block level. This means that the analysis starts with a small number of buildings within each census block and applies a series of distributions necessary for analyzing the potential damage. The application of these distributions and the small number of buildings make the flood model more sensitive to rounding errors that introduces uncertainty into the building count results.” Additionally, losses are not calculated for individual buildings, but instead are based on the performances of entire classes of buildings obtained from the general building stock data. In the flood model, the number of grid cells (pixels) at each flood depth value is divided by the total number of grid cells in the census block. The result is used to weight the flood depths applied to each specific occupancy type in the general building stock. First floor heights are then applied to determine the damage depths to analyze damages and losses. The following table provides the HAZUS results for building damages and lost income due to these damages.

Table 4.85: Kansas Region J HAZUS Flood Scenario Structural Damage and Income Loss

County	Structural Damage	Contents Damage	Inventory Loss	Total Direct Loss	Total Income Loss	Total Direct and Income Loss
Anderson	\$4,623,000	\$3,330,000	\$121,000	\$8,074,000	\$5,000	\$8,079,000
Coffey	\$7,317,000	\$8,586,000	\$419,000	\$16,322,000	\$132,000	\$16,454,000
Franklin	\$22,063,000	\$24,213,000	\$740,000	\$47,016,000	\$129,000	\$47,145,000
Linn	\$4,938,000	\$4,630,000	\$177,000	\$9,745,000	\$50,000	\$9,795,000
Miami	\$12,935,000	\$8,968,000	\$301,000	\$22,204,000	\$6,000	\$22,210,000
Osage	\$8,339,000	\$6,699,000	\$143,000	\$15,181,000	\$22,000	\$15,203,000
Shawnee	\$262,290,000	\$273,317,000	\$8,340,000	\$543,947,000	\$2,539,000	\$546,486,000

Source: FEMA and HAZUS





The USDA 2017 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region J County. USDA Risk Management Agency Crop loss data for the ten-year period of 2009- 2018 (with 2009 and 2018 being full data years) allows us to quantify the monetary impact of flood conditions on the agricultural sector. The higher the percentage loss, the higher the vulnerability the county has to flood events.

Table 4.86: Flood Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	242,149	35	0.01%	\$80,868,000	\$849	0.00%
Coffey	218,978	207	0.09%	\$46,874,000	\$36,774	0.08%
Franklin	222,549	310	0.14%	\$75,773,000	\$31,313	0.04%
Linn	156,904	362	0.23%	\$41,143,000	\$28,980	0.07%
Miami	181,564	527	0.29%	\$53,030,000	\$65,479	0.12%
Osage	252,612	39	0.02%	\$66,913,000	\$4,593	0.01%
Shawnee	126,486	9	0.01%	\$39,209,000	\$893	0.00%

Source: USDA

Flood risk can also change over time because of new building and development, weather patterns and other factors. Although the frequency or severity of impacts cannot be changed, FEMA is working with federal, state, tribal and local partners across the nation to identify flood risk and promote informed planning and development practices to help reduce that risk through the Risk Mapping, Assessment and Planning (Risk MAP) program. Risk MAP uses the watershed boundaries to conduct studies. This watershed approach allows communities to come together to develop partnerships, combine resources, share flood risk information with FEMA, and identify broader opportunities for mitigation action.

The Flood Risk Products and datasets present information that can enhance hazard mitigation planning activities, especially the risk and vulnerability assessment portion of a hazard mitigation plan, and the development of risk-based mitigation strategies. Risk MAP can also help guide land use and development decisions and help you take mitigation action by highlighting areas of highest risk, areas in need of mitigation, and areas of floodplain change. Currently Kansas Region J has no current or scheduled Risk Map projects.

Mold

In general, mold is plant-like organism that obtains nourishment it directly from surrounding organic materials. Mold can grow on a variety of materials and thrives in damp environments. As such, a recently flooded home or business provides an ideal environment for mold growth, especially on materials such as drywall and carpeting. The young, old and ill may be specifically susceptible to the effects of mold, with symptoms including:

- congestion
- cough
- breathing difficulties
- sore throat





- membrane irritation
- upper respiratory infections

As such, any instance of flood related mold should be remediated as soon as possible.

4.13.5 – National Flood Insurance Program Communities

The National Flood Insurance Program (NFIP) is a federal program, managed by FEMA, that exists to provide flood insurance for property owners in participating communities, to improve floodplain management practices, and to develop maps of flood hazard areas. The following table presents the number of NFIP participating communities in each county.

Table 4.87: Kansas Region J NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Anderson County			
Anderson County	12/13/1977	01/01/06	01/01/06(L)
Garnett	02/08/74	08/01/87	08/04/88(M)
Greeley	11/22/1974	03/20/79	11/15/1984
Kincaid	11/22/1974	-	11/22/1974
Westphalia	12/20/1974	-	12/20/1974
Coffey County			
Coffey County	08/23/77	-	08/23/77
Burlington	12/21/1973	12/4/1979	09/20/96
Gridley	11/22/1974	12/2/2003	12/02/03(M)
Lebo	02/01/74	-	04/23/76
Leroy	12/28/1973	11/1/2011	11/01/11(L)
New Strawn	11/22/1974	-	(NSFHA)
Waverly	02/15/74	09/18/85	09/18/85(M)
Franklin County			
Franklin County	08/16/77	06/03/91	05/03/11
Lane	12/27/1974	09/01/08	05/03/11(M)
Ottawa	01/09/74	09/19/84	05/03/11
Pomona	02/08/74	05/03/11	(NSFHA)
Princeton	05/28/76	05/03/11	(NSFHA)
Rantoul	11/15/1974	09/01/90	05/03/11
Richmond	-	05/03/11	(NSFHA)
Wellsville	02/15/74	05/03/11	05/03/11
Williamsburg	-	05/03/11	05/03/11
Linn County			
Linn County	-	11/2/2007	11/2/2007
Blue Mound	01/17/75	11/2/2007	11/2/2007
La Cygne	03/15/74	11/2/2007	11/2/2007
Linn Valley	-	11/2/2007	11/2/2007
Mound City	03/01/74	11/2/2007	11/2/2007
Parker	02/07/75	11/2/2007	11/2/2007
Pleasanton	06/14/74	11/2/2007	11/2/2007





Table 4.87: Kansas Region J NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Prescott	04/23/76	11/2/2007	11/2/2007
Miami County			
Miami County	06/07/77	12/1/2006	08/19/08(M)
Fontana	12/20/1974	08/19/08	08/19/08
Louisburg	03/01/74	08/19/08	08/19/08
Osawatomie	01/23/74	09/19/84	08/19/08
Paola	12/14/1973	04/17/78	08/19/08
Osage County			
Osage County	08/09/77	02/03/10	02/03/10
Burlingame	12/24/1976	02/03/10	02/03/10
Carbondale	05/24/74	03/04/88	02/03/10
Lyndon	06/28/74	06/03/86	02/03/10(M)
Melvorn	07/30/76	02/03/10	02/03/10
Osage City	02/28/75	02/03/10	02/03/10
Overbrook	08/15/75	02/03/10	02/03/10
Quenemo	12/20/1974	09/01/90	02/03/10
Scranton	09/19/75	02/03/10	02/03/10
Shawnee County			
Shawnee County	02/21/78	06/01/82	09/29/11
Auburn	10/25/1974	01/16/81	09/29/11
Rossville	12/28/1973	12/18/1979	09/29/11
Silver Lake	05/31/74	10/15/1980	09/29/11
Topeka	-	10/22/1971	09/29/11
Willard	08/16/74	10/15/1980	09/29/11

Notes: NSFHA: No Special Flood Hazard Area - All Zone C
(L): Original FIRM by letter - All Zone A, C and X
(M): No elevation determined - All Zone A, C and X

Additionally, the NFIP’s Community Rating System (CRS) incentive rewards communities for the work they do managing their floodplains. Eligible communities that qualify for this voluntary program go above the minimum NFIP requirements and can offer their citizens discounted flood insurance in both Special Flood Hazard Areas (SFHAs) areas or non-SFHA areas. Additionally, work already being done by the state of Kansas (e.g., dam safety program and state freeboard requirements) gives communities additional discounts. The following Region J communities are currently CRS participants:

Table 4.88: Kansas Region J CRS Participating Jurisdictions

Jurisdiction	County	CRS Entry Date	CRS Class	% Discount for SFHA	% Discount for Non-SFHA	Status
Overbrook	Osage	10/01/217	8	10%	5%	Current
Shawnee County	Shawnee	05/01/11	8	10%	5%	Current
Silver Lake	Shawnee	05/01/16	9	5%	5%	Current

Source: FEMA and KDEM





4.13.6 – FEMA Flood Policy and Loss Data

Kansas Region J flood-loss information was pulled from FEMA’s “Policy and Loss Data by Community with County and State Data.” There are several limitations to this data, including:

- Only losses to participating NFIP communities are represented
- Communities joined the NFIP at various times since 1978
- The number of flood insurance policies in effect may not include all structures at risk to flooding
- Some of the historical loss areas have been mitigated with property buyouts

Some properties are under-insured. The flood insurance purchase requirement is for flood insurance in the amount of federally backed mortgages, not the entire value of the structure. Additionally, contents coverage is not required.

The following table shows the details of NFIP policy and loss statistics for each county in Kansas Region J. Loss statistics include losses through December 31, 2018.

Table 4.89: Kansas Region J NFIP Policy and Loss Statistics, As of December 31, 2018

Jurisdiction	Number of Policies in Force	Insurance in Force	Number of Closed Losses	Total Payments
Anderson County				
Anderson County	6	\$536,200	3	\$91,441
Garnett	0	\$0	1	\$129,113
Coffey County				
Burlington	15	\$1,487,100	0	\$0
Gridley	1	\$280,000	0	\$0
New Strawn	0	\$0	1	\$2,625
Franklin County				
Franklin County	24	\$3,931,100	12	\$374,682
Lane	1	\$26,000		\$
Ottawa	21	\$9,829,800	2	\$4,436
Rantoul	6	\$657,800	1	\$9,295
Linn County				
Linn County	17	\$3,495,500	0	\$0
La Cygne	3	\$1,606,000	0	\$0
Mound City	1	\$60,000	0	\$0
Pleasanton	3	\$140,000	0	\$0
Miami County				
Miami County	35	\$6,820,900	17	\$675,700
Louisburg	1	\$100,000	0	\$0
Osawatomie	31	\$5,723,500	4	\$367,948
Paola	17	\$3,908,500	3	\$49,226
Osage County				
Osage County	15	\$2,340,000	0	\$0
Burlingame	5	\$386,700	2	\$50,312
Carbondale	2	\$105,100	2	\$3,235





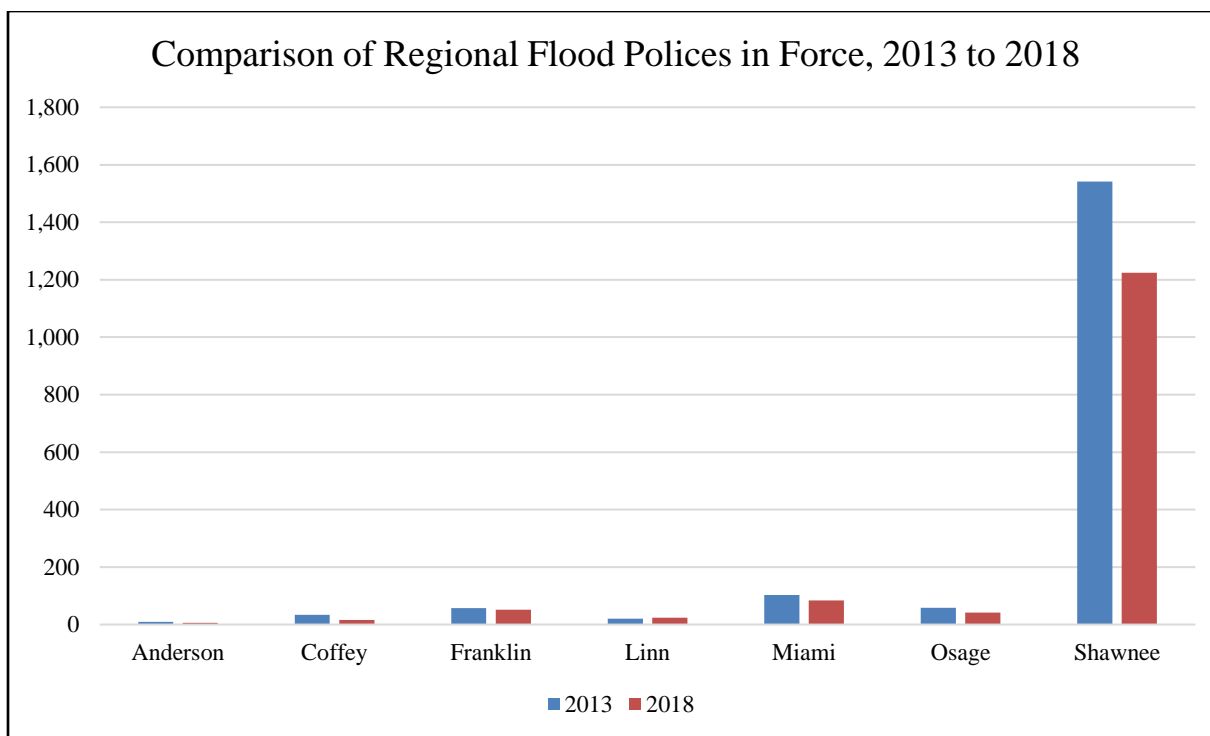
Table 4.89: Kansas Region J NFIP Policy and Loss Statistics, As of December 31, 2018

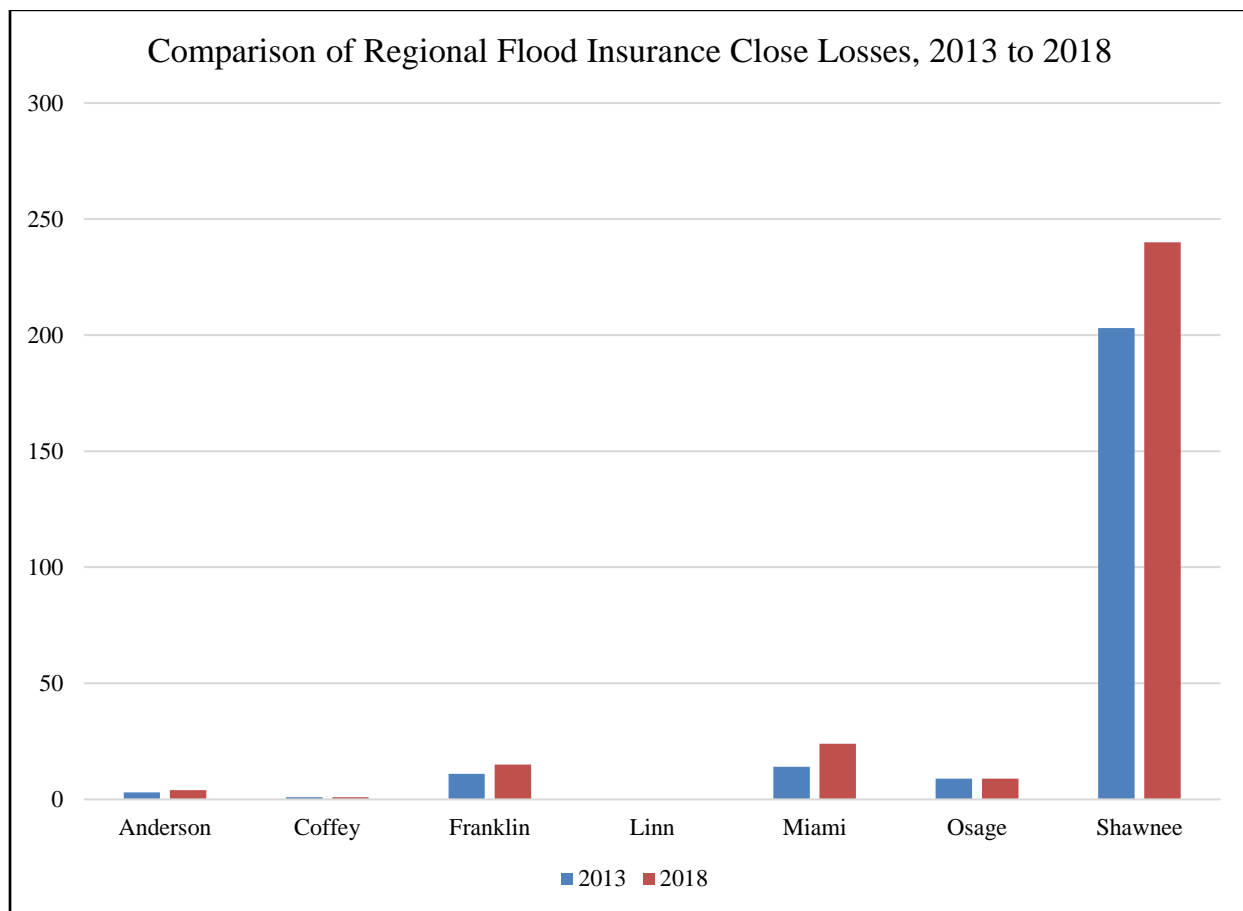
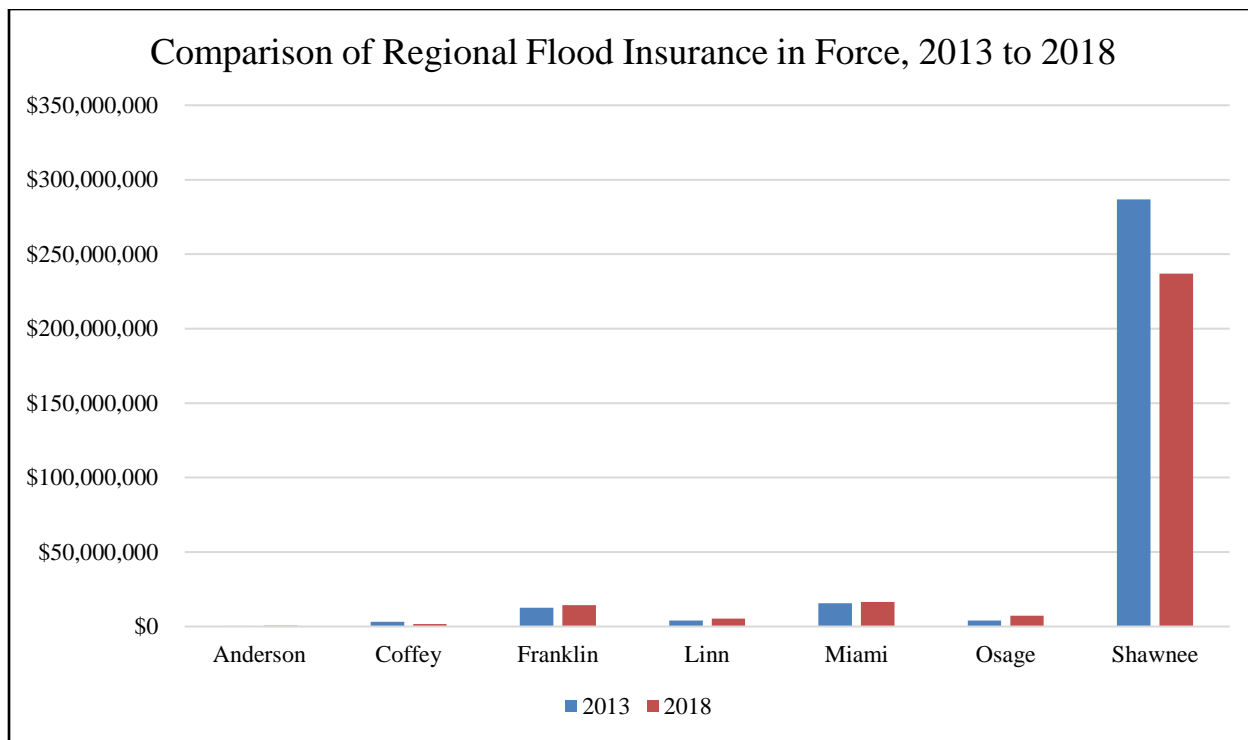
Jurisdiction	Number of Policies in Force	Insurance in Force	Number of Closed Losses	Total Payments
Lyndon	1	\$79,900	2	\$47,759
Melvern		\$560,000	0	\$0
Osage City	2	\$2,340,000	0	\$0
Quenemo	12	\$532,100	3	\$33,271
Scranton	5	\$830,300	0	\$0
Shawnee County				
Shawnee County	236	\$58,715,600	60	\$1,037,618
Auburn	1	\$140,000	0	\$0
Rossville	135	\$18,156,000	107	\$1,216,860
Silver Lake	25	\$5,364,500	2	\$14,784
Topeka	826	\$154,521,200	68	\$1,136,173
Willard	1	\$109,300	3	\$25,520

Source: FEMA, "Policy and Loss Data by Community with County and State Data"

The following graphs summarize data from the above table for Kansas Region J in comparison to 2013 data. Of note:

- Regionally the number of flood policies has decreased from 2013 to 2018, from 1,822 to 1,448
- Regionally the amount of flood insurance in-force decreased from 2013 to 2018, from \$326,841,500 to \$282,783,100
- Regionally the number of flood insurance closed losses increased from 2013 to 2018, from 241 to 293







4.13.7 – Repetitive Loss Properties

A high priority to Kansas Region J is the reduction of losses to Repetitive Loss (RL) and Severe Repetitive Loss (SRL) structures. The NFIP defines a RL property as:

- Any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling 10-year period, since 1978

At least two of the claims must be more than 10 days apart.

The definition of severe repetitive loss as applied to this program was established in section 1361A of the National Flood Insurance Act, as amended, 42 U.S.C. 4102a. An SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- That has at least four NFIP claim payments (including building and contents) over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or
- For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both of the above, at least two of the referenced claims must have occurred within any ten-year period and must be greater than ten days apart.

The following table details RL properties in Kansas Region J.

Table 4.90: Kansas Region J Repetitive Loss Properties, As of December 2018

County	Number of RL Properties	Number of RL Properties Mitigated	Number of RL Properties Insured	Number of Losses	Total Paid
Anderson	0	0	0	0	\$0
Coffey	0	0	0	0	\$0
Franklin	0	0	0	0	\$0
Linn	0	0	0	0	\$0
Miami	1	1	1	2	\$91,078
Osage	2	1	1	4	\$80,288
Shawnee	13	1	9	29	\$427,784

Source: KDEM

The following table details jurisdiction specific information concerning RL property type.

Table 4.91: Kansas Region J Repetitive Loss Properties Type, by Jurisdiction

Jurisdiction	Number of Non-Mitigated RL Properties	Other, Non-Residential	Single Family
Osage			
Lyndon	1	0	1
Shawnee			
Rossville	8	0	8
Shawnee County	4	0	4





Table 4.91: Kansas Region J Repetitive Loss Properties Type, by Jurisdiction

Jurisdiction	Number of Non-Mitigated RL Properties	Other, Non-Residential	Single Family
Topeka	1	0	1

Source: KDEM

No regional SRL properties have been identified.

4.13.8 – Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.92: Flood Consequence Analysis

Subject	Impacts of Flood
Health and Safety of the Public	Impact dependent on the level of flood waters. Individuals further away from the incident area are at a lower risk. Casualties are dependent on warning time.
Health and Safety of Responders	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Temporary relocation may be necessary if inundation affects government facilities.
Property, Facilities, and Infrastructure	Localized impact could be severe in the inundation area of the incident to facilities and infrastructure. The further away from the incident area the damage lessens.
Environment	Impact will be severe for impacted area. Impact will lessen with distance.
Economic Conditions	Impacts to the economy depend on the area flooded, depth of water, and the amount of time it takes for the water to recede.
Public Confidence in the Jurisdiction’s Governance	Perception of whether the flood could have been prevented, warning time, and response and recovery time will greatly impact the public’s confidence.





4.14 – Hailstorms

According to NOAA, hail is precipitation that is formed when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere causing them to freeze. The raindrops form into small frozen droplets and then continue to grow as they come into contact with super-cooled water which will freeze on contact with the frozen rain droplet. This frozen rain droplet can continue to grow and form hail.



4.14.1 – Location and Extent

Hailstorms occur over broad geographic regions. The entire planning area, including all participating jurisdictions, is at risk to hailstorms.

Based on information provided by the Tornado and Storm Research Organization, the following table describes typical damage impacts of the various sizes of hail.

Table 4.93: Hailstorm Intensity Scale

Intensity Category	Diameter (mm)	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	5-9	0.2-0.4	Pea	No damage
Potentially Damaging	10-15	0.4-0.6	Mothball	Slight general damage to plants, crops
Significant	16-20	0.6-0.8	Marble, grape	Significant damage to fruit, crops, vegetation
Severe	21-30	0.8-1.2	Walnut	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
Severe	31-40	1.2-1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	41-50	1.6-2.0	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	51-60	2.0-2.4	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	61-75	2.4-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Destructive	76-90	3.0-3.5	Large orange > Soft ball	Severe damage to aircraft bodywork
Super Hailstorms	91-100	3.6-3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	>100	4.0+	Melon	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

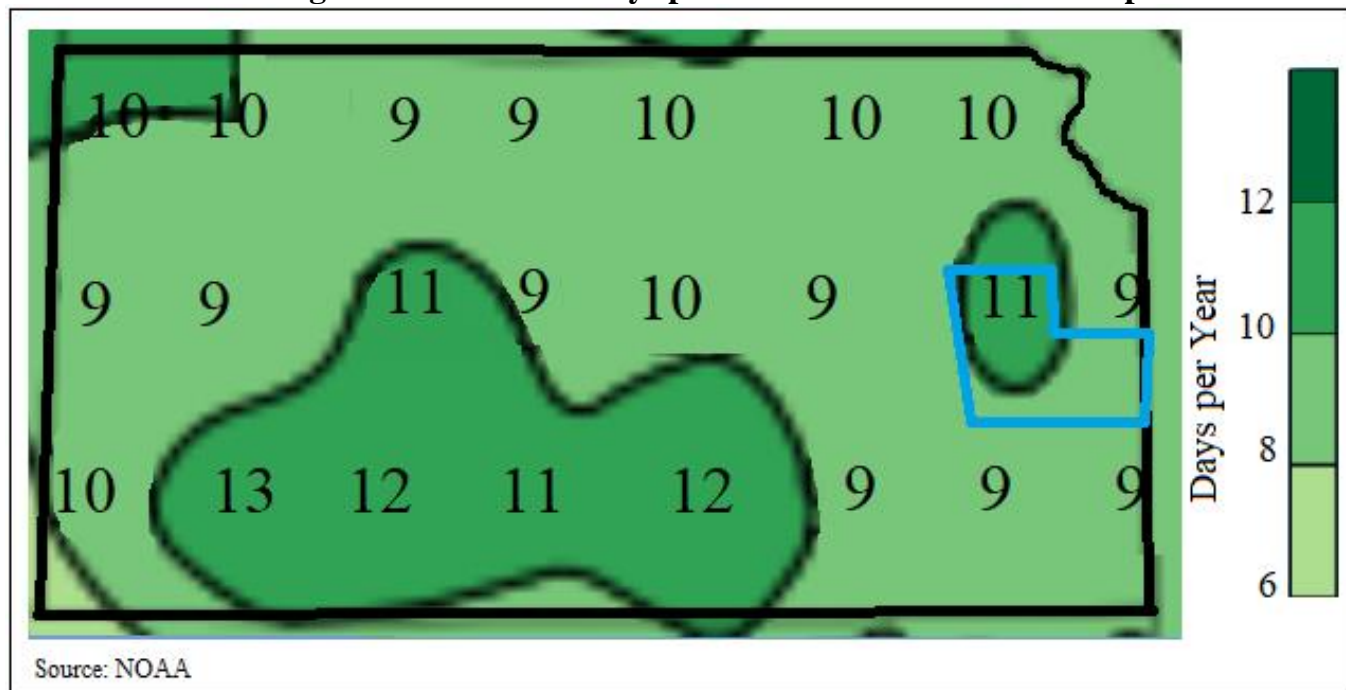
Source: Tornado and Storm Research Organization





The following map, generated by data compiled by NOAA, indicates the average number of severe hail event days for Kansas Region J (9).

Kansas Region J Severe Hail Days per Year from 2003 to 2012 Reports



4.14.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been 11 Presidential Disaster Declarations for Kansas Region J for severe storms (along with other associates hazard event), of which hail may be a component. The following 20-year information (with 1999 and 2018 being full data years) on past declared disasters is presented to provide a historical perspective on hail events that have impacted Kansas Region J. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2014.

Table 4.94: Kansas Region J FEMA Severe Storm Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4417	02/25/2019 (10/04/18 – 10/15/18)	Severe Storms , Straight-line Winds, and Flooding	Anderson	-
4230	07/20/2015 (05/04/2015 – 06/21/2015)	Severe Storms , Tornadoes, Straight-line Winds, and Flooding	Coffey, Franklin, Miami, Morris, Nemaha, Neosho, and Osage	\$13,848,325
4150	10/22/2013 (07/22/2013 – 08/15/2013)	Severe Storms , Straight-line Winds, Tornadoes, and Flooding	Coffey and Linn	\$11,412,827
1932	08/10/2010 (6/7-7/21/2010)	Severe Storms , Flooding, and Tornadoes	Franklin, Miami, and Osage	\$9,279,257





Table 4.94: Kansas Region J FEMA Severe Storm Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1860	09/30/2009 (7/8-7/14/2009)	Severe Storms and Flooding	Anderson, Franklin, and Linn	\$3,347,662
1849	06/25/2009 (4/25-5/16/2009)	Severe Storms , Flooding, Straight-line Winds, and TORNADOS	Anderson, Coffey, and Linn	\$15,013,488
1776	07/09/2008	Severe Storms, Flooding, and TORNADOS	Franklin and Linn	\$70,629,544
1711	7/2/2007 (6/26-30/2007)	Severe Storms and Flooding	Anderson, Coffey, Franklin, Linn, Miami and Osage	\$40,238,600
1699	5/6/2007 (5/4/2007)	Severe Storms, TORNADOS, and Flooding	Osage and Shawnee	\$117,565,269
1535	8/3/2004 (6/12-7/25/2004)	Severe Storms, Flooding, and TORNADOS	Shawnee	\$12,845,892
1462	5/6/2003 (5/4-30/2003)	Severe Storms, TORNADOS, and Flooding	Anderson, Miami and Osage	\$988,056

Source: FEMA

-: Data unavailable

The following provides details of the two Presidential Disaster Declarations for Kansas Region J since the last plan update in 2014.

**Kansas – Severe Storms, Straight-Line Winds, and Flooding
FEMA-4417-DR**

Declared February 25, 2019

The Federal Emergency Management Agency announced that federal disaster assistance has been made available to the state of Kansas to supplement state and local recovery efforts in the areas affected by severe storms, straight-line winds, and flooding from Oct. 4-15, 2018.

Federal funding is available to the state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by severe storms, straight-line winds, and flooding in Anderson, Barton, Cowley, Doniphan, Greenwood, Harvey, Kingman, Neosho, Pratt, Reno, Rice, and Sumner counties.

**Kansas – Severe Storms, TORNADOS, Straight-Line Winds, and Flooding
FEMA-4230-DR**

Declared July 20, 2015

On July 1, 2015, Governor Sam Brownback requested a major disaster declaration due to severe storms, tornados, straight-line winds, and flooding during the period of May 4 to June 21, 2015. The Governor requested a declaration for Public Assistance, including direct federal assistance for 42 counties and Hazard Mitigation statewide. During the period of May 4 to June 27, 2015, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an





event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On July 20, 2015, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms, tornados, straight-line winds, and flooding in Atchison, Barton, Brown, Anderson, Chase, Chautauqua, Cherokee, Cheyenne, Clay, Cloud, Coffey, Coffey, Doniphan, Edwards, Elk, Ellsworth, Franklin, Gray, Greenwood, Franklin, Haskell, Hodgeman, Jackson, Jefferson, Jewell, Lyon, Shawnee, Marshall, Osage, Meade, Miami, Morris, Nemaha, Neosho, Osage, Pottawatomie, Republic, Rice, Stevens, Sumner, Wabaunsee, and Washington Counties. Direct Federal assistance was also authorized. Finally, this declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

In addition to the above reported events, the following table presents NOAA NCEI identified hailstorm events and the resulting damage totals in Kansas Region J for the period 2009 - 2018 (with 2009 and 2018 being full data set years).

Table 4.95: Kansas Region J NCEI Hailstorm Events, 2009 - 2018

County	Number of Days with Events	Property Damage	Deaths	Injuries
Anderson	21	\$0	0	0
Coffey	30	\$0	0	0
Franklin	27	\$0	0	0
Linn	22	\$0	0	0
Miami	23	\$0	0	0
Osage	48	\$0	0	0
Shawnee	54	\$0	0	0

Source: NOAA NCEI

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of hail on the region’s agricultural base. Crop loss data for the ten-year period of 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicates 109 hail related claims on 19,685 acres for \$1,465,009.

Table 4.96: USDA Risk Management Agency Cause of Loss Indemnities 2009-2018, Hail

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Anderson	24	7,075	\$511,962
Coffey	25	5,559	\$471,526
Franklin	29	3,849	\$268,919
Linn	8	1,165	\$116,031
Miami	5	638	\$47,211
Osage	18	1,399	\$49,359
Shawnee	0	0	\$0

Source: USDA Farm Service Agency





4.12.3 – Hazard Probability Analysis

The following table summarizes hailstorm probability data for **Anderson County**.

Table 4.97: Anderson County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	21
Average Events per Year	2
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	24
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	7,075
Average Number of Acres Damaged per Year	708
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$511,962
Average Crop Damage per Year	\$51,196

Source: NCEI and USDA

Data from the NCEI indicates that Anderson County can expect on a yearly basis, relevant to hail events:

- Two events
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Anderson County can expect on a yearly basis, relevant to hail occurrences:

- Two insurance claims
- 708 acres impacted
- \$51,196 in insurance claims

The following table summarizes hailstorm probability data for **Coffey County**.

Table 4.98: Coffey County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	30
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	25
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	5,559





Table 4.98: Coffey County Hailstorm Probability Summary

Data	Recorded Impact
Average Number of Acres Damaged per Year	556
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$471,526
Average Crop Damage per Year	\$47,153

Source: NCEI and USDA

Data from the NCEI indicates that Coffey County can expect on a yearly basis, relevant to hail events:

- Three events
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Coffey County can expect on a yearly basis, relevant to hail occurrences:

- Three insurance claims
- 556 acres impacted
- \$47,153 in insurance claims

The following table summarizes hailstorm probability data for **Franklin County**.

Table 4.99: Franklin County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	27
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	25
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	3,849
Average Number of Acres Damaged per Year	385
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$268,919
Average Crop Damage per Year	\$26,892

Source: NCEI and USDA

Data from the NCEI indicates that Franklin County can expect on a yearly basis, relevant to hail events:

- Three events
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Franklin County can expect on a yearly basis, relevant to hail occurrences:





- Three insurance claims
- 385 acres impacted
- \$26,892 in insurance claims

The following table summarizes hailstorm probability data for **Linn County**.

Table 4.100: Linn County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	22
Average Events per Year	2
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	8
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	1,165
Average Number of Acres Damaged per Year	116
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$116,031
Average Crop Damage per Year	\$11,603

Source: NCEI and USDA

Data from the NCEI indicates that Linn County can expect on a yearly basis, relevant to hail events:

- Two events
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Linn County can expect on a yearly basis, relevant to hail occurrences:

- One insurance claims
- 116 acres impacted
- \$11,603 in insurance claims

The following table summarizes hailstorm probability data for **Miami County**.

Table 4.101: Miami County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	23
Average Events per Year	2
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	5





Table 4.101: Miami County Hailstorm Probability Summary

Data	Recorded Impact
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	638
Average Number of Acres Damaged per Year	64
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$47,211
Average Crop Damage per Year	\$4,721

Source: NCEI and USDA

Data from the NCEI indicates that Miami County can expect on a yearly basis, relevant to hail events:

- Two events
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Miami County can expect on a yearly basis, relevant to hail occurrences:

- One insurance claim
- 64 acres impacted
- \$4,721 in insurance claims

The following table summarizes hailstorm probability data for **Osage County**.

Table 4.102: Osage County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	48
Average Events per Year	5
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Event and Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	18
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	1,399
Average Number of Acres Damaged per Year	140
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$49,359
Average Crop Damage per Year	\$4,936

Source: NCEI and USDA

Data from the NCEI indicates that Osage County can expect on a yearly basis, relevant to hail events:

- Five events
- No deaths or injuries
- \$0 in property damages





According to the USDA Risk Management Agency, Osage County can expect on a yearly basis, relevant to hail occurrences:

- Two insurance claims
- 140 acres impacted
- \$4,936 in insurance claims

The following table summarizes hailstorm probability data for **Shawnee County**.

Table 4.103: Shawnee County Hailstorm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	54
Average Events per Year	5
Number of Days with Event and Death or Injury (2009-2018)	1
Average Number of Days with Event and Death or Injury	<1
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Shawnee County can expect on a yearly basis, relevant to hail events:

- Five events
- <1 death or injury
- \$0 in property damages

According to the USDA Risk Management Agency, Shawnee County can expect on a yearly basis, relevant to hail occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes hailstorm probability data for **Reno County**.

In addition, Kansas Region J has had 11 Presidentially Declared Disasters relating to severe storms (of which hail is a potential component) in the last 20 years. This represents an average of one declared severe storm disaster per year.





4.14.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to hailstorm events. In general, counties with a higher or increasing structural inventory, or having a high structural valuation are to be considered to have a potentially greater vulnerability. Additionally, population vulnerabilities to hail events are expected to be minimal.

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region J county incurring damage over the period 2009 to 2018 from hailstorm events. The greater the percentage of structures damaged the greater overall vulnerability going forward.

Table 4.104: Kansas Region J Structural Vulnerability Data for Hailstorms, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Anderson	\$879,410,000	\$0	0.0%
Coffey	\$1,053,574,000	\$0	0.0%
Franklin	\$2,853,762,000	\$0	0.0%
Linn	\$1,172,469,000	\$0	0.0%
Miami	\$3,706,416,000	\$0	0.0%
Osage	\$1,695,650,000	\$0	0.0%
Shawnee	\$20,465,546,000	\$0	0.0%

Source: NCEI and HAZUS

The USDA 2017 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region J County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of hailstorm conditions on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to hailstorm events.

Table 4.105: Hailstorm Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	242,149	708	0.29%	\$80,868,000	\$51,196	0.06%
Coffey	218,978	556	0.25%	\$46,874,000	\$47,153	0.10%
Franklin	222,549	385	0.17%	\$75,773,000	\$26,892	0.04%
Linn	156,904	116	0.07%	\$41,143,000	\$11,603	0.03%
Miami	181,564	64	0.04%	\$53,030,000	\$4,721	0.01%
Osage	252,612	140	0.06%	\$66,913,000	\$4,936	0.01%
Shawnee	126,486	0	0.00%	\$39,209,000	\$0	0.00%

Source: USDA

4.14.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.





Table 4.106: Hailstorm Consequence Analysis

Subject	Impacts of Hailstorm
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the areas of hail are expected to be severe if caught without proper shelter.
Health and Safety of Responders	Impacts will be predicated on the severity of the event. Damaged infrastructure will likely result in hazards such as downed utility lines, main breakages and debris on roadways. .
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage. Services may be limited to essential tasks if utilities are impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location and structural capacity of the facility. Loss of structural integrity of buildings and infrastructure could occur. Utility lines, roads, residential and business properties will be affected.
Environment	Impact could be severe for the immediate impacted area, depending on the size of the event. Impact will lessen as distance increases from the immediate incident area
Economic Conditions	Impacts to the economy will be dependent severity of the event and the impact on structures and infrastructure. Impacts could be severe if roads/utilities are affected.
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. Warning systems in place and the timeliness of those warnings could be questioned.





4.15 – Land Subsidence

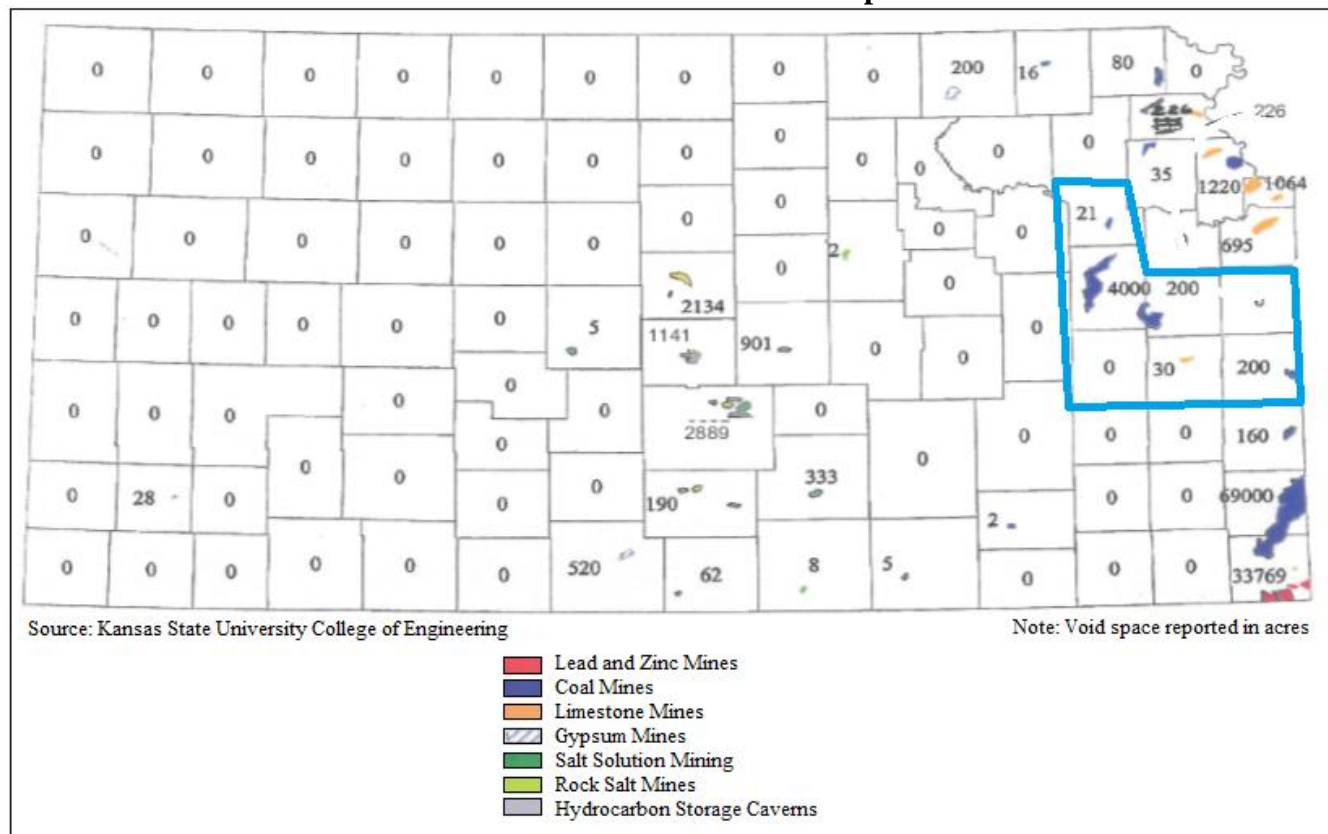
Land subsidence is caused when the ground above manmade or natural voids collapses. Subsidence can be related to mine collapse, water and oil withdrawal, or natural causes such as shrinking of expansive soils, salt dissolution (which may also be related to mining activities), and cave collapses. The surface depression is known as a sinkhole. If sinkholes appear beneath developed areas, damage or destruction of buildings, roads and rails, or other infrastructure can result. The rate of subsidence, which ranges from gradual to catastrophic, correlates to its risk to public safety and property damage.



4.15.1 – Location and Extent

The Kansas Department of Health and Environment (KDHE) prepared a report on “Subsurface Void Space and Sinkhole/Subsidence Area Inventory for the State of Kansas.” The report inventoried subsurface void space from oil and gas exploration and production, natural sources, shaft mining, and solution mining. The following map details the distribution of total acres and major cause of void spaces for all Kansas Region J counties.

KDHE Total Subsurface Void Space





The following table details the total amount of subsurface void space as calculated using data from the KDHE map.

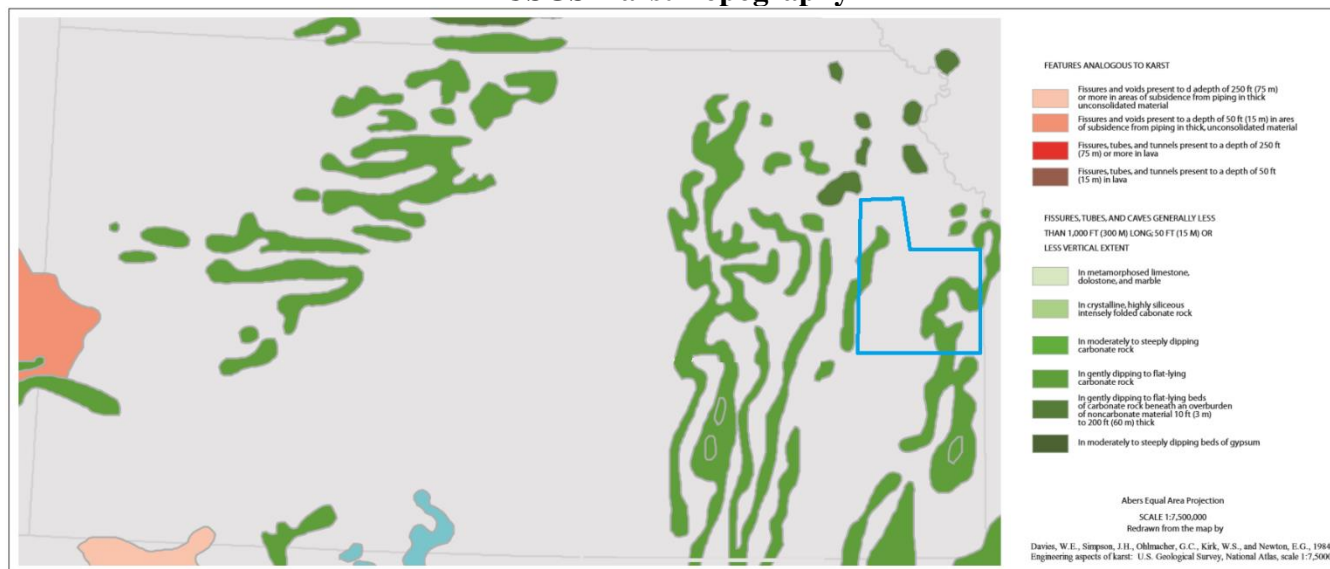
Table 4.107: Kansas Region J Sub-Surface Void Space

County	Total Sub-Surface Void Space (acres)
Anderson	30
Coffey	0
Franklin	200
Linn	200
Miami	0
Osage	4,000
Shawnee	21

Source: KDHE

Of additional concern to Kansas Region J is Karst topography. The following map from the United States Geologic Survey (USGS) indicates areas of Karst topography in the region. The green areas shown in the map show fissures, tubes, and caves generally less than 1,000 feet long with 50 feet or less vertical extent in gently dipping to flat-lying carbonate rock. Brown areas have similar features in gently dipping to flat lying gypsum beds. Light pink colored areas are features analogous to karst with fissures and voids present to a depth of 250 feet or more in areas of subsidence from piping in thick unconsolidated material. Darker pink areas contain fissures and voids (analogous to karst) to a depth of 50 feet. There are limited documented problems associated with natural limestone subsidence and sinkholes in Kansas Region J.

USGS Karst Topography



4.15.2 – Previous Occurrences

There have been no reported land subsidence events in Kansas Region J during the ten-year period from 2009 to 2018.





4.15.3 – Hazard Probability Analysis

Land subsidence events with the potential to affect Kansas Region J are incredibly difficult to quantify and forecast. Compounding the difficulty, land subsidence events occur on their own or occur as a secondary hazard with incidents of heavy rain, melting snow, and earthquakes as a primary cause. Hence, their future occurrences are highly dependent on the likelihood of the mentioned hazards.

Based on limited available data, indicating that there have been no reported events in the past ten years, and bearing in mind that many events may be unreported as they have no impact on human activities, the probability of a reported land subsidence occurrence in any given year is very low.

4.15.4 Vulnerability Analysis

In general, counties with a higher or increasing population, high, or increasing, or having a high structural valuation are to be considered to have a potentially greater vulnerability. Additionally, population vulnerabilities to land subsidence events are expected to be minimal.

Vulnerability to land subsidence in Kansas Region J was analyzed using the KDHE “Subsurface Void Space and Sinkhole/Subsidence Area Inventory for the State of Kansas” report. All documented acres of subsurface void space were classified according to these risk categories for each of the following causes of void space:

- Lead and Zinc Mines
- Coal Mines
- Limestone Mines
- Gypsum Mines
- Salt Solution Mining
- Rock Salt Mines
- Hydrocarbon Storage Caverns

Based on these classifications, a risk category was assigned to each of the subsurface void acres:

- Category I: High Risk
- Category II: Medium Risk
- Category III: Low Risk

The following table shows the classification of the void space in each of Kansas Region J counties. Please note that not all classifications with identified acreage are shown.





Table 4.108: Kansas Region J Sub-Surface Void Space Risk Classification in Acres

County	Coal Category II	Salt Solution Category I	Salt Solution Category II	Limestone Category I	Rock Salt Category III	Hydrocarbon Storage Category III	Total Sub-Surface Void Space
Anderson	0	0	0	30	0	0	30
Coffey	0	0	0	0	0	0	0
Franklin	200	0	0	0	0	0	200
Linn	200	0	0	0	0	0	200
Miami	0	0	0	0	0	0	0
Osage	4,000	0	0	0	0	0	4,000
Shawnee	21	0	0	0	0	0	21

Source: KDHE, "Subsurface Void Space and Sinkhole/Subsidence Area Inventory for the State of Kansas" 2006.

Based on this data, the area for each county underlain by sub-surface void acreage was determined. In general, the higher percentage of acreage underlain by void area the higher the vulnerability.

Table 4.109: Kansas Region J Percentage of Land Underlain by Sub-Surface Void Space

County	Total County Acreage	Sub-Surface Void Space Acreage	Percentage of County Acreage Underlain by Void Space
Anderson	373,760	30	0.01%
Coffey	418,560	0	0.00%
Franklin	369,280	200	0.05%
Linn	387,840	200	0.05%
Miami	377,600	4,000	1.06%
Osage	460,800	21	0.00%
Shawnee	355,840	30	0.01%

Source: KDHE

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region J county incurring damage over the period 2009 to 2018 from land subsidence events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

Table 4.110: Kansas Region J Structural Vulnerability Data for Land Subsidence, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Anderson	\$879,410,000	\$0	0%
Coffey	\$1,053,574,000	\$0	0%
Franklin	\$2,853,762,000	\$0	0%
Linn	\$1,172,469,000	\$0	0%
Miami	\$3,706,416,000	\$0	0%
Osage	\$1,695,650,000	\$0	0%
Shawnee	\$20,465,546,000	\$0	0%

Source: NCEI and HAZUS





4.15.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.110: Land Subsidence Consequence Analysis

Subject	Impacts of Land Subsidence
Health and Safety of the Public	Local impact expected to be moderate to severe for the incident area, depending on the scale of the area.
Health and Safety of Responders	Impact to responders would be minimal.
Continuity of Operations	Minimal expectation of execution of the COOP, unless a facility is impacted.
Property, Facilities, and Infrastructure	Localized impact to facilities and infrastructure in the incident area has the potential to do severe damage.
Environment	Impact to the area would be minimal.
Economic Conditions	Impacts to the economy will depend on the severity of the damage.
Public Confidence in the Jurisdiction's Governance	Local development policies will be questioned





4.16 – Landslides

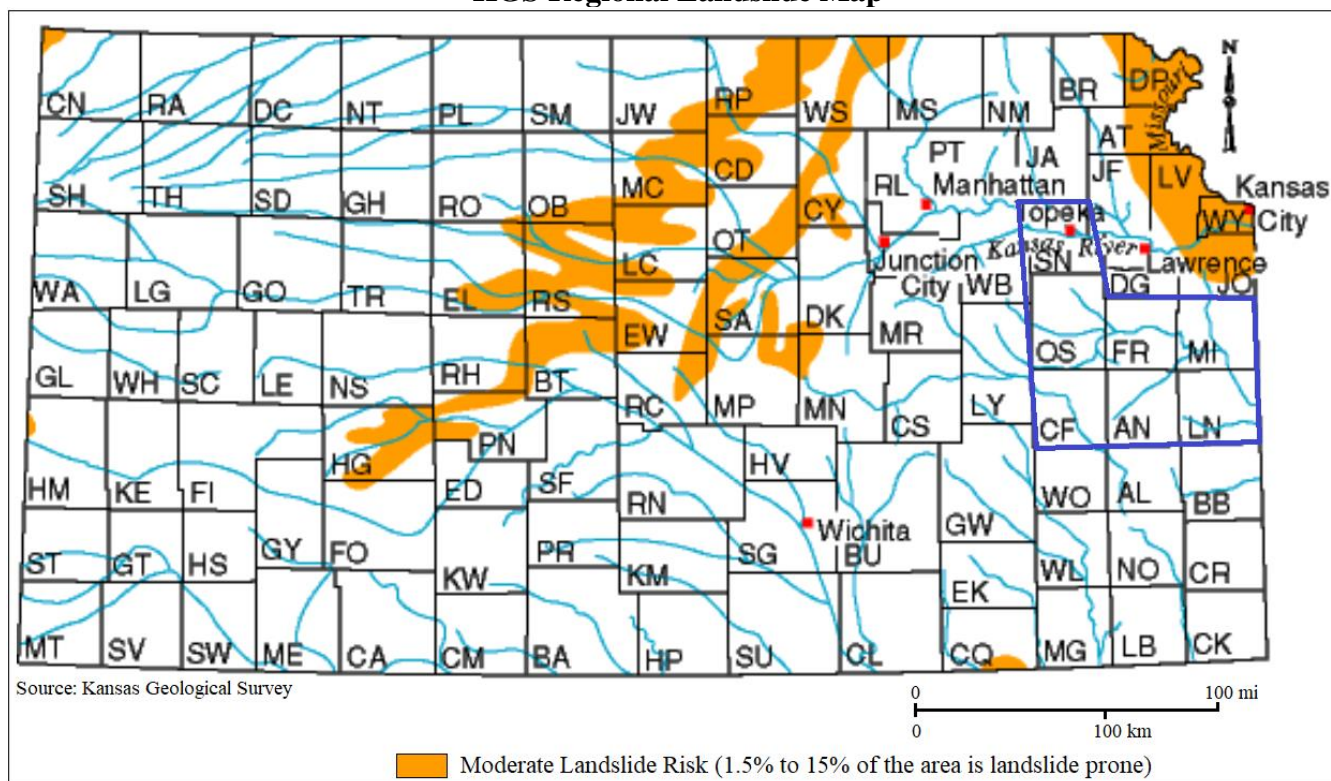
Landslides are the downward and outward movement of slopes. Landslides include a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on and over steepened slopes is the primary reason for a landslide, landslides are often prompted by the occurrence of other disasters. Other contributing factors include erosion, steep slopes, rain and snow, and earthquakes.



4.16.1 – Location and Extent

Landslides are classified based mostly on their character of movement and degree of internal disruption. These landslide classes are rock fall, flow, slide, and creep. Although these are clear divisions, in the real world a landslide may have components of more than one type. Areas prone to landslides can cover broad geographic regions, but occurrences are generally localized. The entire planning area, including all participating jurisdictions, is potentially at risk to landslides. However, landslides require an earth or rock covered slope, and so flatter areas have a much-decreased risk of occurrence. The following map, produced by the Kansas Geological Survey (KGS), shows areas of the region with a moderate susceptibility of landslides, equating to 1.5% to 15% of the area being landslide prone.

KGS Regional Landslide Map





4.16.2 – Previous Occurrences

At present there is no centralized and complete database containing historical records for landslides in Kansas. For Kansas Region J there have been no reported or recorded landslides impacting either participating jurisdictions or the region in the past 10 years.

4.16.3 – Hazard Probability Analysis

Landslides with the potential to affect Kansas Region J are incredibly difficult to quantify and forecast. Compounding the difficulty, landslides occur on their own or occur as a secondary hazard with incidents of heavy rain, melting snow, earthquakes, and land subsidence are their primary cause. Hence, their future occurrences are highly dependent on the likelihood of the mentioned hazards.

As indicated in the map above, no areas of Kansas Region J have been identified as having a moderate susceptibility to landslides. Additionally, the limited available past occurrence data indicate that there is a very low rate of occurrence. Based on limited available data, and bearing in mind that many landslides may be unreported as they have no impact on human activities, it is not likely that a major landslide will impact the region based on zero reported occurrences in 10 years.

4.16.4 Vulnerability Analysis

Based on landslide mapping by the KGS, the area for each county with a moderate landslide risk was estimated. In general, the higher percentage of acreage in a moderate landslide risk area the higher the vulnerability. However, landslides require an earth or rock covered slope, and so flatter areas have a much-decreased risk of occurrence.

Table 4.111: Kansas Region J Percentage of Land in Moderate Landslide Risk Area

County	Total County Acreage	Estimated Acreage with Moderate Landslide Potential	Percentage of County Acreage Identified in Potential Slide Area
Anderson	373,760	0	0.0%
Coffey	418,560	0	0.0%
Franklin	369,280	0	0.0%
Linn	387,840	0	0.0%
Miami	377,600	0	0.0%
Osage	460,800	0	0.0%
Shawnee	355,840	0	0.0%

Source: KDEM and HAZUS

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region J county incurring damage over the period 2009 to 2018 from landslide events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

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Table 4.112: Kansas Region J Structural Vulnerability Data for Landslides, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Anderson	\$879,410,000	\$0	0%
Coffey	\$1,053,574,000	\$0	0%
Franklin	\$2,853,762,000	\$0	0%
Linn	\$1,172,469,000	\$0	0%
Miami	\$3,706,416,000	\$0	0%
Osage	\$1,695,650,000	\$0	0%
Shawnee	\$20,465,546,000	\$0	0%

Source: NCEI and HAZUS

Population vulnerabilities to landslide events are expected to be minimal.

4.16.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.113: Landslide Consequence Analysis

Subject	Impacts of Landslide
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the path of the slide are expected to be severe.
Health and Safety of Responders	Impacts are expected to be minimal.
Continuity of Operations	Minimal expectation of execution of the COOP, unless a facility is impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location of the facility in relation to the slide. Loss of structural integrity of buildings and infrastructure could occur.
Environment	Impact to the area would be minimal other than the immediate area.
Economic Conditions	Impacts to the economy will be dependent severity of landslide and the impact on structures and infrastructure. Impacts could be severe if roads/utilities are affected. Otherwise impact would be non-existent to minimal.
Public Confidence in the Jurisdiction's Governance	Confidence could be an issue if local development policies are questioned.





4.17 – Lightning

Lightning is a discharge of atmospheric electricity that is triggered by a buildup of differing charges within a cloud. According to the NWS, lightning is one of the most underrated severe weather hazards and is the second deadliest weather killer in the United States.

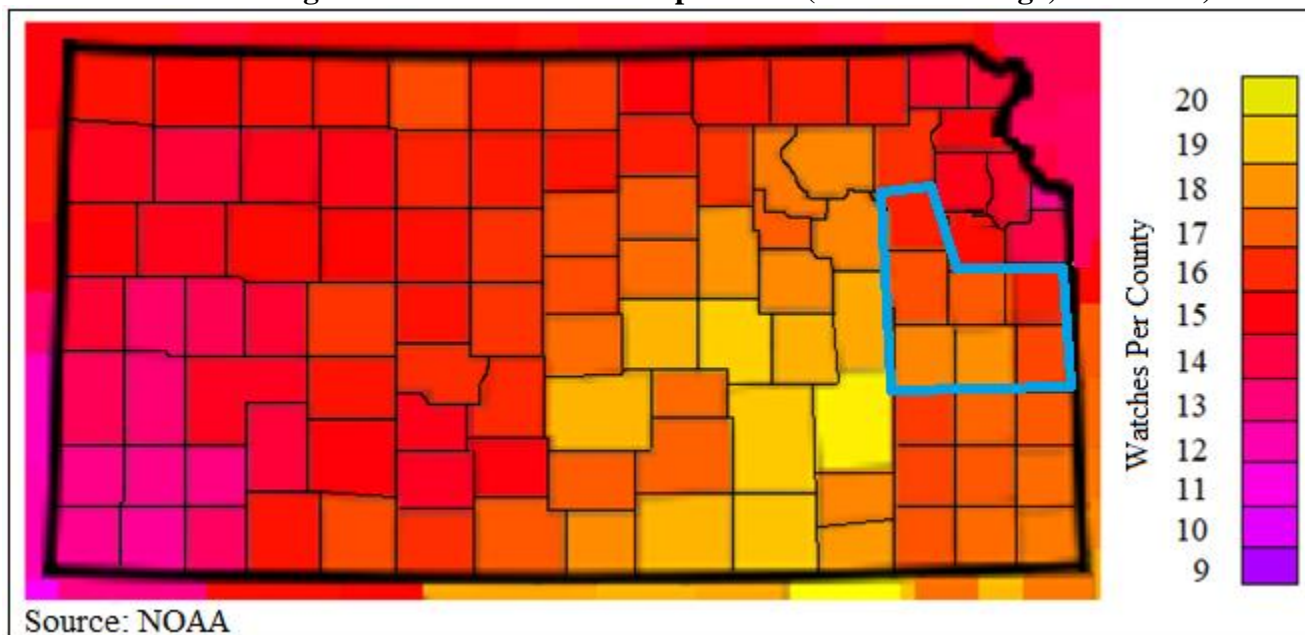


4.17.1 – Location and Extent

Lightning occurs over broad geographic regions. The entire Kansas Region J planning area, including all participating jurisdictions, is at risk to lightning.

Thunderstorms are often the generator of lightning. The following map, generated by NOAA, indicates the average number severe thunderstorm watches per year for Kansas Region J.

Annual Average Thunderstorm Watches per Year (20-Year Average, 1993-2012)

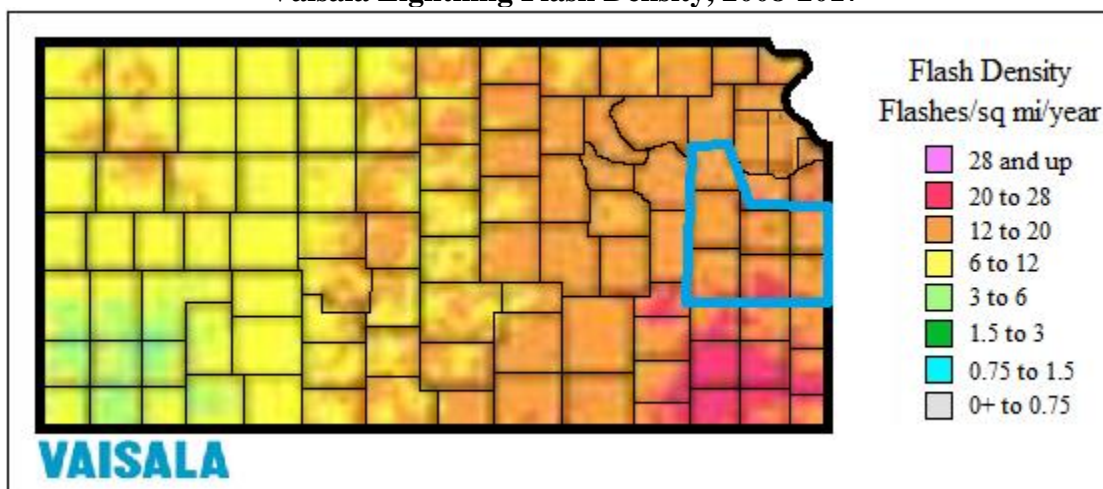


The following map, generated by Vaisala, indicates the average number of lightning flashes per square mile per year for Kansas Region J. In general, the more recorded flashes the greater the potential for lightning strikes.





Vaisala Lightning Flash Density, 2008-2017



4.17.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been 11 Presidential Disaster Declarations for Kansas Region J for severe storms (along with other associates hazard event), of which lightning may be a component. The following 20-year information (with 1999 and 2018 being full data years) on past declared disasters is presented to provide a historical perspective on hail events that have impacted Kansas Region J. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2014.

Table 4.114: Kansas Region J FEMA Severe Storm Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4417	02/25/2019 (10/04/18 – 10/15/18)	Severe Storms , Straight-line Winds, and Flooding	Anderson	-
4230	07/20/2015 (05/04/2015 – 06/21/2015)	Severe Storms , Tornadoes, Straight-line Winds, and Flooding	Coffey, Franklin, Miami, Morris, Nemaha, Neosho, and Osage	\$13,848,325
4150	10/22/2013 (07/22/2013 – 08/15/2013)	Severe Storms , Straight-line Winds, Tornadoes, and Flooding	Coffey and Linn	\$11,412,827
1932	08/10/2010 (6/7-7/21/2010)	Severe Storms , Flooding, and Tornadoes	Franklin, Miami, and Osage	\$9,279,257
1860	09/30/2009 (7/8-7/14/2009)	Severe Storms and Flooding	Anderson, Franklin, and Linn	\$3,347,662
1849	06/25/2009 (4/25-5/16/2009)	Severe Storms , Flooding, Straight-line Winds, and Tornadoes	Anderson, Coffey, and Linn	\$15,013,488
1776	07/09/2008	Severe Storms , Flooding, and Tornadoes	Franklin and Linn	\$70,629,544
1711	7/2/2007 (6/26-30/2007)	Severe Storms and Flooding	Anderson, Coffey, Franklin, Linn, Miami and Osage	\$40,238,600





Table 4.114: Kansas Region J FEMA Severe Storm Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1699	5/6/2007 (5/4/2007)	Severe Storms, Tornadoes, and Flooding	Osage and Shawnee	\$117,565,269
1535	8/3/2004 (6/12-7/25/2004)	Severe Storms, Flooding, and Tornadoes	Shawnee	\$12,845,892
1462	5/6/2003 (5/4-30/2003)	Severe Storms, Tornadoes, and Flooding	Anderson, Miami and Osage	\$988,056

Source: FEMA

-: Data unavailable

The following provides details of the two Presidential Disaster Declarations for Kansas Region J since the last plan update in 2014.

**Kansas – Severe Storms, Straight-Line Winds, and Flooding
FEMA-4417-DR**

Declared February 25, 2019

The Federal Emergency Management Agency announced that federal disaster assistance has been made available to the state of Kansas to supplement state and local recovery efforts in the areas affected by severe storms, straight-line winds, and flooding from Oct. 4-15, 2018.

Federal funding is available to the state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by severe storms, straight-line winds, and flooding in Anderson, Barton, Cowley, Doniphan, Greenwood, Harvey, Kingman, Neosho, Pratt, Reno, Rice, and Sumner counties.

**Kansas – Severe Storms, Tornadoes, Straight-Line Winds, and Flooding
FEMA-4230-DR**

Declared July 20, 2015

On July 1, 2015, Governor Sam Brownback requested a major disaster declaration due to severe storms, tornadoes, straight-line winds, and flooding during the period of May 4 to June 21, 2015. The Governor requested a declaration for Public Assistance, including direct federal assistance for 42 counties and Hazard Mitigation statewide. During the period of May 4 to June 27, 2015, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On July 20, 2015, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms, tornadoes, straight-line winds, and flooding in Atchison, Barton, Brown, Anderson, Chase,





Chautauqua, Cherokee, Cheyenne, Clay, Cloud, Coffey, Coffey, Doniphan, Edwards, Elk, Ellsworth, Franklin, Gray, Greenwood, Franklin, Haskell, Hodgeman, Jackson, Jefferson, Jewell, Lyon, Shawnee, Marshall, Osage, Meade, Miami, Morris, Nemaha, Neosho, Osage, Pottawatomie, Republic, Rice, Stevens, Sumner, Wabaunsee, and Washington Counties. Direct Federal assistance was also authorized. Finally, this declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

In addition to the above reported events, the following table presents NOAA NCEI identified lightning events and the resulting damage totals in Kansas Region J from the period 2009 - 2018.

Table 4.115: Kansas Region J NCEI Lightning Events, 2009 - 2018

County	Number of Events	Property Damage	Deaths	Injuries
Anderson	0	\$0	0	0
Coffey	2	\$0	2	0
Franklin	0	\$0	0	0
Linn	0	\$0	0	0
Miami	1	\$1,000	0	0
Osage	0	\$0	0	0
Shawnee	0	\$0	0	0

Source: NOAA NCEI

The following local events were reported.

- July 7, 2012: Coffey County**
A Kansas man died after being struck by a bolt of lightning outside his home near Waverly in Coffey County. He was killed by a stray bolt of lightning from a nearby storm.
- September 10, 2011: Coffey County**
A woman was riding her bike across John Redmond Dam in Coffey County when she was struck by lightning from a passing thunderstorm. She passed away the next day

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of lightning on the region’s agricultural base. Crop loss data for the ten year period of 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicates no related claims.

Table 4.116: USDA Risk Management Agency Cause of Loss Indemnities 2009-2018, Lightning

County	USDA Crop Loss	Acres Impacted	Number of Claims
Anderson	\$0	0	0
Coffey	\$0	0	0
Franklin	\$0	0	0
Linn	\$0	0	0
Miami	\$0	0	0
Osage	\$0	0	0
Shawnee	\$0	0	0

Source: USDA





4.17.3 – Hazard Probability Analysis

Data from the NCEI indicates that Region J counties can expect on a yearly basis, relevant to lightning events:

- <1 death
- No injuries
- \$100 in property damages

According to the USDA Risk Management Agency, Region J counties can expect on a yearly basis, relevant to lightning occurrences:

- No claims
- No impacted acres
- \$0 in damages

In addition, Kansas Region J has had 11 Presidentially Declared Disasters relating to severe storms (of which lightning is a potential component) in the last 20 years. This represents an average of one declared severe storm disaster per year.

4.17.4 – Vulnerability Analysis

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region J county incurring damage over the period 2009 to 2018 from lightning events. The greater the percentage of structures damaged the greater overall vulnerability going forward.

Table 4.117: Kansas Region J Structural Vulnerability Data for Lightning, 2009 -2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Anderson	\$879,410,000	\$0	0.0%
Coffey	\$1,053,574,000	\$0	0.0%
Franklin	\$2,853,762,000	\$0	0.0%
Linn	\$1,172,469,000	\$0	0.0%
Miami	\$3,706,416,000	\$0	0.0%
Osage	\$1,695,650,000	\$0	0.0%
Shawnee	\$20,465,546,000	\$0	0.0%

Source: NCEI and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability to lightning events. The following table indicates the total county population and the percentage change over the period 2000 to 2017.





Table 4.118: Kansas Region J Population Vulnerability Data for Lightning

County	2017 Population	Percent Population Change 2000 to 2017
Anderson	7,840	-3.3%
Coffey	8,328	-6.1%
Franklin	25,599	3.3%
Linn	9,602	0.3%
Miami	4,625	16.3%
Osage	15,894	-4.9%
Shawnee	178,392	5.0%

Source: US Census Bureau

In addition, lightning may exacerbate agricultural and economic losses. The USDA 2017 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region J County. USDA Risk Management Agency crop loss data (2014 – 2018) allows us to quantify the monetary impact of lightning strikes on the agricultural sector. The higher the percentage loss, the higher the vulnerability the county has to lightning events.

Table 4.119: Lightning Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	242,149	0	0.0%	\$80,868,000	\$0	0.0%
Coffey	218,978	0	0.0%	\$46,874,000	\$0	0.0%
Franklin	222,549	0	0.0%	\$75,773,000	\$0	0.0%
Linn	156,904	0	0.0%	\$41,143,000	\$0	0.0%
Miami	181,564	0	0.0%	\$53,030,000	\$0	0.0%
Osage	252,612	0	0.0%	\$66,913,000	\$0	0.0%
Shawnee	126,486	0	0.0%	\$39,209,000	\$0	0.0%

Source: USDA

4.17.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.120: Lightning Consequence Analysis

Subject	Impacts of Lightning
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the areas of lightning are expected to be severe if caught without proper shelter.
Health and Safety of Responders	Impacts will be predicated on the severity of the event. Damaged infrastructure will likely result in hazards such as downed utility lines, main breakages and debris on roadways.
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage. Services may be limited to essential tasks if utilities are impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location and structural capacity of the facility. Loss of





Table 4.120: Lightning Consequence Analysis

Subject	Impacts of Lightning
	utility infrastructure could occur. Utility lines, residential and business properties will be affected.
Environment	Impact could be severe for the immediate impacted area, depending on the size of the event. Impact will lessen as distance increases from the immediate incident area
Economic Conditions	Impacts to the economy will be dependent severity of the event and the impact on structures and infrastructure. Impacts could be severe if utilities are affected.
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. Warning systems in place and the timeliness of those warnings could be questioned.





4.18 – Soil Erosion and Dust

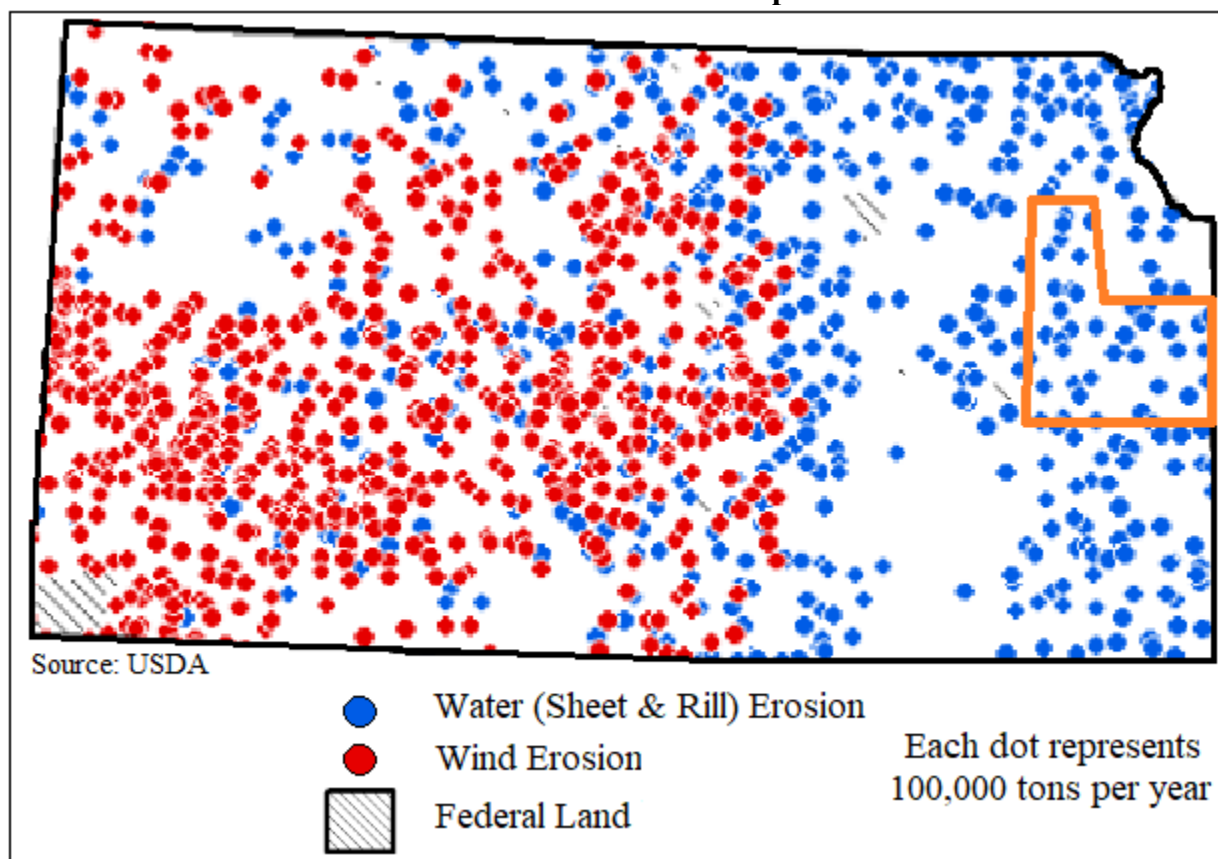
Soil erosion, in general, is a process that removes topsoil through the application of water, wind, or farming activities. Soil erosion can be a slow, unobserved process or can happen quickly due to extreme environmental factors. The United States is losing soil 10 times faster than the natural replenishment rate, and related production losses cost the country about \$44,000,000,000 each year. On average, wind erosion is responsible for about 40% of this loss and can increase markedly in drought years.



4.18.1 – Location and Extent

Soil erosion and dust occurs over broad geographic regions. The entire Kansas Region J planning area, including all participating jurisdictions, is at risk to soil erosion and dust.

Wind and Water Erosion on Cropland 2012



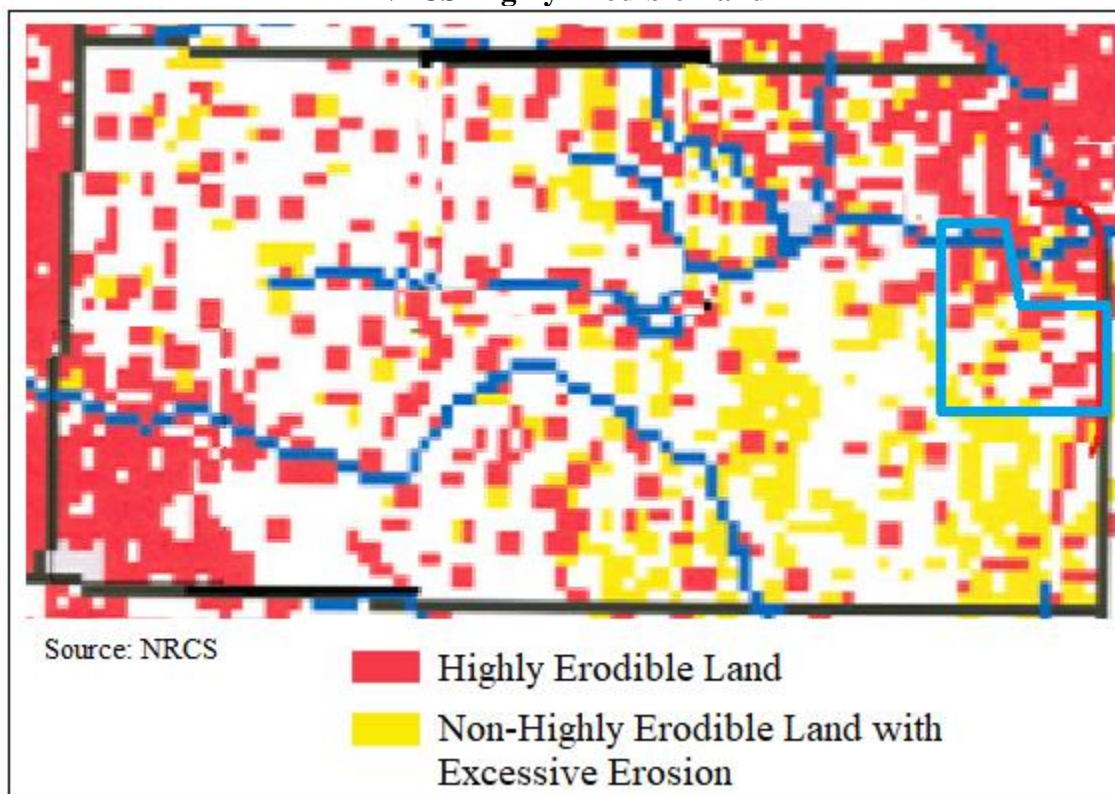
The following figure, from the Natural Resources Conservation Service (NRCS) shows areas of excessive erosion of farmland in Kansas. Each red dot represents 5,000 acres of highly erodible land, and each





yellow dot represents 5,000 acres of non-highly erodible land with excessive erosion above the tolerable soil erosion rate.

NRCS Highly Erodible Land



4.18.2 – Previous Occurrences

At present there is no centralized and complete database containing historical records for soil erosion in Kansas. For Kansas Region J there have been no reported or recorded soil erosion or dust events impacting either participating jurisdictions or the region in the past 10 years.

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of soil erosion and dust on the Region’s agricultural base. Crop loss data for the years 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicates no related claims

4.18.3 – Hazard Probability Analysis

Predicting future erosion amounts is problematic as much relies on farm management practices, available moisture and crop type. Due to the on-going nature of this hazard, and the small agricultural base for the region, it is expected that future events causing minimally measurable impact to the regions crops and farmers will continue occur. Again, the rate of occurrence and potential future occurrence will be predicated on farm management practices and drought and water conditions.





4.18.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to soil erosion and dust events. Additionally, as this hazard disproportionately impacts the agricultural sector, only data on that sector was reviewed for potential vulnerability. Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of soil erosion on the region’s agricultural base. Crop loss data for the ten year period of 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicates no soil erosion related claims.

Table 4.121: Soil Erosion and Dust Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	242,149	0	0.0%	\$80,868,000	\$0	0.0%
Coffey	218,978	0	0.0%	\$46,874,000	\$0	0.0%
Franklin	222,549	0	0.0%	\$75,773,000	\$0	0.0%
Linn	156,904	0	0.0%	\$41,143,000	\$0	0.0%
Miami	181,564	0	0.0%	\$53,030,000	\$0	0.0%
Osage	252,612	0	0.0%	\$66,913,000	\$0	0.0%
Shawnee	126,486	0	0.0%	\$39,209,000	\$0	0.0%

Source: USDA

4.18.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.122: Soil Erosion and Dust Consequence Analysis

Subject	Impacts of Soil Erosion and Dust
Health and Safety of the Public	Impact tends to be agricultural; however, dust can be a danger to susceptible individuals in the form of air pollutants.
Health and Safety of Responders	With proper preparedness and protection, impact to the responders is expected to be minimal.
Continuity of Operations	Minimal expectation for utilization of the COOP.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be severe, depending on the site of the soil erosion. This could adversely affect utility poles/lines, and facilities. Dust can also adversely affect machinery, air conditioners, etc.
Environment	The impact to the environment could be severe. Soil erosion and dust can severely affect farming, ranching, wildlife and plants due to production losses and habitat changes.
Economic Conditions	Impacts to the economy will be dependent on how extreme the soil erosion and dust are. Potentially it could severely affect crop yield and productivity. Seedling survival and growth is stressed by erosion and dust, as is the top soil which agriculture is dependent on.
Public Confidence in the Jurisdiction’s Governance	Planning, response, and recovery may be questioned if not timely and effective.





4.19 – Tornado

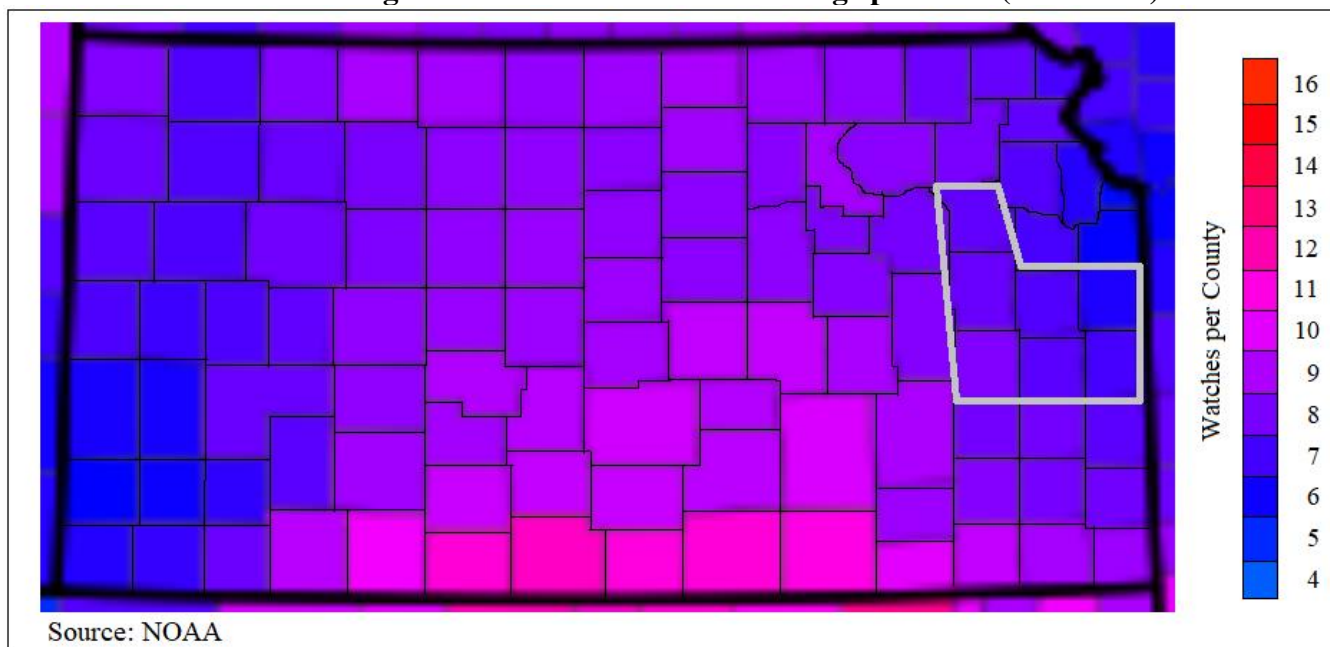
A tornado is a violently rotating column of air in contact with the ground. Often referred to as a twister or a cyclone, they can strike anywhere and with little warning. Tornadoes come in many shapes and sizes but are typically in the form of a visible condensation funnel, whose narrow end touches the earth and is often encircled by a cloud of debris and dust.



4.19.1 – Location and Extent

Tornadoes can strike anywhere in Kansas Region J, placing the entire planning area at risk. The following map, generated by NOAA, shows the average annual tornado watches per year for Kansas Region J.

Annual Average Tornado Watches Year Average per Year (1933-2012)

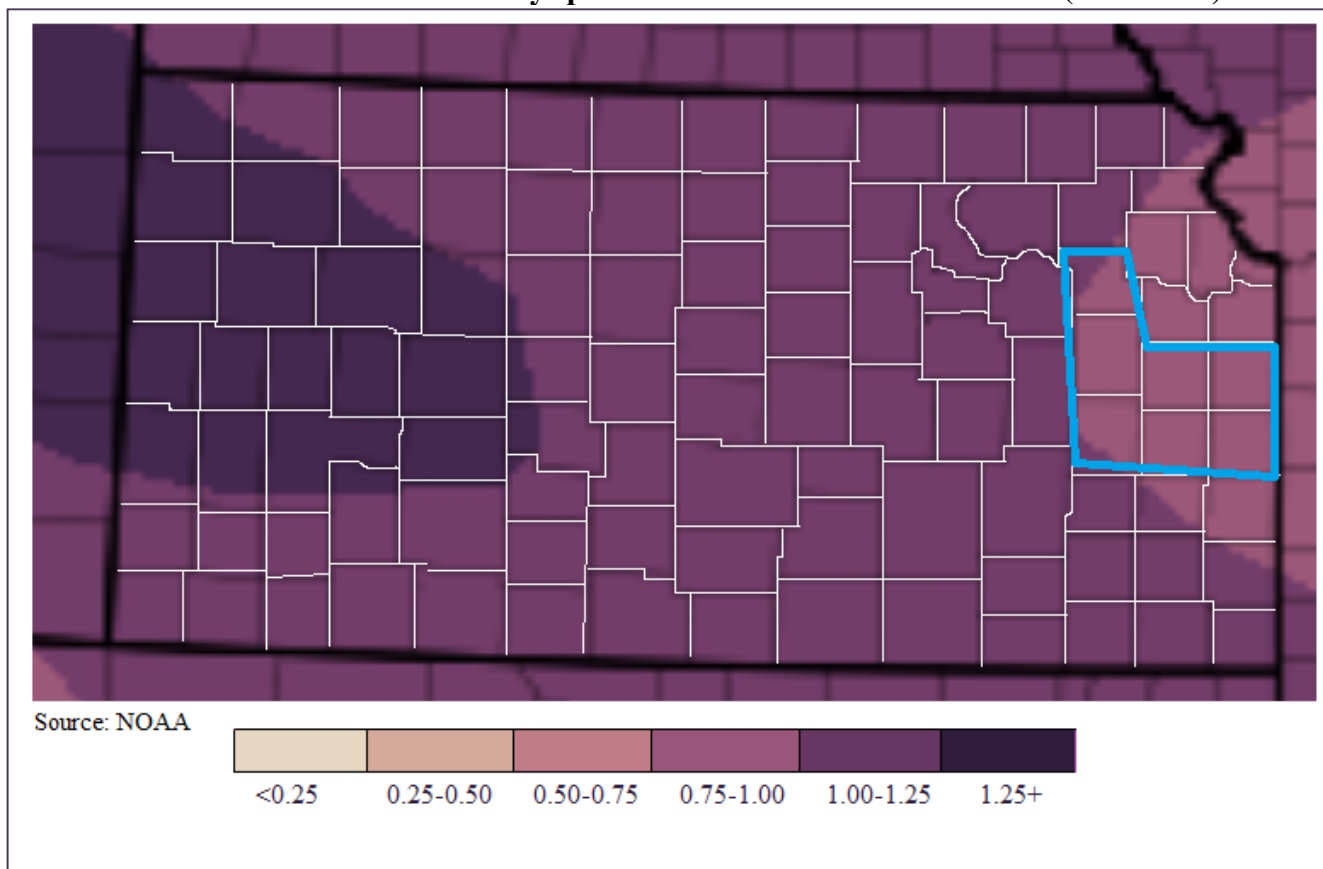


Additionally, NOAA generated the following map indicating the mean number of tornado days per year, using data compiled from the years 1986 to 2015.





Mean Number of Tornado Days per Year Within 25 Miles of a Point (1986-2015)



Many tornados only exist for a few seconds in the form of a touchdown. The most extreme tornados can attain wind speeds of more than 200 miles per hour, stretch more than two miles across, and travel dozens of miles.

A tornado may arrive with a squall line or cold front and touch down quickly. Smaller tornados can strike without warning. Other times tornado watches and sirens will alert communities of high potential tornado producing weather or an already formed tornado and its likely path.

Since 2007, the United States uses the Enhanced Fujita Scale to categorize tornados. The scale correlates wind speed values per F level and provides a rubric for estimating damage.

Table 4.123: Enhanced Fujita Scale

Scale	Wind Speed (mph)	Relative Frequency	Potential Damage
EF0	65-85	53.5%	Light. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornados with no reported damage (i.e. those that remain in open fields) are always rated EF0.
EF1	86-110	31.6%	Moderate. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.





Table 4.123: Enhanced Fujita Scale

Scale	Wind Speed (mph)	Relative Frequency	Potential Damage
EF2	111-135	10.7%	Considerable. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes complete destroyed; large trees snapped or uprooted; light object missiles generated; cars lifted off ground.
EF3	136-165	3.4%	Severe. Entire stores of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	166-200	0.7%	Devastating. Well-constructed houses and whole frame houses completely leveled; cars thrown, and small missiles generated.
EF5	>200	<0.1%	Explosive. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 300 ft.; steel reinforced concrete structure badly damaged; high rise buildings have significant structural deformation; incredible phenomena will occur.

Source: NOAA Storm Prediction Center

4.19.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been eight Presidential Disaster Declarations for Kansas Region J for tornados (along with other associates hazard event), of which hail may be a component. The following 20-year information (with 1999 and 2018 being full data years) on past declared disasters is presented to provide a historical perspective on tornado events that have impacted Kansas Region J. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2014.

Table 4.124: Kansas Region J FEMA Tornado Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4230	07/20/2015 (05/04/2015 – 06/21/2015)	Severe Storms, Tornados , Straight-Line Winds, and Flooding	Coffey, Franklin, Miami, Morris, Nemaha, Neosho, and Osage	\$13,848,325
4150	10/22/2013 (07/22/2013 – 08/15/2013)	Severe Storms, Straight-line Winds, Tornados , and Flooding	Coffey and Linn	\$1,102,861 (Estimate)
1932	08/10/2010 (6/7-7/21/2010)	Severe Storms, Flooding and Tornados	Franklin, Miami, and Osage	\$9,279,257
1849	06/25/2009 (4/25-5/16/2009)	Severe Storms, Flooding, Straight-Line Winds, and Tornados	Anderson, Coffey, and Linn	\$15,013,488
1776	07/09/2008	Severe Storms, Flooding, and Tornadoes	Franklin and Linn	\$70,629,544
1699	5/6/2007 (5/4/2007)	Severe Storms, Tornados , and Flooding	Osage and Shawnee	\$117,565,269





Table 4.124: Kansas Region J FEMA Tornado Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
1535	8/3/2004 (6/12-7/25/2004)	Severe Storms, Flooding, and Tornados	Shawnee	\$12,845,892
1462	5/6/2003 (5/4-30/2003)	Severe Storms, Tornados , and Flooding	Anderson, Miami and Osage	\$988,056

Source: FEMA

-: Data unavailable

The following provides details of the single Presidential Disaster Declarations for Kansas Region J since the last plan update in 2014.

Kansas – Severe Storms, Tornados, Straight-Line Winds, and Flooding

FEMA-4230-DR

Declared July 20, 2015

On July 1, 2015, Governor Sam Brownback requested a major disaster declaration due to severe storms, tornados, straight-line winds, and flooding during the period of May 4 to June 21, 2015. The Governor requested a declaration for Public Assistance, including direct federal assistance for 42 counties and Hazard Mitigation statewide. During the period of May 4 to June 27, 2015, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On July 20, 2015, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms, tornados, straight-line winds, and flooding in Atchison, Barton, Brown, Anderson, Chase, Chautauqua, Cherokee, Cheyenne, Clay, Cloud, Coffey, Coffey, Doniphan, Edwards, Elk, Ellsworth, Franklin, Gray, Greenwood, Franklin, Haskell, Hodgeman, Jackson, Jefferson, Jewell, Lyon, Shawnee, Marshall, Osage, Meade, Miami, Morris, Nemaha, Neosho, Osage, Pottawatomie, Republic, Rice, Stevens, Sumner, Wabaunsee, and Washington Counties. Direct Federal assistance was also authorized. Finally, this declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

In addition to the above reported events, the following table presents NOAA NCEI identified tornado events and the resulting damage totals in Kansas Region J for the period 2009 - 2018 (with 2009 and 2018 being full data set years).





Table 4.125: Kansas Region J NCEI Tornado Events, 2009 - 2018

County	Number of Days with Event	Property Damage	Deaths	Injuries	Highest Rated Tornado
Anderson	1	\$500	0	0	EF0
Coffey	4	\$0	0	0	EF0
Franklin	5	\$0	0	0	EF1
Linn	1	\$0	0	0	EF2
Miami	2	\$5,000	0	0	EF1
Osage	5	\$0	0	0	EF2
Shawnee	7	\$1,000	0	0	EF0

Source: NOAA NCEI

The following provides both **local accounts** and NOAA NCEI descriptions of notable recorded events:

- **May 25, 2011: Mount Hope (Miami County)**
A tornado touched down and caused a truck to be overturned and heavily damaged. Minor building damage also observed. Property damage was recorded at \$5,000.

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of tornados on the region’s agricultural base. Crop loss data for the ten-year period of 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicates four tornado related claims on 654 acres causing \$44,169 in loss.

Table 4.126: USDA Risk Management Agency Cause of Loss Indemnities 2009-2018, Tornados

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Anderson	0	0	\$0
Coffey	0	0	\$0
Franklin	0	0	\$0
Linn	1	461	\$34,879
Miami	1	27	\$2,590
Osage	2	166	\$6,700
Shawnee	0	0	\$0

Source: USDA

4.19.3 – Hazard Probability Analysis

The following table summarizes tornado probability data for **Anderson County**.

Table 4.127: Anderson County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	1
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$500
Average Property Damage per Year	\$50





Table 4.127: Anderson County Tornado Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Anderson County can expect on a yearly basis, relevant to tornado events:

- One event
- No deaths or injuries
- \$50 in property damages

According to the USDA Risk Management Agency, Anderson County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes tornado probability data for **Coffey County**.

Table 4.128: Coffey County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	4
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Coffey County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths or injuries





- \$0 in property damages

According to the USDA Risk Management Agency, Coffey County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes Tornado probability data for **Franklin County**.

Table 4.129: Franklin County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	5
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Franklin County can expect on a yearly basis, relevant to tornado events:

- One event
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Franklin County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes tornado probability data for **Linn County**.





Table 4.130: Linn County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	1
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	1
Average Number of Claims per Year	<1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	461
Average Number of Acres Damaged per Year	46
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$34,879
Average Crop Damage per Year	\$3,488

Source: NCEI and USDA

Data from the NCEI indicates that Linn County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Linn County can expect on a yearly basis, relevant to tornado occurrences:

- <1 insurance claim
- 46 acres impacted
- \$3,488 in insurance claims

The following table summarizes tornado probability data for **Miami County**.

Table 4.131: Miami County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	2
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$5,000
Average Property Damage per Year	\$500
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	1
Average Number of Claims per Year	<1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	27
Average Number of Acres Damaged per Year	3
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$2,590
Average Crop Damage per Year	\$259

Source: NCEI and USDA





Data from the NCEI indicates that Miami County can expect on a yearly basis, relevant to tornado events:

- <1 event
- No deaths or injuries
- \$500 in property damages

According to the USDA Risk Management Agency, Miami County can expect on a yearly basis, relevant to tornado occurrences:

- <1 insurance claim
- Three acres impacted
- \$259 in insurance claims

The following table summarizes tornado probability data for **Osage County**.

Table 4.132: Osage County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	5
Average Events per Year	<1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$0
Average Property Damage per Year	\$0
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	2
Average Number of Claims per Year	<1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	166
Average Number of Acres Damaged per Year	17
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$6,700
Average Crop Damage per Year	\$670

Source: NCEI and USDA

Data from the NCEI indicates that Osage County can expect on a yearly basis, relevant to tornado events:

- One event
- No deaths or injuries
- \$0 in property damages

According to the USDA Risk Management Agency, Osage County can expect on a yearly basis, relevant to tornado occurrences:

- <1 insurance claim
- 17 acres impacted
- \$670 in insurance claims

The following table summarizes Tornado probability data for **Shawnee County**.





Table 4.133: Shawnee County Tornado Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	7
Average Events per Year	1
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with a Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$1,000
Average Property Damage per Year	\$100
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: NCEI and USDA

Data from the NCEI indicates that Shawnee County can expect on a yearly basis, relevant to tornado events:

- One event
- No deaths or injuries
- \$100 in property damages

According to the USDA Risk Management Agency, Shawnee County can expect on a yearly basis, relevant to tornado occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims.

Based on the number of NCEI reported events we derive the following probability for event occurrence in Kansas Region J:

- **Tornado Probability:** Approximately three events per year

However, if events are normalized for tornados rated above an EF2, we derive the following probability for event occurrence:

- **Probability of an EF2 or greater tornado:** <1 event per year

In addition, Kansas Region J has had eight Presidentially Declared Disasters relating to tornados (and other concurrent events such as flooding) in the last 20 years. This represents an average of one declared tornado disaster per year.

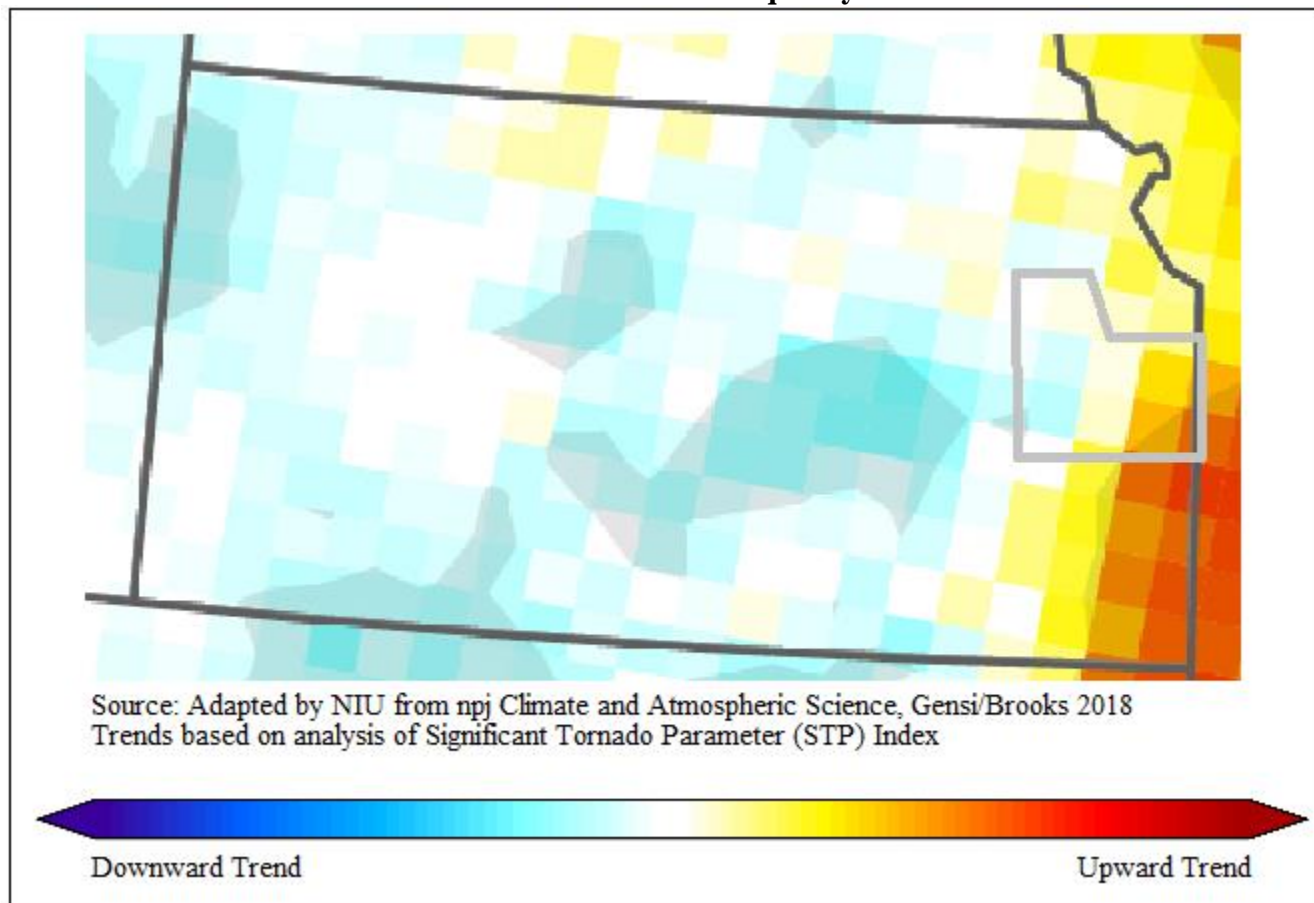
Research conducted by the National Severe Storms Lab looked at Significant Tornado Parameter (STP) to help determine future tornado probability. STP is a measurement of the major parameters of tornado





conditions, including wind speed and direction, wind at differing altitudes, unstable air patterns, and humidity. The following map, generated by Northern Illinois University and compiled from STP data, indicates that Kansas Region J may see an increasing future number of tornados.

Tornado Environmental Frequency Trends



4.19.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to tornado events. Counties with a higher or increasing population, high, or increasing, or having a high structural valuation are to be considered to have a potentially greater vulnerability. It is worth highlighting the majority of Kansas Region J counties may have increased vulnerability to tornado events due to a projected increase in the number of structures.

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region J county incurring damage over the period 2009 to 2018 from tornado events. The greater the percentage of structures damaged the greater overall vulnerability going forward.





Table 4.134: Kansas Region J Structural Vulnerability Data for Tornadoes, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Anderson	\$879,410,000	\$500	0.00%
Coffey	\$1,053,574,000	\$0	0.00%
Franklin	\$2,853,762,000	\$0	0.00%
Linn	\$1,172,469,000	\$0	0.00%
Miami	\$3,706,416,000	\$5,000	0.00%
Osage	\$1,695,650,000	\$0	0.00%
Shawnee	\$20,465,546,000	\$1,000	0.00%

Source: NCEI and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability to tornado events. The following table indicates the total county population and the percentage change over the period 2000 to 2017.

Table 4.135: Kansas Region J Population Vulnerability Data for Tornadoes

County	2017 Population	Percent Population Change 2000 to 2017
Anderson	7,840	-3.3%
Coffey	8,328	-6.1%
Franklin	25,599	3.3%
Linn	9,602	0.3%
Miami	4,625	16.3%
Osage	15,894	-4.9%
Shawnee	178,392	5.0%

Source: US Census Bureau

The USDA 2017 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region J County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of tornadoes on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to tornado events.

Table 4.136: Tornado Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	242,149	0	0.00%	\$80,868,000	\$0	0.00%
Coffey	218,978	0	0.00%	\$46,874,000	\$0	0.00%
Franklin	222,549	0	0.00%	\$75,773,000	\$0	0.00%
Linn	156,904	46	0.03%	\$41,143,000	\$3,488	0.01%
Miami	181,564	3	0.00%	\$53,030,000	\$259	0.00%
Osage	252,612	17	0.01%	\$66,913,000	\$670	0.00%
Shawnee	126,486	0	0.00%	\$39,209,000	\$0	0.00%

Source: USDA





Between 2001 and 2010 51% of those killed by tornados were living in mobile homes, according to the NOAA. A 2012 “Kansas Severe Weather Awareness Week” report indicates that people living in mobile homes are killed by tornados at a rate 20 times higher than people living in permanent homes. Additionally, a new study from Michigan State University reported that the two biggest factors related to tornado fatalities were housing quality (measured by mobile homes as a proportion of housing units) and income level. When a tornado strikes, a county with double the number of mobile homes as a proportion of all homes will experience 62% more fatalities than a county with fewer mobile homes, according to the study data.

The following participating jurisdictions may have increased vulnerability to tornado events due to having greater than 20% of housing stock as mobile homes:

- **Colony** (Anderson County)
- **Pomona** (Franklin County)
- **Princeton** (Franklin County)
- **Rantoul** (Franklin County)
- **Linn Valley** (Linn County)
- **Fontana** (Miami County)
- **Quenemo** (Osage County)
- **Willard** (Shawnee County)

4.19.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.137: Tornado Consequence Analysis

Subject	Impacts of Tornado
Health and Safety of the Public	Impact of the immediate area could be severe depending on whether individuals were able to seek shelter and get out of the trajectory of the tornado. Casualties are dependent on warning systems and warning times.
Health and Safety of Responders	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Temporary to permanent relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Localized impact could be severe in the trajectory path. Roads, buildings, and communications could be adversely affected. Damage could be severe.
Environment	Impact will be severe for the immediate impacted area. Impact will lessen as distance increases from the immediate incident area.
Economic Conditions	Impacts to the economy will greatly depend on the trajectory of the tornado. If a jurisdiction takes a direct hit then the economic conditions will be severe. With an indirect hit the impact could be low to severe.
Public Confidence in the Jurisdiction’s Governance	Response and recovery will be in question if not timely and effective. Warning systems and warning time will also be questioned.





4.20 – Wildfire

The NWS defines a wildfire as any free burning uncontrollable wildland fire not prescribed for the area which consumes the natural fuels and spreads in response to its environment. They can occur naturally, by human accident, and on rare occasions by human action. Population de-concentration in the U.S. has resulted in rapid development in the outlying fringe of metropolitan areas and in rural areas with attractive recreational and aesthetic amenities, especially forests. This expansion has increased the likelihood that wildfires will threaten life and property.



4.20.1 – Location and Extent

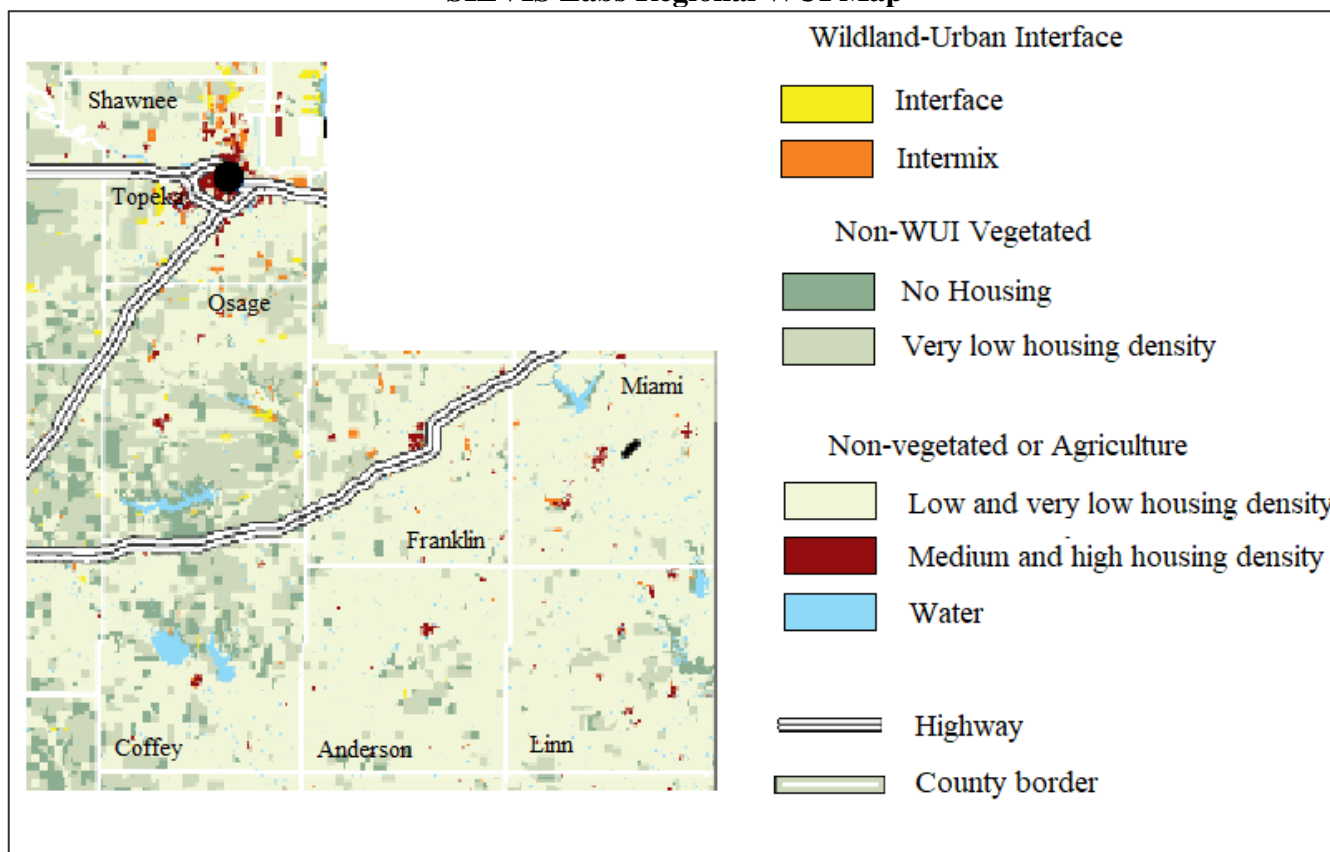
Wildfires in Kansas Region J typically originate in pasture or prairie areas following the ignition of dry grasses (by natural or human sources). According to the 2011 Kansas Forest Action Plan, with the exception of Eastern Redcedar, most forest types in Kansas do not pose significant fire management issues. However, grasslands, which make up a majority of the open areas in Kansas Region J, do pose fire management issues due to the expansion of the Wildland Urban Interface (WUI) in recent decades.

The WUI creates an environment in which fire can move readily between structural and vegetation fuels. Two types of WUI are mapped: intermixed and interface. Intermix WUI are areas where housing and vegetation intermingle; interface WUI are areas with housing in the vicinity of dense, contiguous wildland vegetation. The following maps detail WUI areas and information for Kansas Region J.



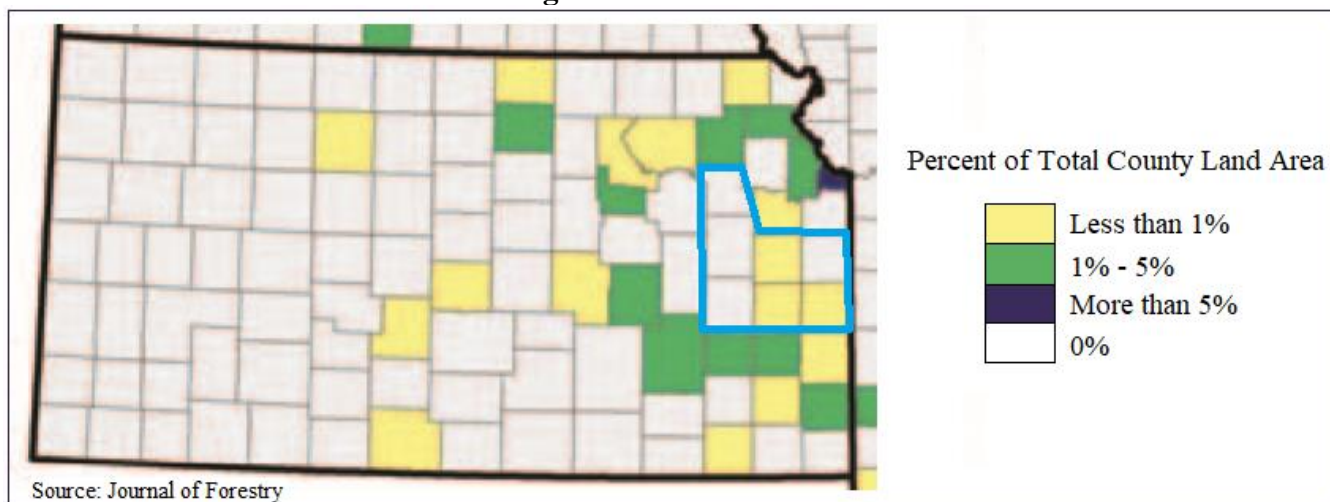


SILVIS Labs Regional WUI Map



The Eastern Redcedar is of concern to Kansas Region J. This invasive evergreen species can take over fence rows and un-planted fields, adding to wildfire fuel and risk. The following 2012 map, from the Journal of Forestry, indicates the percent of the total regional acreage impacted by Eastern Redcedar.

Percent of Total Regional Land Area of Eastern Redcedar





4.20.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been no Presidential Disaster Declarations for Kansas Region J for wildfires. In the 20-year period from 1999 to present, there been no Fire Management Assistance Declaration for Kansas Region J for wildfires.

The Office of the State of Kansas Fire Marshall’s Office (KSFM) was contacted concerning the size and origin of reported wildfires for the region. The following table lists all recorded wildfires, by county, for the six-year period 2013-2018 (currently available data, with 2013 and 2018 being full data set years).

Table 4.138: Kansas Region J State Fire Marshall Recorded Wildfire Events, 2013-2018

County	Number of Reported Fires	Deaths	Injuries	Buildings Burned	Burned Acres
Anderson	209	0	0	0	7,094
Coffey	141	0	0	1	9,417
Franklin	228	0	1	5	9,459
Linn	190	0	2	0	12,081
Miami	103	0	3	2	2,700
Osage	243	0	0	3	12,831
Shawnee	278	0	1	7	16,478

Source: KSFM

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of wildfires on the region’s agricultural base. Crop loss data for the ten-year period of 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicates nine wildfire related claims on 126 acres for \$7,490.

Table 4.139: USDA Risk Management Agency Cause of Loss Indemnities 2009-2018, Wildfires

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Anderson	0	0	\$0
Coffey	0	0	\$0
Franklin	0	0	\$0
Linn	0	0	\$0
Miami	0	0	\$0
Osage	0	0	\$0
Shawnee	0	0	\$0

Source: USDA

4.20.3 – Hazard Probability Analysis

The following table summarizes wildfire probability data for **Anderson County**.





Table 4.140: Anderson County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	209
Average Events per Year	35
Number Deaths or Injuries (2009-2018)	0
Average Number of Yearly Deaths and Injuries (2009-2018)	0
Total Reported Burned Buildings (2009-2018)	0
Average Burned Buildings per Year	0
Total Reported Burned Acres (2009-2018)	7,094
Average Burned Acres per Year	1,182
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Anderson County can expect on a yearly basis, relevant to wildfire events:

- 35 events
- No deaths or injuries
- No buildings burned
- 1,182 acres burned

According to the USDA Risk Management Agency, Anderson County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Coffey County**.

Table 4.141: Coffey County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	141
Average Events per Year	24
Number Deaths or Injuries (2009-2018)	0
Average Number of Yearly Deaths and Injuries (2009-2018)	0
Total Reported Burned Buildings (2009-2018)	1
Average Burned Buildings per Year	<1
Total Reported Burned Acres (2009-2018)	9,417
Average Burned Acres per Year	1,570
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0





Table 4.141: Coffey County Wildfire Probability Summary

Data	Recorded Impact
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Coffey County can expect on a yearly basis, relevant to wildfire events:

- 24 events
- No deaths or injuries
- <1 building burned
- 1,570 acres burned

According to the USDA Risk Management Agency, Coffey County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Franklin County**.

Table 4.142: Franklin County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	228
Average Events per Year	38
Number Deaths or Injuries (2009-2018)	1
Average Number of Yearly Deaths and Injuries (2009-2018)	<1
Total Reported Burned Buildings (2009-2018)	5
Average Burned Buildings per Year	1
Total Reported Burned Acres (2009-2018)	9,459
Average Burned Acres per Year	1,577
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Franklin County can expect on a yearly basis, relevant to wildfire events:

- 38 events
- <1 death or injury





- One building burned
- 1,577 acres burned

According to the USDA Risk Management Agency, Franklin County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Linn County**.

Table 4.143: Linn County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	190
Average Events per Year	32
Number Deaths or Injuries (2009-2018)	2
Average Number of Yearly Deaths and Injuries (2009-2018)	<1
Total Reported Burned Buildings (2009-2018)	0
Average Burned Buildings per Year	0
Total Reported Burned Acres (2009-2018)	12,081
Average Burned Acres per Year	2,014
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Linn County can expect on a yearly basis, relevant to wildfire events:

- 32 events
- <1 death or injury
- No buildings burned
- 2,014 acres burned

According to the USDA Risk Management Agency, Linn County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Miami County**.





Table 4.144: Miami County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	103
Average Events per Year	17
Number Deaths or Injuries (2009-2018)	3
Average Number of Yearly Deaths and Injuries (2009-2018)	1
Total Reported Burned Buildings (2009-2018)	2
Average Burned Buildings per Year	<1
Total Reported Burned Acres (2009-2018)	2,700
Average Burned Acres per Year	450
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Miami County can expect on a yearly basis, relevant to wildfire events:

- 17 events
- <1 death or injury
- <1 building burned
- 450 acres burned

According to the USDA Risk Management Agency, Miami County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Osage County**.

Table 4.145: Osage County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	243
Average Events per Year	41
Number Deaths or Injuries (2009-2018)	0
Average Number of Yearly Deaths and Injuries (2009-2018)	0
Total Reported Burned Buildings (2009-2018)	3
Average Burned Buildings per Year	1
Total Reported Burned Acres (2009-2018)	12,831
Average Burned Acres per Year	2,139
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0





Table 4.145: Osage County Wildfire Probability Summary

Data	Recorded Impact
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Osage County can expect on a yearly basis, relevant to wildfire events:

- 41 events
- No deaths or injuries
- <1 building burned
- 2,139 acres burned

According to the USDA Risk Management Agency, Osage County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

The following table summarizes wildfire probability data for **Shawnee County**.

Table 4.146: Shawnee County Wildfire Probability Summary

Data	Recorded Impact
Number of KSFM Reported Events (2009-2018)	278
Average Events per Year	46
Number Deaths or Injuries (2009-2018)	1
Average Number of Yearly Deaths and Injuries (2009-2018)	<1
Total Reported Burned Buildings (2009-2018)	7
Average Burned Buildings per Year	1
Total Reported Burned Acres (2009-2018)	16,478
Average Burned Acres per Year	2,746
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	0
Average Number of Claims per Year	0
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	0
Average Number of Acres Damaged per Year	0
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$0
Average Crop Damage per Year	\$0

Source: KSFM and NOAA

Data from the KSFM indicates that Shawnee County can expect on a yearly basis, relevant to wildfire events:

- 46 events
- <1 death or injury
- One building burned





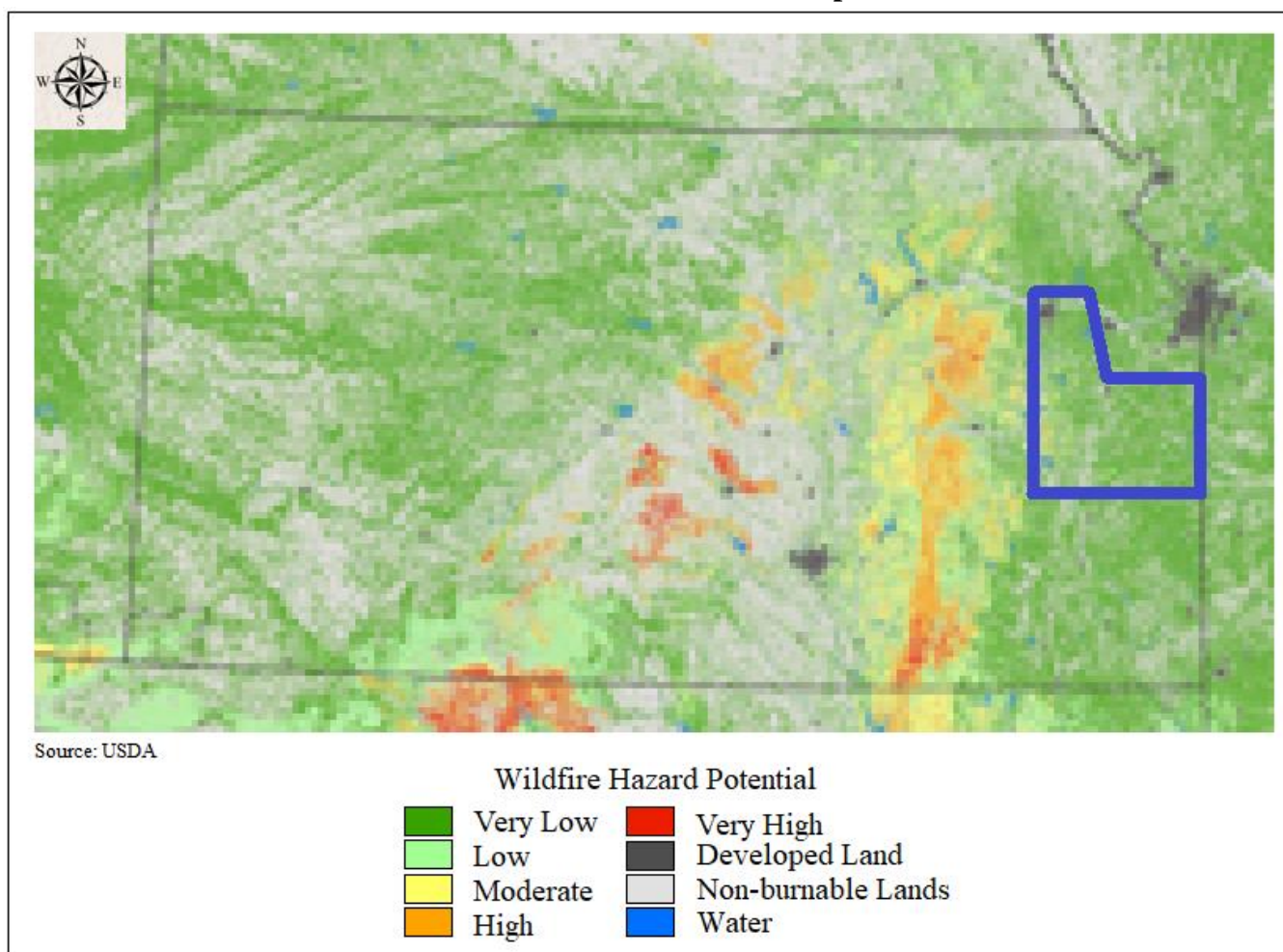
- 2,746 acres burned

According to the USDA Risk Management Agency, Shawnee County can expect on a yearly basis, relevant to wildfire occurrences:

- No insurance claims
- No acres impacted
- \$0 in insurance claims

Mapping created by the USDA in 2018 indicates the Wildfire Hazard Potential for the United States. The map indicates that Kansas Region J is the very low and low potential class.

USDA Wildfire Potential Map



4.20.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to wildfire events. Counties with a higher or increasing population, high, or increasing, or having a high structural valuation are to be considered to have a potentially greater vulnerability. It is worth highlighting





the majority of Kansas Region J counties may have increased vulnerability to wildfire events due to a projected increase in the number of structures.

The following table presents data from HAZUS and KSFM concerning the structures and the percentage of structures for each Kansas Region J county incurring damage over the six-year period of 2013 to 2018 (current available data) from wildfire events. As KSFM did not assign a value to the structures burned, an estimate of \$32,000 per structure (value determined using a commercial cost calculator for an 800 square foot general purpose barn at \$40 per square foot) was used as reports indicate the majority of structures burned were farm out-buildings. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

Table 4.147: Kansas Region J Structural Vulnerability Data for Wildfires, 2009-2018

County	HAZUS Building Valuation	KSFM Structure Damage	Percentage of Building Valuation Damaged
Anderson	\$879,410,000	\$0	0.00%
Coffey	\$1,053,574,000	\$32,000	0.00%
Franklin	\$2,853,762,000	\$160,000	0.01%
Linn	\$1,172,469,000	\$0	0.00%
Miami	\$3,706,416,000	\$64,000	0.00%
Osage	\$1,695,650,000	\$96,000	0.01%
Shawnee	\$20,465,546,000	\$224,000	0.00%

Source: NCEI and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability to wildfire events. The following table indicates the total county population and the percentage change over the period 2000 to 2017.

Table 4.148: Kansas Region J Population Vulnerability Data for Wildfires

County	2017 Population	Percent Population Change 2000 to 2017
Anderson	7,840	-3.3%
Coffey	8,328	-6.1%
Franklin	25,599	3.3%
Linn	9,602	0.3%
Miami	4,625	16.3%
Osage	15,894	-4.9%
Shawnee	178,392	5.0%

Source: US Census Bureau

The USDA 2017 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region J County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of wildfires on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to wildfire events.





Table 4.149: Wildfire Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	768,149	0	0.0%	\$282,338,000	\$0	0.0%
Coffey	574,614	0	0.0%	\$108,976,000	\$0	0.0%
Franklin	506,006	0	0.0%	\$109,644,000	\$0	0.0%
Linn	339,584	0	0.0%	\$161,716,000	\$0	0.0%
Miami	542,010	0	0.0%	\$103,188,000	\$0	0.0%
Osage	571,577	0	0.0%	\$208,482,000	\$0	0.0%
Shawnee	596,296	0	0.0%	\$151,478,000	\$0	0.0%

Source: USDA

Potentially lessening future vulnerability to wildfires are Community Wildfire Protection Plans (CWPPs). A CWPP is the most effective way to take advantage of various Federal programs to include the Healthy Forests Restoration Act. By having a CWPP, communities are given priority for funding of Healthy Forests Restoration Act hazardous fuels reduction projects. The three main components of a CWPP are:

- Collaboration between all affected or potentially affected jurisdictions,
- Assessment of the wildfire hazards in an area that leads to recommendation for prioritized fuel reduction, and
- A section on recommendations towards reducing structural ignitability.

Currently the following Kansas Region J counties have approved CWPPs.

- Osage County
- Shawnee County (in progress)

4.20.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.150: Wildfire Consequence Analysis

Subject	Impacts of Wildfire
Health and Safety of the Public	Impact could be severe for people living and working in the immediate area. Surrounding communities may also be impacted by evacuees.
Health and Safety of Responders	Impact to responders could be severe depending on the size and scope of the fire, especially for firefighters. Impact will be low to moderate for support responders with the main threat as smoke inhalation.
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Delivery of services could be affected if there is any disruption to the roads and/or utilities due to damages sustained.
Environment	Impact will be severe for the immediate area with regards to trees, bushes, animals, and crops. Impact will lessen as distance increases.
Economic Conditions	Impacts to the economy could be moderate in the immediate area.





Table 4.150: Wildfire Consequence Analysis

Subject	Impacts of Wildfire
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. Evacuation orders and shelter availability could be called in to question.





4.21 – Windstorm

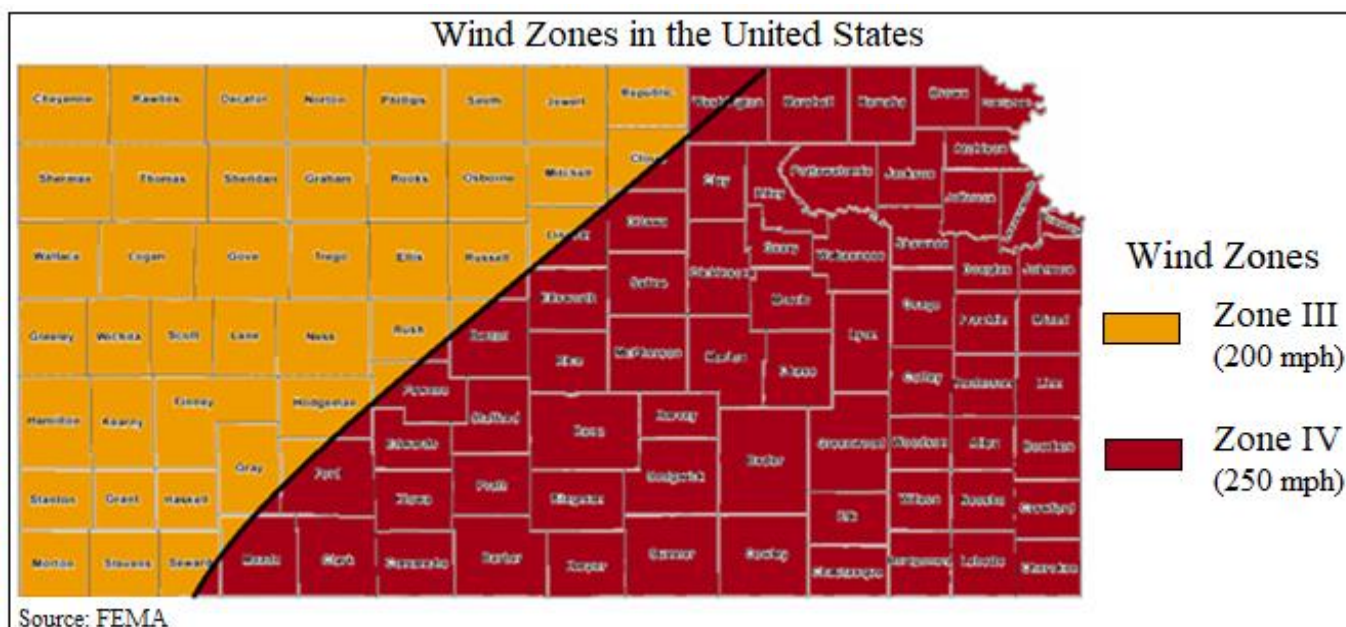
Straight-line winds are generally any thunderstorm wind that is not associated with rotation. It is these winds, which can exceed 100 mph that represent the most common type of severe weather and are responsible for most wind damage related to thunderstorms. Since thunderstorms do not have narrow tracks like tornados, the associated wind damage can be extensive and affect entire counties or regions. Objects like trees, barns, outbuildings, high-profile vehicles, and power lines/poles can be toppled or destroyed, and roofs, windows, and homes can be damaged as wind speeds increase.



4.21.1 – Location and Extent

High winds occur over broad geographic regions. The entire Kansas Region J planning area, including all participating jurisdictions, is at risk to high wind events.

The following figure shows the wind zones of the United States based on maximum wind speeds. Kansas Region J is located within wind zone IV, the highest inland category.



Severe thunderstorms strike Kansas Region J regularly, with accompanying high wind that can cause injury, death, and property damage. The widespread and frequent nature of thunderstorms makes high wind a relatively common occurrence. The NWS classifies thunderstorms, often the generator of high winds, using the following categories.

- **Marginal:** Isolated severe thunderstorms, limited in duration and/or coverage and/or intensity
- **Slight:** Scattered severe storms possible, Short-lived and/or not widespread, isolated intense storms possible

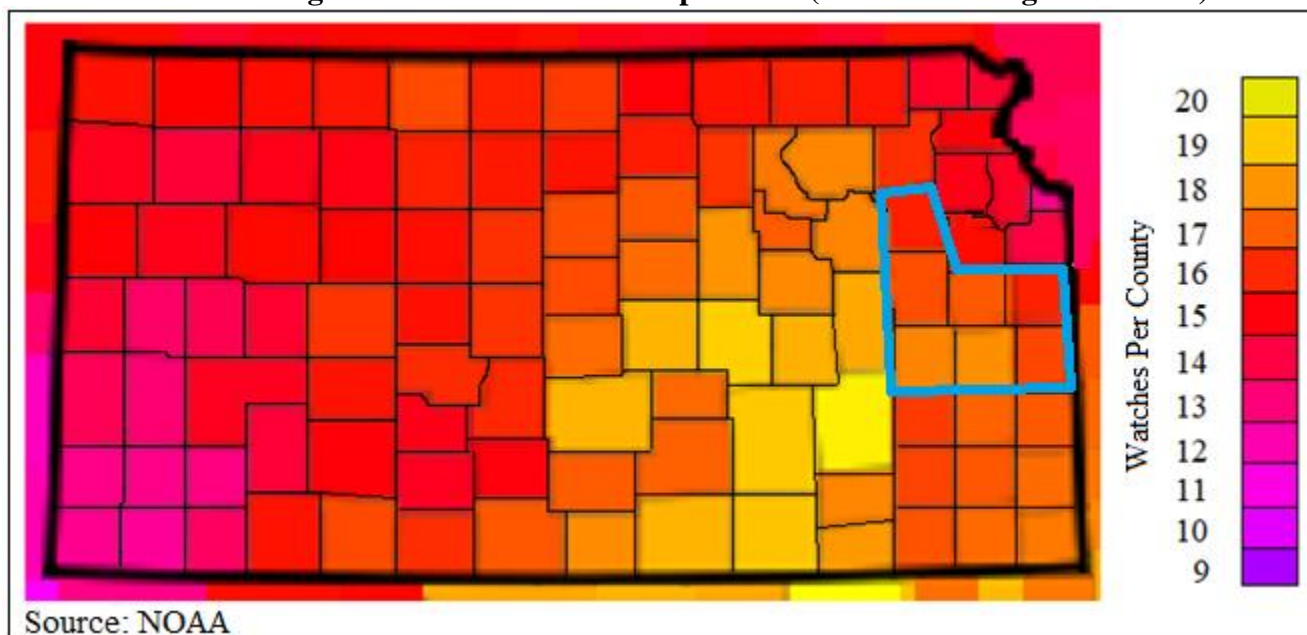




- **Enhanced:** Numerous severe storms possible, more persistent and/or widespread, a few intense
- **Moderate:** Widespread severe storms likely, long-lived, widespread and intense
- **High:** Widespread severe storms expected, long-lived, very widespread and particularly intense

The following map, generated by NOAA, indicates the average number severe thunderstorm watches per year for Kansas Region J.

Annual Average Thunderstorm Watches per Year (20-Year Average 1993-2012)



To measure wind speed and its correlating potential for damage, experts use the Beaufort scale as shown below.

Table 4.151: Beaufort Scale

Beaufort Number	Wind Speed (mph)	Effects on Land
0	Under 1	Calm, smoke rises vertically
1	1-3	Smoke drift indicates wind direction, vanes do not move
2	4-7	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Leaves, small twigs in constant motion. Light flags extended.
4	13-18	Dust, leaves and loose paper raised up, small branches move
5	19-24	Small trees begin to sway
6	25-31	Large branches of trees in motion, whistling heard in wires
7	32-38	While trees in motion, resistance felt in walking against the wind
8	39-46	Twigs and small branches broken off trees
9	47-54	Slight structural damage occurs, slate blown from roofs
10	55-63	Seldom experienced on land, trees broken, structural damage occurs
11	64-72	Very rarely experienced on land, usually with widespread damage
12	73 or higher	Violence and destruction





4.21.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been four Presidential Disaster Declarations for Kansas Region J for Straight-Line Winds (along with other associated hazard events). The following 20-year information (with 1999 and 2018 being full data years) on past declared disasters is presented to provide a historical perspective on high wind events that have impacted Kansas Region J. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2014.

Table 4.152: Kansas Region J FEMA Straight-Line Winds Disaster and Emergency Declarations, 1999 -2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4417	02/25/2019 (10/04/18 – 10/15/18)	Severe Storms, Straight-Line Winds , and Flooding	Anderson	-
4230	07/20/2015 (05/04/2015 – 06/21/2015)	Severe Storms, Tornadoes, Straight-Line Winds , and Flooding	Coffey, Franklin, Miami, Morris, Nemaha, Neosho, and Osage	\$13,848,325
4150	10/22/2013 (07/22/2013 – 08/15/2013)	Severe Storms, Straight-Line Winds , Tornadoes, and Flooding	Coffey and Linn	\$11,412,827
1849	06/25/2009 (4/25-5/16/2009)	Severe Storms, Flooding, Straight-Line Winds , and Tornadoes	Anderson, Coffey, and Linn	\$15,013,488

Source: FEMA

-: Data unavailable

The following provides details of the two Presidential Disaster Declarations for Kansas Region J since the last plan update in 2014.

Kansas – Severe Storms, Straight-Line Winds, and Flooding FEMA-4417-DR

Declared February 25, 2019

The Federal Emergency Management Agency announced that federal disaster assistance has been made available to the state of Kansas to supplement state and local recovery efforts in the areas affected by severe storms, straight-line winds, and flooding from Oct. 4-15, 2018.

Federal funding is available to the state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by severe storms, straight-line winds, and flooding in Anderson, Barton, Cowley, Doniphan, Greenwood, Harvey, Kingman, Neosho, Pratt, Reno, Rice, and Sumner counties.

Kansas – Severe Storms, Tornadoes, Straight-Line Winds, and Flooding FEMA-4230-DR

Declared July 20, 2015





On July 1, 2015, Governor Sam Brownback requested a major disaster declaration due to severe storms, tornados, straight-line winds, and flooding during the period of May 4 to June 21, 2015. The Governor requested a declaration for Public Assistance, including direct federal assistance for 42 counties and Hazard Mitigation statewide. During the period of May 4 to June 27, 2015, joint federal, state, and local government Preliminary Damage Assessments (PDAs) were conducted in the requested counties and are summarized below. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that Federal assistance is necessary.

On July 20, 2015, President Obama declared that a major disaster exists in the State of Kansas. This declaration made Public Assistance requested by the Governor available to state and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the severe storms, tornados, straight-line winds, and flooding in Atchison, Barton, Brown, Anderson, Chase, Chautauqua, Cherokee, Cheyenne, Clay, Cloud, Coffey, Coffey, Doniphan, Edwards, Elk, Ellsworth, Franklin, Gray, Greenwood, Franklin, Haskell, Hodgeman, Jackson, Jefferson, Jewell, Lyon, Shawnee, Marshall, Osage, Meade, Miami, Morris, Nemaha, Neosho, Osage, Pottawatomie, Republic, Rice, Stevens, Sumner, Wabaunsee, and Washington Counties. Direct Federal assistance was also authorized. Finally, this declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.

In addition to the above reported events, the following table presents NOAA NCEI identified high wind events (High Wind and Thunderstorm Wind) and the resulting damage totals in Kansas Region J for the period 2009 - 2018 (with 2009 and 2018 being full data set years).

Table 4.153: Kansas Region J NCEI High Wind Events, 2009 - 2018

County	Number of Days with Events	Property Damage	Deaths	Injuries	Highest Recorded Wind Speed
Anderson	29	\$5,000	0	0	78 Knots
Coffey	39	\$17,500	0	0	72 Knots
Franklin	33	\$3,526,000	0	0	80 Knots
Linn	25	\$6,200	0	0	71 Knots
Miami	24	\$62,600	0	0	70 Knots
Osage	42	\$13,000	0	0	70 Knots
Shawnee	55	\$140,000	0	2	72 Knots

Source: NOAA NCEI

The following provides both **local accounts** and NOAA NCEI descriptions of notable recorded events:

- June 15, 2014: Wellsville (Franklin County)**
 Trees were uprooted. There was damage to the high school roof. Numerous power lines down over a large swath of Wellsville. Property damage was recorded at \$3,000.





- **August 8, 2012: Shawnee County**

A significant downburst occurred near Forbes Field in South Topeka causing damage and power outages. The ASOS at Forbes Field measured a 79-mph wind gust while several residents and city officials also reported 70 to 80 mph winds. Several large trees were either uprooted or broken, and several street signs were damaged from this wind. The most significant damage occurred on US 75 where two tractor-trailers were overturned due to the high winds. Both big rigs struck other vehicles in the accident. One of the drivers of the two overturned trucks had to be extricated from the vehicle and sustained serious injuries. Property damage was recorded at \$100,000.

- **August 13, 2010: Paola (Miami County)**

Thunderstorm wind gusts were estimated up to 80 mph. Several homes had their roofs blown off. Property damage was recorded at \$50,000.

- **June 8, 2009: Franklin County**

Many trees of greater than 36 in diameter were snapped or uprooted from the storm. The heaviest damage was incurred at the Ottawa Airport where eyewitness estimates the wind speed ranged from 90 to 100 mph. Two 18-wheel trucks were reported as overturned, as a result of the strong winds as the storm crossed Interstate 35 in Ottawa. A hangar collapsed onto a collection of small aircraft at the Ottawa airport. Approximately half a dozen small aircraft were heavily damaged when the structure caved in. A motel was also destroyed when the roof was completely ripped off the top of the structure. Aside from these compromised structures, a vintage DC-3 was blown by the strong winds approximately 1/2 mile from the Ottawa Airport into a nearby bean field. An uncountable number of small outbuildings such as grain bins, barns, sheds, garages, and tin shelters were destroyed in the wind. Numerous telephone poles were also snapped as a result of the winds. The length of the damage path was approximately 25.5 miles long by approximately 11 miles wide. Property damage was recorded at \$500,000.

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of high on the region’s agricultural base. Crop loss data for the ten year period of 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicates 12 high wind related claims on 751 acres for \$48,485.

**Table 4.154: USDA Risk Management Agency Cause of Loss
Indemnities 2009-2018, High Winds**

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Anderson	10	1,313	\$173,708
Coffey	1	83	\$5,238
Franklin	4	671	\$62,301
Linn	2	124	\$7,355
Miami	3	550	\$145,423
Osage	6	1,138	\$115,792
Shawnee	3	152	\$10,747

Source: USDA





4.21.3 – Hazard Probability Analysis

The following table summarizes high wind probability data for **Anderson County**.

Table 4.155: Anderson County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	29
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$5,000
Average Property Damage per Year	\$500
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	10
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	1,313
Average Number of Acres Damaged per Year	131
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$173,708
Average Crop Damage per Year	\$17,371

Source: NCEI and USDA

Data from the NCEI indicates that Anderson County can expect on a yearly basis, relevant to high wind events:

- Three events
- No deaths or injuries
- \$500 in property damages

According to the USDA Risk Management Agency, Anderson County can expect on a yearly basis, relevant to high wind occurrences:

- One insurance claim
- 131 acres impacted
- \$17,371 in insurance claims

The following table summarizes high wind probability data for **Coffey County**.

Table 4.156: Coffey County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	39
Average Events per Year	4
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$17,500
Average Property Damage per Year	\$1,750
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	1
Average Number of Claims per Year	<1





Table 4.156: Coffey County High Wind Probability Summary

Data	Recorded Impact
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	83
Average Number of Acres Damaged per Year	8
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$5,238
Average Crop Damage per Year	\$524

Source: NCEI and USDA

Data from the NCEI indicates that Coffey County can expect on a yearly basis, relevant to high wind events:

- Four events
- No deaths or injuries
- \$1,750 in property damages

According to the USDA Risk Management Agency, Coffey County can expect on a yearly basis, relevant to high wind occurrences:

- <1 insurance claim
- Eight acres impacted
- \$524 in insurance claims

The following table summarizes High wind probability data for **Franklin County**.

Table 4.157: Franklin County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	33
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$3,526,000
Average Property Damage per Year	\$352,600
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	4
Average Number of Claims per Year	<1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	671
Average Number of Acres Damaged per Year	67
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$62,301
Average Crop Damage per Year	\$6,230

Source: NCEI and USDA

Data from the NCEI indicates that Franklin County can expect on a yearly basis, relevant to high wind events:

- Three events
- No deaths or injuries
- \$325,600 in property damages





According to the USDA Risk Management Agency, Franklin County can expect on a yearly basis, relevant to high wind occurrences:

- <1 insurance claim
- 67 acres impacted
- \$6,230 in insurance claims

The following table summarizes high wind probability data for **Linn County**.

Table 4.158: Linn County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	25
Average Events per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$6,200
Average Property Damage per Year	\$620
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	2
Average Number of Claims per Year	<1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	124
Average Number of Acres Damaged per Year	12
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$7,355
Average Crop Damage per Year	\$736

Source: NCEI and USDA

Data from the NCEI indicates that Linn County can expect on a yearly basis, relevant to high wind events:

- Three events
- No deaths or injuries
- \$620 in property damages

According to the USDA Risk Management Agency, Linn County can expect on a yearly basis, relevant to high wind occurrences:

- <1 insurance claim
- 12 acres impacted
- \$736 in insurance claims

The following table summarizes high wind probability data for **Miami County**.

Table 4.159: Miami County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	24
Average Events per Year	2
Number of Days with Event and Death or Injury (2009-2018)	0





Table 4.159: Miami County High Wind Probability Summary

Data	Recorded Impact
Average Number of Days with Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$62,600
Average Property Damage per Year	\$6,260
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	3
Average Number of Claims per Year	<1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	550
Average Number of Acres Damaged per Year	55
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$145,423
Average Crop Damage per Year	\$14,542

Source: NCEI and USDA

Data from the NCEI indicates that Miami County can expect on a yearly basis, relevant to high wind events:

- Two events
- No deaths or injuries
- \$6,260 in property damages

According to the USDA Risk Management Agency, Miami County can expect on a yearly basis, relevant to high wind occurrences:

- <1 insurance claim
- 55 acres impacted
- \$14,542 in insurance claims

The following table summarizes high wind probability data for **Osage County**.

Table 4.160: Osage County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	42
Average Events per Year	4
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Days with Death or Injury	0
Total Reported NCEI Property Damage (2009-2018)	\$13,000
Average Property Damage per Year	\$1,300
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	6
Average Number of Claims per Year	1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	1,138
Average Number of Acres Damaged per Year	114
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$115,792
Average Crop Damage per Year	\$11,579

Source: NCEI and USDA





Data from the NCEI indicates that Osage County can expect on a yearly basis, relevant to high wind events:

- Four events
- No deaths or injuries
- \$1,300 in property damages

According to the USDA Risk Management Agency, Osage County can expect on a yearly basis, relevant to high wind occurrences:

- One insurance claim
- 114 acres impacted
- \$11,579 in insurance claims

The following table summarizes High wind probability data for **Shawnee County**.

Table 4.161: Shawnee County High Wind Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	55
Average Events per Year	6
Number of Days with Event and Death or Injury (2009-2018)	2
Average Number of Days with Death or Injury	<1
Total Reported NCEI Property Damage (2009-2018)	\$140,000
Average Property Damage per Year	\$14,000
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	3
Average Number of Claims per Year	<1
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	152
Average Number of Acres Damaged per Year	15
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$10,747
Average Crop Damage per Year	\$1,075

Source: NCEI and USDA

Data from the NCEI indicates that Shawnee County can expect on a yearly basis, relevant to high wind events:

- Six events
- <1 death or injury
- \$14,000 in property damages

According to the USDA Risk Management Agency, Shawnee County can expect on a yearly basis, relevant to high wind occurrences:

- <1 insurance claim
- 15 acres impacted
- \$1,075 in insurance claims





In addition, Kansas Region J has had six Presidentially Declared Disaster relating to straight-line winds (and other concurrent events) in the last 20 years. This represents an average of less than one declared straight-line wind disaster per year.

4.21.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to high wind events. In general, counties with a higher or increasing population, and/or a high or increasing structural valuation are to be considered to have a potentially greater vulnerability.

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region J county incurring damage over the period 2009 to 2018 from high wind events. The greater the percentage of structures damaged the greater overall vulnerability going forward.

Table 4.162: Kansas Region J Structural Vulnerability Data for High Winds, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Anderson	\$879,410,000	\$5,000	0.0%
Coffey	\$1,053,574,000	\$17,500	0.0%
Franklin	\$2,853,762,000	\$3,526,000	0.1%
Linn	\$1,172,469,000	\$6,200	0.0%
Miami	\$3,706,416,000	\$62,600	0.0%
Osage	\$1,695,650,000	\$13,000	0.0%
Shawnee	\$20,465,546,000	\$140,000	0.0%

Source: NCEI and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability to high wind events. The following table indicates the total county population and the percentage change over the period 2000 to 2017.

Table 4.163: Kansas Region J Population Vulnerability Data for High Wind

County	2017 Population	Percent Population Change 2000 to 2017
Anderson	7,840	-3.3%
Coffey	8,328	-6.1%
Franklin	25,599	3.3%
Linn	9,602	0.3%
Miami	4,625	16.3%
Osage	15,894	-4.9%
Shawnee	178,392	5.0%

Source: US Census Bureau

The USDA 2017 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region J County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of high wind on the agricultural sector. In general, the higher the percentage loss, the higher the vulnerability the county has to high wind events.





Table 4.164: High Wind Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	242,149	131	0.05%	\$80,868,000	\$17,371	0.02%
Coffey	218,978	8	0.00%	\$46,874,000	\$524	0.00%
Franklin	222,549	67	0.03%	\$75,773,000	\$6,230	0.01%
Linn	156,904	12	0.01%	\$41,143,000	\$736	0.00%
Miami	181,564	55	0.03%	\$53,030,000	\$14,542	0.03%
Osage	252,612	114	0.05%	\$66,913,000	\$11,579	0.02%
Shawnee	126,486	15	0.01%	\$39,209,000	\$1,075	0.00%
Reno	242,149	131	0.05%	\$80,868,000	\$17,371	0.02%
Rice	218,978	8	0.00%	\$46,874,000	\$524	0.00%
Sedgwick	222,549	67	0.03%	\$75,773,000	\$6,230	0.01%
Sumner	156,904	12	0.01%	\$41,143,000	\$736	0.00%

Source: USDA

As with tornados, the following participating jurisdictions may have increased vulnerability to windstorm events due to having greater than 20% of housing stock as mobile homes:

- **Colony** (Anderson County)
- **Pomona** (Franklin County)
- **Princeton** (Franklin County)
- **Rantoul** (Franklin County)
- **Linn Valley** (Linn County)
- **Fontana** (Miami County)
- **Quenemo** (Osage County)
- **Willard** (Shawnee County)

4.21.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.165: High Wind Consequence Analysis

Subject	Impacts of High Winds
Health and Safety of the Public	Impact of the immediate area could be severe depending on whether individuals were able to seek shelter. Casualties are dependent on warning systems and warning times.
Health and Safety of Responders	Impact to responders is expected to be minimal unless responders live within the affected area.
Continuity of Operations	Temporary to permanent relocation may be necessary if government facilities experience damage.
Property, Facilities, and Infrastructure	Localized impact could be severe in the wind path. Roads, buildings, and communications could be adversely affected. Damage could be severe.





Table 4.165: High Wind Consequence Analysis

Subject	Impacts of High Winds
Environment	Impact will be severe for the immediate impacted area. Impact will lessen as distance increases from the immediate incident area.
Economic Conditions	Impacts to the economy will greatly depend on the wind severity. Potential economic impact conditions could be minor to severe.
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. Warning systems and warning time will also be questioned.





4.22 – Winter Storms

Winter weather in Kansas Region J usually come in the form of light to heavy snow or freezing rain. A major winter storm can last for several days and be accompanied by high winds, freezing rain or sleet, heavy snowfall, and cold temperatures. Heavy accumulations of ice, often the result of freezing rain, can bring down trees, utility poles, and communications towers and disrupt communications and power for days.



4.22.1 – Location and Extent

All of Kansas Region J is susceptible to severe winter storms. For winter weather, the NWS describes the different types of events as follows:

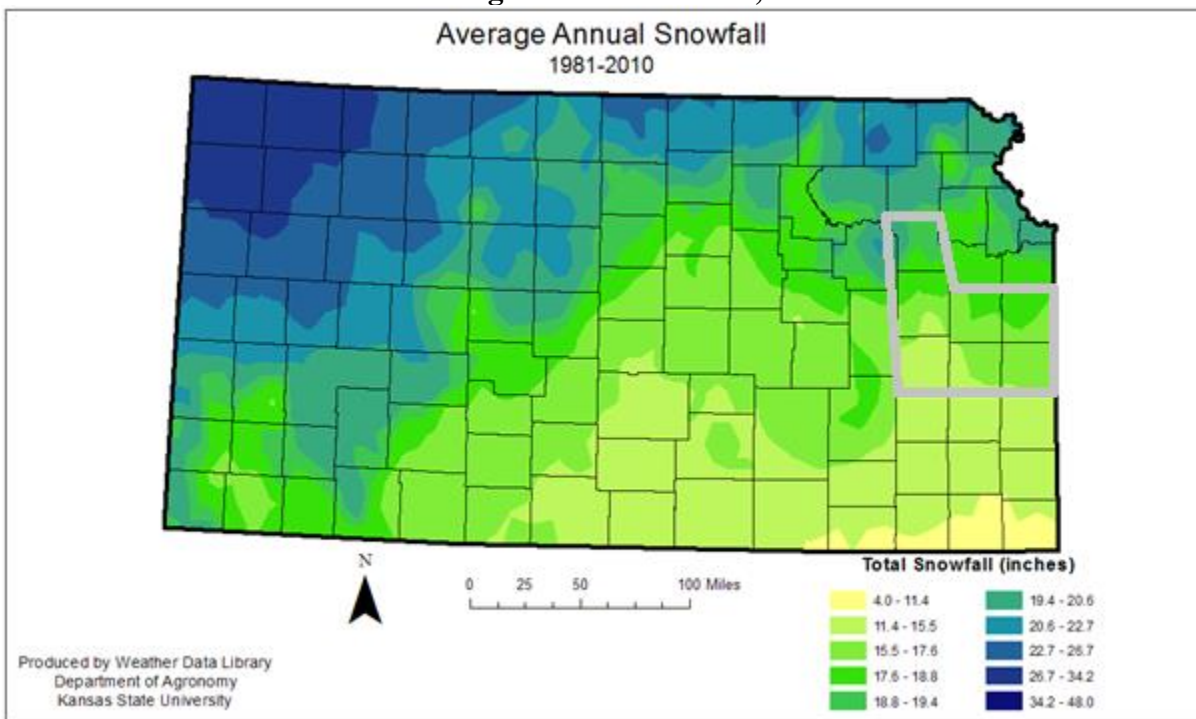
- **Blizzard:** Winds of 35 mph or more with snow and blowing snow reducing visibility to less than 1/4 mile for at least three hours.
- **Blowing Snow:** Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.
- **Snow Squalls:** Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.
- **Snow Showers:** Snow falling at varying intensities for brief periods of time. Some accumulation is possible.
- **Freezing Rain:** Rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces forming a coating or glaze of ice. Most freezing-rain events are short lived and occur near sunrise between the months of December and March.
- **Sleet:** Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects.

The following map, generated Kansa State University, using the latest available data, indicates the average annual snowfall for Kansas Region J for a given year.



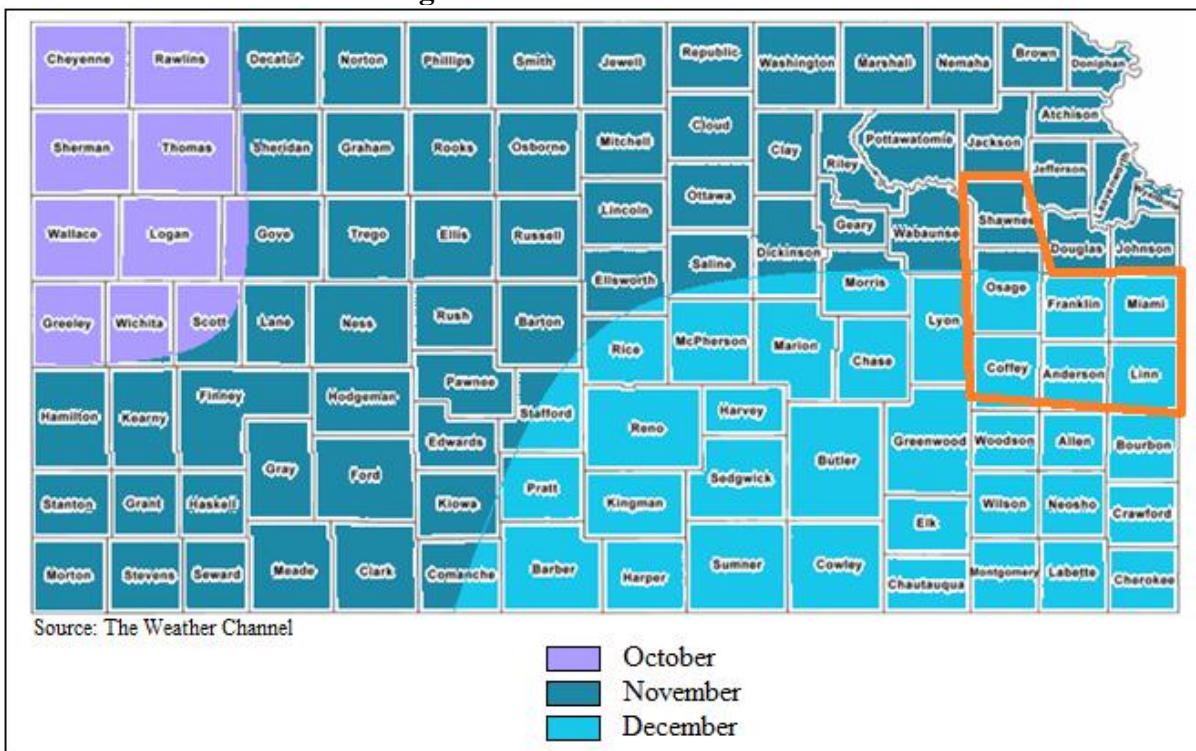


Average Annual Snowfall, 1981-2010



Additionally, as indicated by the map below, Kansas Region J can expect to receive the first measurable snow in November to December of each year.

Average Date of First Measurable Snow





4.22.2 – Previous Occurrences

In the 20-year period from 1999 to present, there have been six Presidential Disaster Declarations for Kansas Region J for severe winter storms. The following 20-year information (with 1999 and 2018 being full data years) on past declared disasters is presented to provide a historical perspective on winter storm events that have impacted Kansas Region J. Declaration numbers in bold indication declared disaster that have occurred since the previous mitigation plan update in 2014.

Table 4.166: Kansas Region J FEMA Severe Winter Storms Disaster and Emergency Declarations, 1999 - 2018

Declaration Number	Incident Period	Disaster Description	Regional Counties Involved	Dollars Obligated
4112	04/26/2013 (02/20-02/23/2013)	Snowstorm	Franklin and Osage	\$1,102,861
1885	03/09/2010 (12/9/2009-1/8/2010)	Severe Winter Storms and Snowstorm	Anderson, Franklin, Linn, Miami, Osage, and Shawnee	\$19,100,658
1848	06/24/2009 (3/26-29/2009)	Severe Winter Storm and Record and Near Record Snow	Anderson, Coffey, Linn, Shawnee, and Sumner,	\$20,174,657
1741	02/01/2008	Severe Winter Storms	Miami, Osage and Shawnee	\$359,557,345
1579	2/8/2005 (1/4-6/2005)	Severe Winter Storm, Heavy Rains, and Flooding	Anderson Coffey, Franklin, Osage and Shawnee	\$106,873,672
1402	2/6/2002 (1/29-2/15/2002)	Ice Storm	Anderson, Coffey, Franklin, Linn, Miami, Osage and Shawnee	\$60,185,754

Source: FEMA

The following presents NOAA NCEI data concerning winter storm events in Kansas Region J. It is worth noting that the NCEI data is regional, and sometimes state wide. As such reported damage is not specific to a regional county nor to any of the participating jurisdictions.

Table 4.167: Kansas Region J NCEI Winter Storm Events, 2009 - 2018

Event Type	Number of Days with Events	Property Damage	Deaths	Injuries
Blizzards	4	\$0	0	0
Ice Storm	3	\$0	0	0
Winter Storms	17	\$2,000	0	0

Source: NOAA NCEI

The following provides both **local accounts** and NOAA NCEI descriptions of notable recorded events:

- **January 14, 2017: Regional**
Tree limbs down from ice accumulation. Measurement estimates put the ice accumulation between one quarter and one-half inch.





- **February 20, 2018: Regional**

Through the day on February 20, 2018 numerous accidents occurred as a result of widespread accumulating ice. Patchy freezing drizzle started as early as midnight on the morning of February 20, but the heavier rain fell through the morning and early afternoon hours. Numerous powerlines and trees sustained some damage from the accumulation of 1/8 to 1/3 inch of ice across a widespread area.

Available crop loss data from the USDA Risk Management Agency detailing cause of loss was researched to determine the financial impacts of winter storms on the region’s agricultural base. Crop loss data for the ten-year period of 2009- 2018 (with 2009 and 2018 being full data years), for the region, indicates 181 winter storm related claims on 13,559 acres for \$913,931.

**Table 4.168: USDA Risk Management Agency Cause of Loss Indemnities
2009-2018, Winter Storms**

County	Number of Reported Claims	Acres Lost	Total Amount of Loss
Anderson	28	1,586	\$44,319
Coffey	27	1,594	\$179,176
Franklin	26	3,272	\$154,333
Linn	28	3,308	\$307,406
Miami	31	1,834	\$121,216
Shawnee	25	1,012	\$67,605
Osage	16	953	\$39,875

Source: USDA

4.2.2.3 – Hazard Probability Analysis

For probability purposes, each component of severe winter storms was examined and combined. The following table summarizes winter storm event data for Kansas Region J.

Table 4.169: Kansas Region J Winter Storm Probability Summary

Data	Recorded Impact
Number of Days with NCEI Reported Event (2009-2018)	24
Average Event Days per Year	3
Number of Days with Event and Death or Injury (2009-2018)	0
Average Number of Yearly Deaths and Injuries (2009-2018)	0
Total Reported NCEI Property Damage (2009-2018)	\$2,000
Average Property Damage per Year	\$200

Source: NCEI

Data from the NCEI indicates that Kansas Region J can expect on a yearly basis, relevant to winter storm events:

- Three events
- No deaths or injuries
- \$200 in property damages





The following table summarizes USDA Risk Management Agency winter storm event data for **Anderson County**.

Table 4.170: Anderson County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	28
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	1,586
Average Number of Acres Damaged per Year	159
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$44,319
Average Crop Damage per Year	\$4,432

Source: USDA

According to the USDA Risk Management Agency, Anderson County can expect on a yearly basis, relevant to winter storm occurrences:

- Three insurance claims
- 159 acres impacted
- \$4,432 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Coffey County**.

Table 4.171: Coffey County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	27
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	1,594
Average Number of Acres Damaged per Year	159
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$179,176
Average Crop Damage per Year	\$17,918

Source: USDA

According to the USDA Risk Management Agency, Coffey County can expect on a yearly basis, relevant to winter storm occurrences:

- Three insurance claims
- 159 acres impacted
- \$17,918 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Franklin County**.





Table 4.172: Franklin County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	27
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	3,272
Average Number of Acres Damaged per Year	327
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$154,333
Average Crop Damage per Year	\$15,433

Source: USDA

According to the USDA Risk Management Agency, Franklin County can expect on a yearly basis, relevant to winter storm occurrences:

- Three insurance claims
- 327 acres impacted
- \$15,433 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Linn County**.

Table 4.173: Linn County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	28
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	3,308
Average Number of Acres Damaged per Year	331
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$307,406
Average Crop Damage per Year	\$30,741

Source: USDA

According to the USDA Risk Management Agency, Linn County can expect on a yearly basis, relevant to winter storm occurrences:

- Three insurance claims
- 331 acres impacted
- \$30,741 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Miami County**.





Table 4.174: Miami County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	31
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	1,834
Average Number of Acres Damaged per Year	183
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$121,216
Average Crop Damage per Year	\$12,122

Source: USDA

According to the USDA Risk Management Agency, Miami County can expect on a yearly basis, relevant to winter storm occurrences:

- Three insurance claims
- 183 acres impacted
- \$12,122 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Osage County**.

Table 4.175: Osage County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	25
Average Number of Claims per Year	3
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	1,012
Average Number of Acres Damaged per Year	101
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$67,605
Average Crop Damage per Year	\$6,761

Source: USDA

According to the USDA Risk Management Agency, Osage County can expect on a yearly basis, relevant to winter storm occurrences:

- Three insurance claims
- 101 acres impacted
- \$6,761 in insurance claims

The following table summarizes USDA Risk Management Agency winter storm event data for **Shawnee County**.





Table 4.176: Shawnee County Winter Storm Probability Summary (Agricultural)

Data	Recorded Impact
USDA Farm Service Agency Number of Crop Damage Claims (2009-2018)	16
Average Number of Claims per Year	2
USDA Farm Service Agency Number of Acres Damaged (2009-2018)	953
Average Number of Acres Damaged per Year	95
USDA Farm Service Agency Crop Damage Claims Amount (2009-2018)	\$39,875
Average Crop Damage per Year	\$3,987

Source: USDA

According to the USDA Risk Management Agency, Shawnee County can expect on a yearly basis, relevant to winter storm occurrences:

- Two insurance claims
- 95 acres impacted
- \$3,987 in insurance claims

In addition, Kansas Region J has had six Presidentially Declared Disasters relating to winter storms (and other concurrent events) in the last 20 years. This represents an average of less than one declared winter storm related disaster per year.

4.22.4 – Vulnerability Analysis

For purposes of this assessment, all counties within the region were determined to be at equal risk to winter storm events. In general, counties with a higher or increasing population, and/or a high or increasing structural valuation are to be considered to have a potentially greater vulnerability.

The following table presents data from the NOAA NCEI and HAZUS concerning the value of structures and the percentage of structures for each Kansas Region J county (in total, due to the regional nature of both storms and NCEI reporting) incurring damage over the period 2009 to 2018 from winter storm events. In general, the greater the percentage of structures damaged the greater overall vulnerability going forward.

Table 4.177: Kansas Region J Structural Vulnerability Data for Winter Storms, 2009-2018

County	HAZUS Building Valuation	NCEI Structure Damage	Percentage of Building Valuation Damaged
Regional Counties	\$31,826,827,000	\$2,000	0.00%

Source: NCEI and HAZUS

Counties with a higher identified population are to be considered to have a potentially greater vulnerability to winter storm events. The following table indicates the total county population and the percentage change over the period 2000 to 2017.





Table 4.178: Kansas Region J Population Vulnerability Data for Winter Storms

County	2017 Population	Percent Population Change 2000 to 2017
Anderson	7,840	-3.3%
Coffey	8,328	-6.1%
Franklin	25,599	3.3%
Linn	9,602	0.3%
Miami	4,625	16.3%
Osage	15,894	-4.9%
Shawnee	178,392	5.0%

Source: US Census Bureau

The USDA 2017 Census of Agriculture (the latest available data) provides data on the crop exposure value, the total dollar value of all crops, for each Kansas Region J County. USDA Risk Management Agency crop loss data allows us to quantify the monetary impact of winter storms on the agricultural sector. The higher the percentage loss, the higher the vulnerability the county has to winter storm events.

Table 4.179: Winter Storm Acres Impacted and Crop Insurance Paid per County from 2009-2018

Jurisdiction	Farm Acreage	Annualized Acres Impacted	Percentage of Total Acres Impacted Yearly	Market Value of Products Sold	Annualized Crop Insurance Paid	Percentage of Market Value Impacted Yearly
Anderson	242,149	159	0.07%	\$80,868,000	\$4,432	0.01%
Coffey	218,978	159	0.07%	\$46,874,000	\$17,918	0.04%
Franklin	222,549	327	0.15%	\$75,773,000	\$15,433	0.02%
Linn	156,904	331	0.21%	\$41,143,000	\$30,741	0.07%
Miami	181,564	183	0.10%	\$53,030,000	\$12,122	0.02%
Osage	252,612	101	0.04%	\$66,913,000	\$6,761	0.01%
Shawnee	126,486	95	0.08%	\$39,209,000	\$3,987	0.01%

Source: USDA

4.22.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.180: Winter Storm Consequence Analysis

Subject	Impacts of Winter Storm
Health and Safety of the Public	Severity and location dependent. Impacts on persons in the areas of snow and ice are expected to be severe if caught without proper shelter.
Health and Safety of Responders	Impacts will be predicated on the severity of the event. Damaged infrastructure will likely result in hazards such as downed utility lines, main breakages and debris on roadways. .
Continuity of Operations	Temporary relocation may be necessary if government facilities experience damage. Services may be limited to essential tasks if utilities are impacted.
Property, Facilities, and Infrastructure	Impact to property, facilities, and infrastructure could be minimal to severe, depending on the location and structural capacity of the facility. Loss of





	structural integrity of buildings and infrastructure could occur. Utility lines, roads, residential and business properties will be affected.
Environment	Impact could be severe for the immediate impacted area, depending on the size of the event. Impact will lessen as distance increases from the immediate incident area
Economic Conditions	Impacts to the economy will be dependent severity of the event and the impact on structures and infrastructure. Impacts could be severe if roads/utilities are affected.
Public Confidence in the Jurisdiction's Governance	Response and recovery will be in question if not timely and effective. The timeliness warnings could be questioned.





4.23 – Civil Disorder

Civil disorder is a term that generally refers to a public disturbance by three or more people involving acts of violence that cause immediate danger, damage, or injury to others or their property. However, it is important to remember that gatherings in protest are recognized rights of any person or group, and this right is protected under the United States Constitution.

4.23.1 – Location and Extent

Historically civil disorder has been most commonly associated with urban areas and college campuses. And while the entire planning area may be affected by civil disorder, with its generally small population and low population density, the magnitude of such an event would likely be limited to the major cities within the region.

In general, civil unrest usually accompanies, or is started by, a gathering of people for an event. And while most events occur with no violence, violence can occur with little warning or cause. Unfortunately, large crowds can be subject to control by skillful troublemakers who are often able to incite behavior from members of the crowd that they usually would not consider. . In general, when a crowd begins to exhibit signs of disorder, it can be categorized in three categories:

- **Public disorder:** Public disorder is a basic breach of civic order. Individuals or small groups assembling have a tendency to disrupt the normal flow of things around them.
- **Public disturbance:** Public disturbance is designed to cause turmoil on top of the disruption. Individuals and groups assembling into a crowd begin chanting, yelling, singing, and voicing individual or collective opinions.
- **Riot:** A riot is a disturbance that turns violent. Assembled crowds become a mob that violently expresses itself by destroying property, assaulting others, and creating an extremely volatile environment.

While civil disorder is not an everyday occurrence in the planning area, when they do occur they are extremely disruptive and difficult to control. Should a civil disorder event occur in the planning area the result could be measured in loss of life, economic upheaval, and destruction of property.

4.23.2 – Previous Occurrences

There have been no documented cases of civil unrest of disorder in Kansas Region J during the past five years.

4.23.3 – Hazard Probability Analysis

By nature, acts of civil disorder are difficult to foresee. However, the probability of a major civil disorder event in Kansas Region J is considered very low due the lack of any recent documented historical events. Again, it is worth noting that no previous occurrences in no way guarantees no future occurrences.





4.23.4 Vulnerability Analysis

Due to the unknown location and nature of civil disorder, all participating jurisdictions with Kansas Region J are vulnerable. Additionally, and again related to the capricious nature of civil disorder, all buildings and citizens are vulnerable.

Economic impacts and human injury or death are the primary concern with civil disorder. Increases in population or the hosting of major political, economic or social events could increase the likelihood and severity of a civil disturbance.

In general, it is difficult to quantify potential losses of Civil Disorder due to the many variables and human elements and lack of historical precedence. Therefore, for the purposes of this plan, a **hypothetical scenario** is included for illustrative purposes only.

Event: City organizers set up a two-block long fan zone near the local community sports field for an important sporting event. The population density in the fan zone is 6,000 people, with at least five persons per 25 square feet.

Riot: The riot began to take shape as the game came to a close, with some spectators throwing bottles and other objects. Small fires were started and soon some rioters overturned a vehicle and set it alight. Fist fights broke out and in a nearby parking lot and two police cars were also set on fire. Riot police eventually managed to disperse the rioters and all fires were extinguished.

Results: The following table presents potential event results:

Table 4.181: Hypothetical Riot Outcomes

Category	Result
Total Traumatic Injuries	250 persons
Total Urgent Care Injuries	1,000 persons
Injuries not Requiring Hospitalization	2,500 persons
Damage to Vehicles	Glass replacement cost for approximately 200 vehicles: \$ 8,000 Repair / repainting cost for approximately 200 vehicles: \$800,000
Damage to Buildings	Window replacement cost for approximately 50 buildings: \$80,000

Source: Kansas State Hazard Mitigation Plan

4.23.5 – Impact and Consequence Analysis

As per EMAP standards, the following table provides the consequence analysis for drought conditions.

Table 4.182: Civil Disorder Consequence Analysis

Subject	Civil Disorder Potential Impacts
Health and Safety of the Public	Impact could be severe for persons in the incident area.
Health and Safety of Responders	Impact to responders could be severe if not trained and properly equipped. Responders that are properly trained and equipped will have a low to moderate impact.





Table 4.182: Civil Disorder Consequence Analysis

Subject	Civil Disorder Potential Impacts
Continuity of Operations	Depending on damage to facilities/personnel in the incident area, re-location may be necessary and lines of succession execution (minimal to severe).
Property, Facilities, and Infrastructure	Impact within the incident area could be severe, depending on the extent of the event. (minimal to severe)
Environment	Localized impact within the incident area could be severe depending on the type of human caused incident.
Economic Conditions	Economic conditions could be adversely affected and dependent upon time and length of clean up and investigation (minimal to severe).
Public Confidence in the Jurisdiction's Governance	Impact will be dependent on whether or not the incident could have been avoided by government or non-government entities, clean-up and investigation times, and outcomes. (minimal to severe).





4.24 – Hazardous Materials

Hazardous materials (HazMat) are any substances that pose a risk to health, life, or property when released or improperly handled. Generally, the term refers to materials with hazardous chemical or physical properties, though sometimes biological agents can fall under this category. The basic types of hazardous materials may be categorized according to more than six different systems; but the categories of U.S. Emergency Planning and Community Right-to-Know Act (42 U.S.C. 11002) provide a general guide to hazardous materials:



- **Extremely Hazardous Substances:** Materials that have acutely toxic chemical or physical properties and may cause irreversible damage or death to people or harm the environment if released or used outside their intended use.
- **Hazardous Substances:** Materials posing a threat to human health and/or the environment, or any substance designated by the EPA to be reported if a designated quantity of the substance is spilled into waterways, aquifers, or water supplies or is otherwise released into the environment.

4.24.1 – Location and Extent

In Kansas Region J, HazMat incidents are generally classified as:

- **Fixed Facility Incidents:** Commercial Facilities and Superfund Sites
- **Transportation Incidents:** Highway, Railway, Pipeline, Air, and Water

Fixed Facilities

When facilities have hazardous materials in quantities at or above the threshold planning quantity, they must submit Tier II information to appropriate federal and state agencies to facilitate emergency planning in accordance with the Community Right to Know Act. The forms are known as Tier II reports and the facilities included are referred to as Tier II facilities. According to data provided by KDEM, there are 3,424 Tier II Facilities housing hazardous chemicals in Kansas Region J. The following table details the number of Tier II facilities by county.

Table 4.183: Kansas Region J Tier II Facilities by County

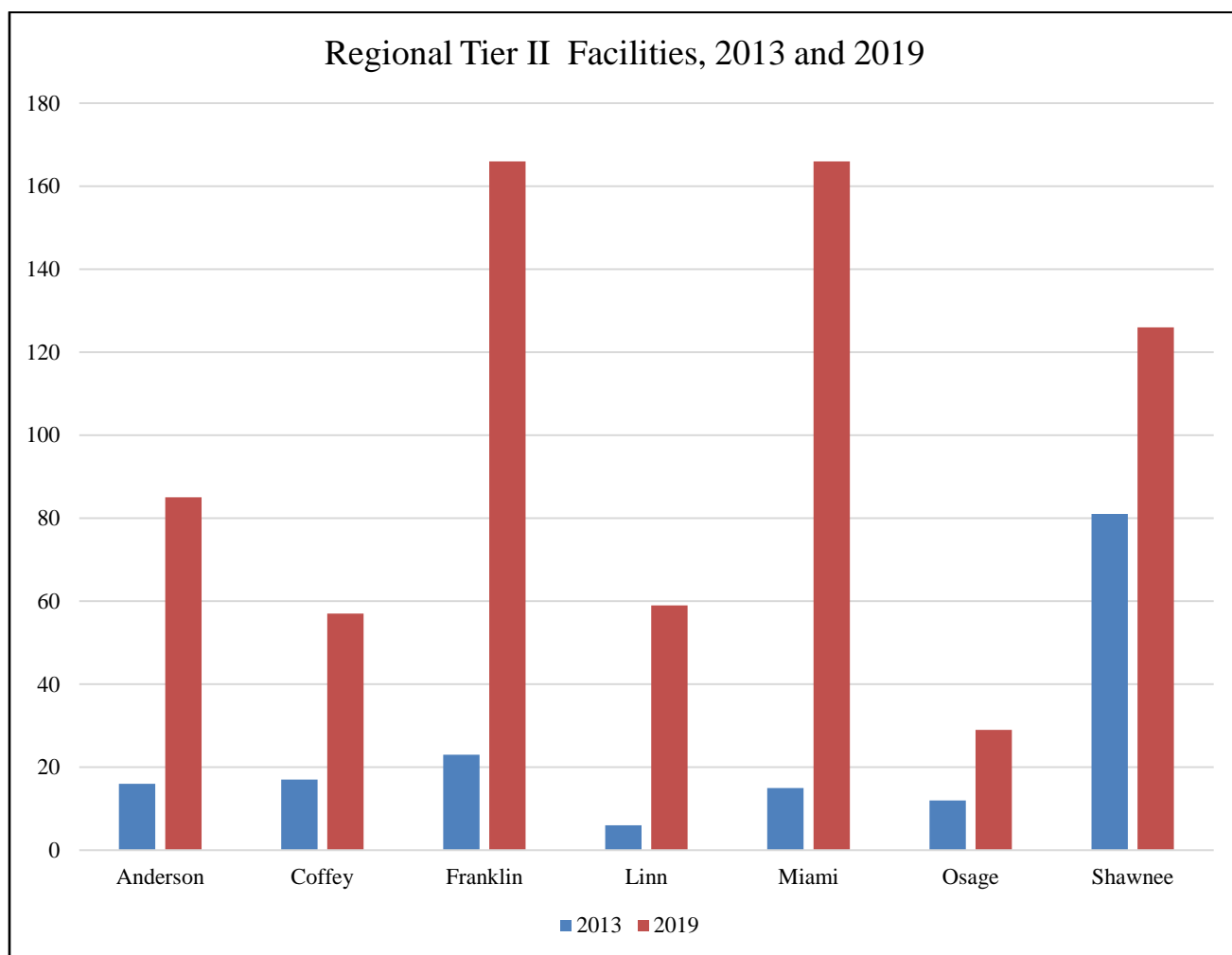
County	Tier II Facilities
Anderson	85
Coffey	57
Franklin	166
Linn	59
Miami	166
Osage	29
Shawnee	126

Source: KDEM





As illustrated in the following graph, the number of Tier II facilities has increased for the region, primarily to due to an extensive outreach effort by KDHE to facilities that house hazardous chemicals



The National Priorities List (NPL) is a published list of hazardous waste sites in the country that are eligible for extensive, long-term cleanup under the Superfund program. A Superfund site is an uncontrolled or abandoned location where hazardous waste is located which may affect local ecosystems and/or people. The EPA has indicated that there are no Superfund sites located with Kansas Region K.

Transportation

The following table, from Kansas Department of Transportation (KDOT), presents total roadway mileage by county.

Table 4.184: Kansas Region J Total Roadway Mileage by County

County	Roadways (Miles)
Anderson	1,141
Coffey	1,266
Franklin	1,237





Table 4.184: Kansas Region J Total Roadway Mileage by County

County	Roadways (Miles)
Linn	1,209
Miami	1,321
Osage	1,442
Shawnee	1,975

Source: KDOT

Kansas Region J is served by numerous railroad companies. Railroads are generally defined by three classes, predicated on revenue and size, with Class I (Freight) being the largest. Class I railroads are of the greatest concern due to the type of freight carried, with categories including There are three Class I railroads in Kansas Region J providing service with long-haul deliveries to national market areas and intermodal rail/truck service providers:

- Burlington Northern and Santa Fe Railway
- Kansas City Southern Railway
- Union Pacific Railroad

The following table, with information from KDOT, provides the total railroad track mileage of for each county within Kansas Region J.

Table 4.185: Kansas Region J Total Class I Railroad Mileage by County

County	Interstates (Miles)
Anderson	31
Coffey	20
Franklin	37
Linn	46
Miami	74
Osage	53
Shawnee	76

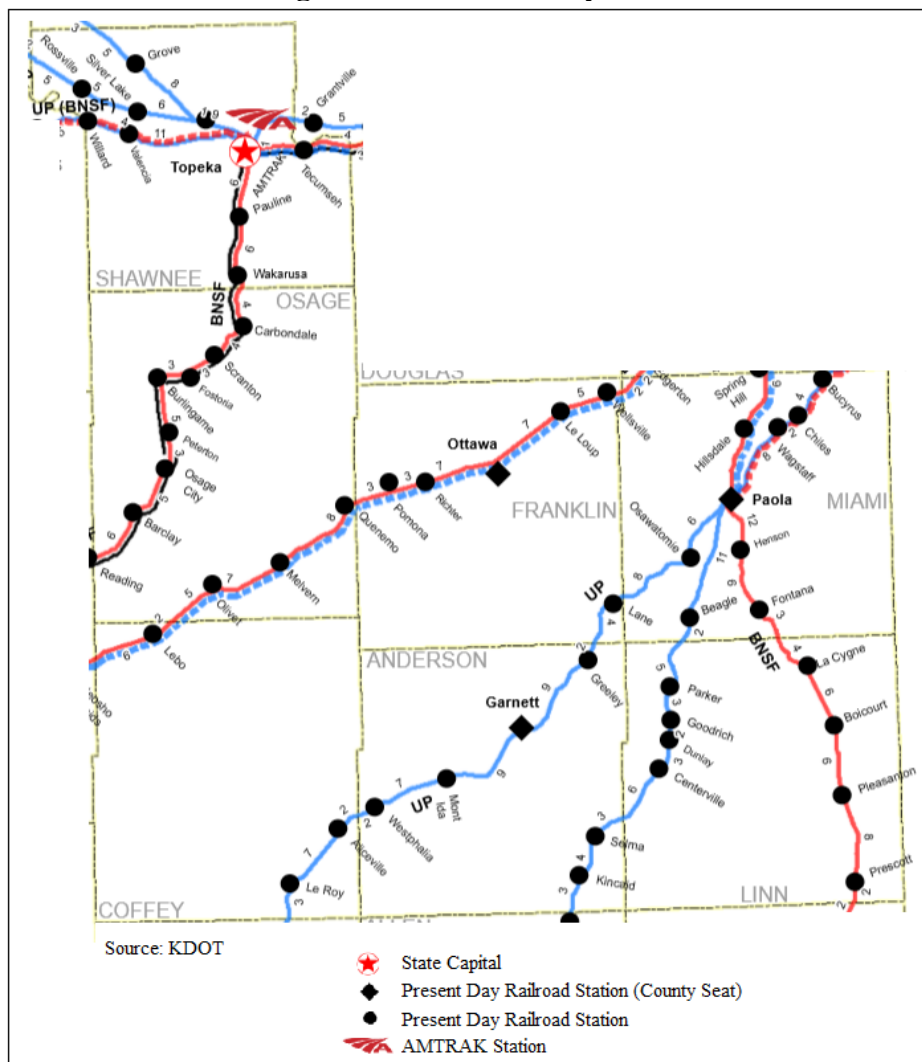
Source: KDOT

The following map, from KDOT, shows Class I track locations in Kansas Region J.





Regional Class I Railway Lines



Pipelines

The following data, provided by KDEM and the United States Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA), indicates the total number of gas and liquid pipeline mileage per county

Table 4.185: PHMSA Pipeline Mileage by County

County	Gas (miles)	Liquid (miles)
Anderson	140	68
Coffey	225	83
Franklin	374	32
Linn	0	164
Miami	241	217
Osage	84	39
Shawnee	46	98

Source: KDEM and PHMSA





4.24.2 – Previous Occurrences

The following table, with data from KDEM, lists the number of hazardous materials incidents, injuries, fatalities and people evacuated from the public and facilities for each Kansas Region J county over the three-year period 2013-2015 (due to system changes, the most current data available).

Table 4.186: Kansas Region J HazMat KDEM Reported Incidents, 2013-2015

Jurisdiction	Incidents	Injuries	Fatalities	People Evacuated
Anderson	1	0	0	0
Coffey	0	0	0	0
Franklin	1	0	0	0
Linn	1	0	0	0
Miami	1	0	0	0
Osage	2	0	0	2
Shawnee	5	1	0	0

Source: KDEM

Hazardous Materials Regulations (49 CFR Parts 171-180) require certain types of HazMat incidents be reported, with data tracked by PHMSA’s Office of Hazardous Materials Safety (OHMS) by transportation category type (Air, Highway, Rail and Water). The OHMS Incident Report Database from 2010 to 2018 indicated 49 reported incidents within Kansas Region J for the period 2000 through 2018. The following charts detail the number of events per year per transportation category.

Table 4.87: Kansas Region J OHMS HazMat Incidents, 2000-2018

Jurisdiction	Highway	Air	Rail	Damages	Injuries	Deaths
Anderson County						
-	0	0	0	\$0	0	0
Coffey County						
-	0	0	0	\$0	0	0
Franklin County						
Ottawa	8	0	0	\$0	0	0
Linn County						
La Cygne	1	0	0	\$13,131	0	0
Miami County						
-	0	0	0	\$0	0	0
Osage County						
-	0	0	0	\$0	0	0
Shawnee County						
Topeka	38	1	2	\$150,436	0	0

Source: PHMSA OHMS

Data from PHMSA provides significant incident reports for the pipeline systems in Kansas Region J. Data from the period 2013 to 2017 indicate that there were ten pipeline incidents that no fatalities, no injuries and \$2,209,467 in damages. The following table details reported pipeline incident details for each county with a reported event.





Table 4.188: Kansas Region J PHMSA Reported Pipeline Incidents by County, 2013 to 2017

County	Number of Incidents	Fatalities	Injuries	Total Damage	Gross Barrels Spilled
Anderson	2	0	0	\$501,699	0
Coffey	0	0	0	\$0	0
Franklin	0	0	0	\$0	0
Linn	1	0	0	\$20,200	2
Miami	1	0	0	\$17,600	1
Osage	0	0	0	\$0	0
Shawnee	5	0	0	\$277,324	0

Source: PHMSA

4.24.3 – Hazard Probability Analysis

HazMat incidents are not predictable. However, probabilities can be estimated using past occurrence data as a guide.

The following tables summarize occurrence data and probability for HazMat events for **Anderson County** using data from KDEM.

Table 4.189: Anderson County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2013-2015)	1
Average Events per Year	<1
Number of Reported Injuries (2013-2015)	0
Average Injuries per Year	0
Number of Reported Deaths (2013-2015)	0
Average Deaths per Year	0
Number of Reported Evacuations (2013-2015)	0
Average Evacuations per Year	0

Source: KDEM and PHMSA

Data indicates that Anderson County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- <1 event
- No deaths
- No injury
- No evacuations

The following tables summarize occurrence data and probability for HazMat events for **Coffey County** using data from KDEM.





Table 4.190: Coffey County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2013-2015)	0
Average Events per Year	0
Number of Reported Injuries (2013-2015)	0
Average Injuries per Year	0
Number of Reported Deaths (2013-2015)	0
Average Deaths per Year	0
Number of Reported Evacuations (2013-2015)	0
Average Evacuations per Year	0

Source: KDEM and PHMSA

Data indicates that Coffey County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- No events
- No deaths
- No injury
- No evacuations

The following tables summarize occurrence data and probability for HazMat events for **Franklin County** using data from KDEM.

Table 4.191: Franklin County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2013-2015)	1
Average Events per Year	<1
Number of Reported Injuries (2013-2015)	0
Average Injuries per Year	0
Number of Reported Deaths (2013-2015)	0
Average Deaths per Year	0
Number of Reported Evacuations (2013-2015)	0
Average Evacuations per Year	0

Source: KDEM and PHMSA

Data indicates that Franklin County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- <1 event
- No deaths
- No injury
- No evacuations

The following tables summarize occurrence data and probability for HazMat events for **Linn County** using data from KDEM.





Table 4.192: Linn County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2013-2015)	1
Average Events per Year	<1
Number of Reported Injuries (2013-2015)	0
Average Injuries per Year	0
Number of Reported Deaths (2013-2015)	0
Average Deaths per Year	0
Number of Reported Evacuations (2013-2015)	0
Average Evacuations per Year	0

Source: KDEM and PHMSA

Data indicates that Linn County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- <1 event
- No deaths
- No injury
- No evacuations

The following tables summarize occurrence data and probability for HazMat events for **Miami County** using data from KDEM.

Table 4.193: Miami County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2013-2015)	1
Average Events per Year	<1
Number of Reported Injuries (2013-2015)	0
Average Injuries per Year	0
Number of Reported Deaths (2013-2015)	0
Average Deaths per Year	0
Number of Reported Evacuations (2013-2015)	0
Average Evacuations per Year	0

Source: KDEM and PHMSA

Data indicates that Miami County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- <1 event
- No deaths
- No injury
- No evacuations

The following tables summarize occurrence data and probability for HazMat events for **Osage County** using data from KDEM.





Table 4.194: Osage County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2013-2015)	2
Average Events per Year	1
Number of Reported Injuries (2013-2015)	0
Average Injuries per Year	0
Number of Reported Deaths (2013-2015)	0
Average Deaths per Year	0
Number of Reported Evacuations (2013-2015)	2
Average Evacuations per Year	<1

Source: KDEM and PHMSA

Data indicates that Osage County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- One event
- No deaths
- No injury
- <1 evacuation

The following tables summarize occurrence data and probability for HazMat events for **Shawnee County** using data from KDEM.

Table 4.195: Shawnee County HazMat Incident Probability Summary

Data	Recorded Impact
Number of Reported Events (2013-2015)	5
Average Events per Year	2
Number of Reported Injuries (2013-2015)	1
Average Injuries per Year	<1
Number of Reported Deaths (2013-2015)	0
Average Deaths per Year	0
Number of Reported Evacuations (2013-2015)	0
Average Evacuations per Year	0

Source: KDEM and PHMSA

Data indicates that Shawnee County can expect on a yearly basis, relevant to fixed facility related HazMat events:

- Two events
- No deaths
- <1 injury
- No evacuations

4.24.4 – Vulnerability Analysis

Special populations are particularly vulnerable to the impacts of a hazardous materials incident because of the potential difficulties involved in the evacuation. The following table details the number of special





population facilities in each Kansas Region J county located within ½ mile of a chemical facility. The locations of colleges, educational and correctional institution facilities is from the Kansas Data Access & Support Center, health facilities data is from HAZUS, aging facilities is from KDEM and childcare facilities is from KDHE.

Table 4.196: Kansas Region J Special Population Facilities Within

County	Health Facilities	Colleges	Educational Facilities	Aging Facilities	Child Care	Correctional Institutions
Anderson	1	1	6	3	6	0
Coffey	1	0	7	0	18	1
Franklin	0	0	2	1	16	1
Linn	0	0	3	1	5	0
Miami	2	0	3	2	29	1
Osage	0	0	4	2	20	0
Shawnee	4	6	21	19	130	2

Source: KDEM

Counties with a higher identified population are to be considered to have a potentially greater vulnerability to HazMat events. The following table indicates the total county population and the percentage change over the period 2000 to 2017.

Table 4.197: Kansas Region J Population Vulnerability Data for HazMat

County	2017 Population	Percent Population Change 2000 to 2017
Anderson	7,840	-3.3%
Coffey	8,328	-6.1%
Franklin	25,599	3.3%
Linn	9,602	0.3%
Miami	4,625	16.3%
Osage	15,894	-4.9%
Shawnee	178,392	5.0%

Source: US Census Bureau

4.24.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.198: HazMat Incident Consequence Analysis

Subject	Impacts of Hazardous Materials Incident
Health and Safety of Persons in the Area of the Incident	Impact in the immediate area could be severe and long lasting.
Responders	Impact to responders is expected to be moderate to severe, potentially even with required safety equipment.
Continuity of Operations	Long term relocation may be necessary if government facilities experience contamination or damage.
Property, Facilities, and Infrastructure	Localized impact could be severe in the incident area. Facilities may need to be abandoned and razed. Large areas may become inaccessible.





Table 4.198: HazMat Incident Consequence Analysis

Subject	Impacts of Hazardous Materials Incident
Environment	Impact could be severe for the immediate area. Impact will lessen with distance. The proximity of open bodies of water could compound the impact.
Economic Conditions	Local economy and finances may be adversely affected, depending on the nature, extent and duration of the event.
Public Confidence in Governance	Response and recovery will be in question if not timely and effective. Warning systems and the timeliness of those warnings could be questioned.





4.25 – Major Disease

For this plan, major disease is classified as infectious diseases caused by microscopic agents, including viruses, bacteria, parasites, and fungi or by their toxins, that may impact humans. They may be spread by direct contact with an infected person or animal, ingesting contaminated food or water, vectors such as mosquitoes or ticks, contact with contaminated surroundings such as animal droppings, infected droplets, or by aerosolization.

4.25.1 – Location and Extent

Human transmissible disease and infectious diseases are illnesses caused by microscopic agents, including viruses, bacteria, parasites, and fungi or by their toxins. They may be spread by direct contact with an infected person or animal, ingesting contaminated food or water, vectors such as mosquitoes or ticks, contact with contaminated surroundings such as animal droppings, infected droplets, or by aerosolization.

The entire planning area is susceptible to a transmissible disease outbreak. However, more densely populated areas may be more susceptible.

4.25.2 – Previous Occurrences

The KDHE was contacted concerning the epidemiological tracking of contagious and/or human transmissible diseases. Data was solicited concerning the following diseases of concern:

- Haemophilus Influenzae Invasive Disease
- Measles (Rubeola)
- Meningococcal Infections
- Mumps
- Pertussis
- Streptococcus pneumoniae, Invasive
- West Nile Virus
- Zika Virus

A review of available data indicates there have been no unusual or concerning spikes in these diseases. Additionally, no new novel pathogens of concern have been tracked or reported.

4.25.3 – Hazard Probability Analysis

Each year the Centers for Disease Control (CDC) produces a report detailing the legally reportable diseases in the United States. While over time this report can serve as a predictor of the likelihood of future disease, it is impossible to predict outbreaks. Data from the CDC report does not indicate any areas of concern for Kansas Region J. Based on the relatively limited/controlled outbreak history in Kansas Region J, the possibility of a large-scale major disease outbreak to be limited.





4.25.4 – Vulnerability Analysis

For purposes of this assessment, no facilities or agricultural commodities are considered vulnerable to the major disease hazard.

Due to the person to person transmission of many diseases of concern counties with a higher identified population are to be considered to have a potentially greater vulnerability. The following table indicates the total county population and registered growth over the period 2000 to 2017.

Counties with a higher identified population are to be considered to have a potentially greater vulnerability to earthquake events. The following table indicates the total county population and the percentage change over the period 2000 to 2017.

Table 4.199: Kansas Region J Population Vulnerability Data for Earthquakes

County	2017 Population	Percent Population Change 2000 to 2017
Anderson	7,840	-3.3%
Coffey	8,328	-6.1%
Franklin	25,599	3.3%
Linn	9,602	0.3%
Miami	4,625	16.3%
Osage	15,894	-4.9%
Shawnee	178,392	5.0%

Source: US Census Bureau

Additionally, there is an increased likelihood of mortality for very young and very old populations due to transmissible disease. The following table indicates the percentage of the total county population that may be considered especially vulnerable to a major disease.

Table 4.200: Kansas Region J Vulnerable Population Vulnerability Data for Major Disease

County	Percentage of Population 5 and Under (2017)	Percentage of Population 65+ (2017)
Anderson	6.1%	21.6%
Coffey	5.3%	20.9%
Franklin	6.3%	16.4%
Linn	5.5%	22.1%
Miami	5.9%	16.5%
Osage	5.6%	19.4%
Shawnee	6.4%	17.6%

Source: US Census Bureau





4.25.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.201: Major Disease Consequence Analysis

Subject	Impacts of Major Disease Outbreak
Health and Safety of Persons in the Area of the Incident	Impact over a widespread area could be severe depending on type of outbreak and whether it is a communicable disease. Casualties are dependent on warning systems, warning times and the availability of vaccines, antidotes, and medical svc.
Responders	Impact to responders could be severe, especially if they reside in the area and or their type of exposure during response. With proper precautions and safety nets in place the impact is lessened.
Continuity of Operations	Continuity of Operations will be greatly dependent on availability of healthy individuals. COOP is not expected to be exercised.
Property, Facilities, and Infrastructure	Access to facilities and infrastructure could be affected until decontamination is completed
Environment	Impact could be severe for the immediate impacted area depending on the source of the outbreak. Impact could have far-reaching implications if disease is transferable between humans and animals or to wildlife.
Economic Conditions	Impacts to the economy could be severe if the disease is communicable. Loss of tourism, revenue, and business as usual will greatly affect the local economy and the state as a whole.
Public Confidence in Governance	Response and recovery will be in question if not timely and effective. Availability of medical supplies, vaccines, and treatments will come into question.





4.26 – Radiological Incident

For purposes of this plan, a radiological incident is considered an accident involving a release of radioactive materials from a nuclear reactor. Radiological accidents could cause injury or death, contaminate property and valuable environmental resources, as well as disrupt the functioning of communities and their economies. Since 1980, each utility that owns a commercial nuclear power plant in the United States has been required to have both an onsite and offsite emergency response plan as a condition of obtaining and maintaining a license to operate that plant. Onsite emergency response plans are approved by the U.S. Nuclear Regulatory Commission (NRC).



4.26.1 – Location and Extent

The only active commercial nuclear reactor within the State of Kansas is the Wolf Creek Nuclear Power Plant (Wolf Creek) in Coffey County. The following information, from the NRC, pertains to Wolf Creek:

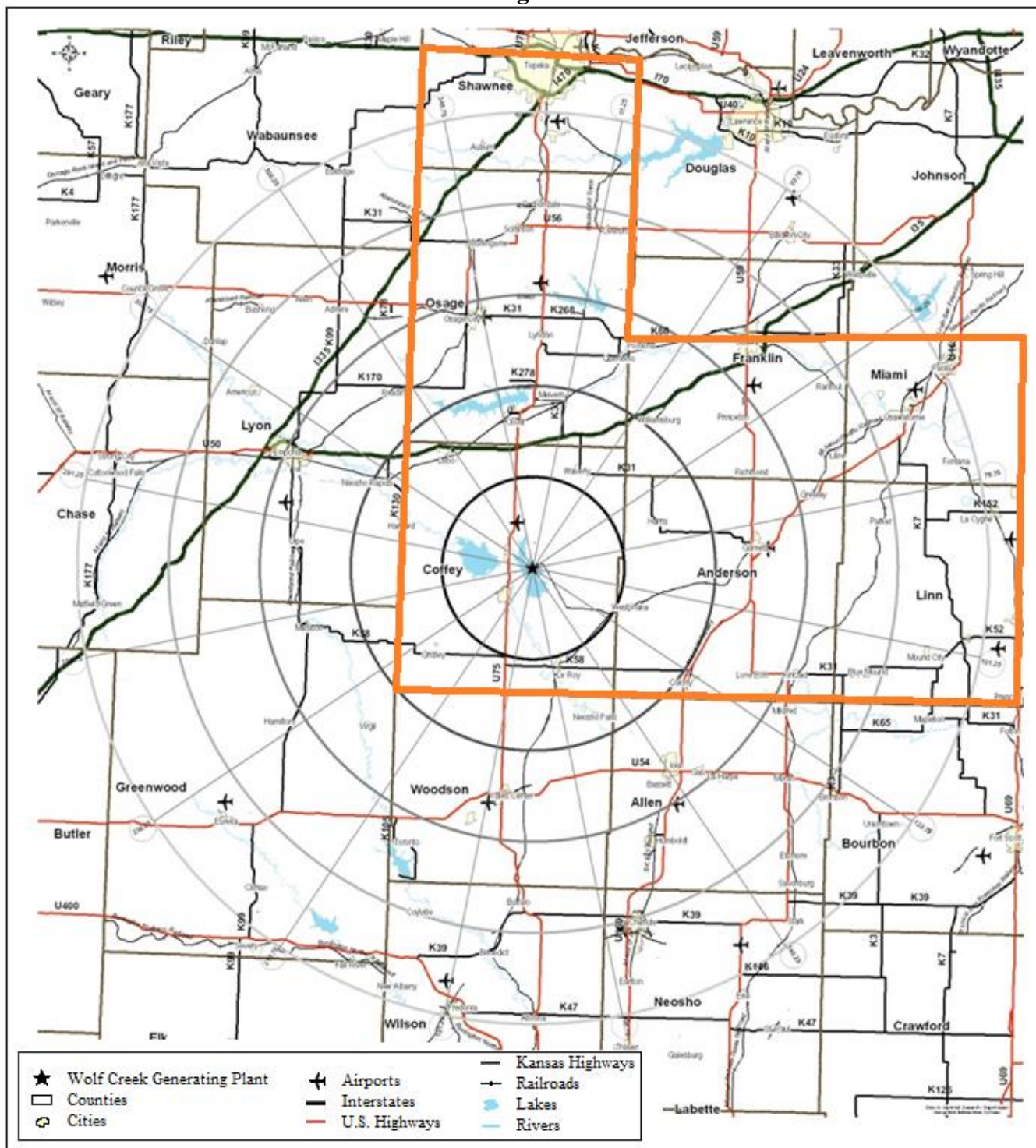
- **Location:** Burlington, KS (3.5 miles NE of Burlington, KS)
- **Operator:** Wolf Creek Nuclear Operating Corp.
- **Operating License:** Issued - 06/04/1985
- **Renewed License:** Issued - 11/20/2008
- **License Expires -** 03/11/2045
- **Reactor Type:** Pressurized Water Reactor
- **Licensed MWt:** 3,565
- **Reactor Vendor/Type:** Westinghouse Four-Loop
- **Containment Type:** Dry, Ambient Pressure

The following map, from KDEM, illustrates both the 10-mile 50-mile emergency planning zones (EPZs) for Wolf Creek.





Wolf Creek Generating Plant Exclusion Zones



Within Region J, Coffey County is located in the 10-mile EPZ. The remainder of the region is within the 50-mile EPZ.





4.26.2 – Previous Occurrences

There have been no previous major radiological events recorded in Kansas Region J.

4.26.3 – Hazard Probability Analysis

Historically there have been no nuclear failure and/or release events in Kansas Region J, or at Wolf Creek. The firm regulations imposed by the NRC on Wolf Creek work to ensure its safe operation. The amount of radioactivity released by a nuclear power plant is monitored continuously to be sure it does not go above allowed levels. The same sophisticated monitoring equipment provides exact information about any accidental release. The risk to the public from radioactivity released from nuclear power plants is smaller than the amount, and associated risk, we receive naturally on a daily basis.

4.26.4 – Vulnerability Assessment

Assuming the vulnerability to both structures and populations is not possible due to the tremendous number of variables involved in a potential nuclear release event. However, due to its location within the 10-mile EPZ, all structures and populations within Coffey County are at increased risk to exposure in the event of system failures. However, due to the strict oversight provided by the NRC, the potential vulnerability to Kansas Region J is considered to be very low.

4.26.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.202: Radiological Incident Consequence Analysis

Subject	Impacts of Nuclear Incident
Health and Safety of Persons in the Area of the Incident	Impact in the immediate area could be severe and long lasting.
Responders	Impact to responders is expected to be severe, potentially even with required safety equipment.
Continuity of Operations	Long term relocation may be necessary if government facilities experience contamination.
Property, Facilities, and Infrastructure	Localized impact could be severe in the incident area. Facilities may need to be abandoned and razed. Large areas may become inaccessible.
Environment	Impact could be severe for the immediate area. Impact will lessen with distance.
Economic Conditions	Local economy and finances may be adversely affected, depending on the nature, extent and duration of the event.
Public Confidence in Governance	Response and recovery will be in question if not timely and effective. Warning systems and the timeliness of those warnings could be questioned.





4.27 – Terrorism

The United States does not have a standardized definition of terrorism that is agreed upon by all agencies. The Federal Bureau of Investigation generally defines terrorism as:

"the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives."

4.27.1 – Location and Extent

Kansas is home to a wide variety of criminal extremist groups. The Southern Poverty Law Center reported that in 2018 there were three active hate groups in Kansas: one neo-Nazi group, the National Socialist Movement in Lansing, one racist skinhead group, the Midland Hammerskins in Wichita, and one anti-homosexual group, the Westboro Baptist Church in Topeka. Other groups, such as the Animal Liberation Front, Earth Liberation Front, and People for the Ethical Treatment of Animals may have sympathizers in the region. Although no major terrorist acts have been attributed to any of these latter groups, their involvement in violent acts is meant to disrupt governmental functions and cannot be discounted.

4.27.2 – Previous Occurrences

Kansas Region J has been fortunate to escape a major terrorist incident.

4.27.3 – Hazard Probability Analysis

By nature, acts of terrorism are difficult to foresee. However, the probability of a major terrorist event in Kansas Region J is considered very low due the lack of any documented historical events. Again, it is worth noting that no previous occurrences in no way guarantees no future occurrences.

4.27.4 – Vulnerability Analysis

For purposes of this assessment, data is not available to quantify vulnerability or estimated losses as a result of terrorism incidents that might impact state-owned facilities.

For this assessment, it is not possible to calculate a specific vulnerability for each county or participating jurisdiction. However, because of the desire for publicity following attacks, it is more likely that counties and jurisdictions with greater population densities and /or larger event venues have a greater risk.

In general, it is difficult to quantify potential losses of terrorism due to the many variables and human elements and lack of historical precedence. Therefore, for the purposes of this plan, the loss estimates will take into account three hypothetical scenarios. The estimated impact of each event was calculated using the Electronic Mass Casualty Assessment and Planning Scenarios developed by Johns Hopkins University.

Please note that the hypothetical scenarios are included for illustrative purposes only.





Scenario #1: Mustard Gas Release

Event: Mustard gas is released from a light aircraft onto the stadium during a home football game. The agent directly contaminates the stadium and the immediate surrounding area. This attack would cause harm to humans and could render portions of the stadium unusable for a short time period in order to allow for a costly clean-up. There might also be a fear by the public of long-term contamination of the stadium and subsequent boycott of games resulting in a loss of revenue and tourism dollars.

Event Assumptions: For this scenario the number of people in the stadium is 50,000 with an additional 5,000 persons remain outside the stadium in the adjacent parking areas. The agent used, mustard gas, is extremely toxic and may damage eyes, skin and respiratory tract with death sometimes resulting from secondary respiratory infections. Death rate from exposure estimated to be 3%. The estimated decontamination cost is \$12 person. For this scenario it is assumed that all persons with skin injuries will require decontamination.

Results: The following table presents the estimated human and economic impacts of the scenario.

Table 4.203: Estimated Impact of Scenario #1, Mustard Gas Release

Impact	Post Exposure Onset Time	Effect
Severe Eye Injuries (1-2 hours)	1 -2 Hours	41,250 persons
Severe Airway Injuries (1-2 hours)	1 - 2 Hours	41,250 persons
Severe Skin Injuries (2 hours to days)	2 Hours to Days	49,500 persons
Deaths	Immediate to Days	1,100 persons
Cost of Decontamination	N/A	\$594,000

Source: Electronic Mass Casualty Assessment and Planning Scenarios by Johns Hopkins University

Scenario #2: Pneumonic Plague

Event: Four Canisters containing aerosolized pneumonic plague bacteria are opened in public bathrooms of heavily populated buildings (airports, stadiums, etc.). Each release location will directly infect 110 people; hence, the number of release locations dictates the initial infected population. The secondary infection rate is used to calculate the total infected population. This attack method would not cause damages to buildings or other infrastructure, only to human populations.

Event Assumptions: Each canister contains 650 milliliters of pneumonic plague bacteria. The type of infectious agent used is identified on Day 4. After identification, the fatality rate is 10% for new cases. Pneumonic plague has a 1-15 percent mortality rate in treated cases and a 40-60 percent mortality rate in untreated cases.

Results: The following table presents the estimated human impacts of the scenario.





Table 4.204: Estimated Impact of Scenario #2, Pneumonic Plague Release

Impact	Effect
Initial Infected Population	440 persons
Secondary Infected Population	883 persons
Deaths (7% of Infected)	62

Source: Electronic Mass Casualty Assessment and Planning Scenarios by Johns Hopkins University

Scenario #3: Improvised Explosive Device

Event: An improvised explosive device utilizing an ammonium nitrate/fuel oil mixture is carried in a panel van to a parking area during a time when stadium patrons are leaving their cars and entering the stadium and detonated. Potential losses with this type of scenario include both human and structural assets.

Event Assumptions: The quantity of ammonium nitrate/fuel oil mixture used is 4,000 pounds. The population density of the lot is assumed to be 1 person per every 25 square feet for a pre-game crowd. The Lethal Air Blast Range for such a vehicle is estimated to be 50 feet according to the Bureau of Alcohol, Tobacco, Firearms and Explosives Standards. The Falling Glass Hazard distance is estimated at 600 feet according to Bureau of Alcohol, Tobacco, Firearms and Explosives Explosive Standards. In this event, damage would occur to vehicles, and depending on the proximity of other structures, damages would occur to the stadium complex itself. The exact amount of these damages is difficult to predict because of the large numbers of factors, including the type of structures nearby and the amount of insurance held by vehicle owners. It is estimated that the average replacement cost for a vehicle is \$20,000 and the average repair cost for damaged vehicles would be \$4,000.

Results: The following table presents the estimated human impacts of the scenario.

Table 4.205: Estimated Impact of Scenario #3, Improvised Explosive Device

Impact	Effect
Deaths	1,391 persons
Trauma Injuries	2,438 persons
Urgent Care Injuries	11,935
Injuries not Requiring Hospitalization	4,467
Repair Costs for 100 Vehicles	\$400,000
Replacement Costs for 50 Vehicles	\$1,000,000

Source: Electronic Mass Casualty Assessment and Planning Scenarios by Johns Hopkins University

4.27.5 – Impact and Consequence Analysis

There is no consensus on estimates of potential fatalities and injuries for terrorism events. Injury and death tolls would be dependent on the type, size and weapon used. Areas with higher population densities would likely result in a greater number of casualties.

As per EMAP requirements, the following table provides the Consequence Analysis.





Table 4.206: Terrorism Consequence Analysis

Subject	Impacts of Terrorism
Health and Safety of Persons in the Area of the Incident	Impact could be severe for persons in the incident area.
Responders	Impact to responders could be severe if not trained and properly equipped. Responders that are properly trained and equipped will have a low to moderate impact.
Continuity of Operations	Depending on damage to facilities/personnel in the incident area, relocation may be necessary and lines of succession execution.
Property, Facilities, and Infrastructure	Impact within the incident area could be severe for explosion, moderate to low for Hazmat.
Environment	Localized impact within the incident area could be severe depending on the type of incident.
Economic Conditions	Economic conditions could be adversely affected and dependent upon time and length of clean up and investigation.
Public Confidence in Governance	Impact dependent on if the incident could have been avoided by government entities, clean-up, investigation times and outcomes.





4.28 – Utility/Infrastructure Failure

Critical infrastructure involves several different types of facilities and systems including:

- Electric power
- Transportation routes
- Natural gas and oil pipelines
- Water and sewer systems, storage networks
- Internet/telecommunications systems



Failure of utilities or infrastructure components in south-southwest Kansas can seriously impact public health, functioning of communities and the region's economy. Disruptions to utilities can occur from many of the hazards detailed in this plan, but the most likely causes include:

- Floods
- Lightning
- Tornadoes and Windstorms
- Winter Storms

In addition to being impacted by another listed hazard, utilities and infrastructure can fail as a result of faulty equipment, lack of maintenance, degradation over time, or accidental damage.

4.28.1 – Location and Extent

All of Kansas Region J is at risk for utility and/or infrastructure failure. The following sections discuss the major utilities in further detail.

Electric Power

The most common hazards analyzed in this plan that may disrupt the power supply are flood, lightning, tornado, windstorm, and winter weather. In addition, extreme heat can disrupt power supply when air conditioning use spikes during heat waves resulting in brownouts or rolling blackouts.

In general, electricity in Kansas Region J is provided by either investor-owned utilities or rural electric cooperatives (RECs). RECs are not-for-profit, member-owned electric utilities. Kansas RECs are governed by a board of trustees elected from the membership. Most Kansas RECs were set up under the Kansas Electric Cooperative Act, which, together with the federal Rural Electrification Act of 1934, made electric power available to rural customers. Information on regional electrical suppliers may be found at www.kec.org/servicearea_map.html. Additionally, locations of electric certified areas and transmission lines may be found at www.kcc.state.ks.us/maps/ks_electric_certified_areas.pdf.





Transportation Routes

Transportation routes can also be impacted by many of the hazards discussed in this plan. The primary hazards that impact transportation are flood, hazardous materials, and winter weather. Flood events can make roads and bridges impassible due to high water. Flood waters can also erode or scour road beds and bridge abutments. Highway and railroad accidents that involve hazardous materials can impact transportation routes through closures and/or evacuations. Winter weather frequently impacts transportation as roads become treacherous or impassible due to ice and snow. Other hazards that impact transportation routes include dam and levee failures if routes are in inundation areas, extreme temperatures that can cause damage to pavement, land subsidence that can damage roads/railroads, landslides that can cause debris and rock falls onto roadways, terrorism that can target routes, tornados that can directly damage infrastructure or deposit debris in routes, wildfires that can cause decreased visibility on transportation routes due to smoke, and windstorms that can cause vehicle accidents or overturning.

Pipelines Systems

Hazards that can impact natural gas and oil pipelines include earthquakes, expansive soils, land subsidence, landslide, and terrorism

Water and Sewer Systems

The primary hazards that can impact water supply systems include drought, floods, hazardous materials, and terrorism. Water district boundary maps are available for review at <https://krwa.net/ONLINE-RESOURCES/RWD-Maps>.

Internet and Telecommunications

Internet and telecommunications infrastructure can be impacted by floods, lightning, tornados, windstorms, and winter weather. Land line phone lines often utilize the same poles as electric lines, so when weather events such as windstorm or winter weather cause lines to break both electricity and telephone services may experience outages. With the increasing utilization of cellular phones, hazard events such as tornado that can damage cellular repeaters can cause outages. In addition, during any hazard event, internet and telecommunications systems can become overwhelmed due to the surge in call and usage volume. A map indicating telephone service providers in Kansas Region J is available at www.kcc.state.ks.us/maps/ks_telephone_certified_areas.pdf.

4.28.3 – Hazard Probability Analysis

Minor utility failures occur annually across the region, with larger failures usually tied to other disaster events such as tornados, winter storms and windstorms. As discussed throughout this plan, these concurrent events occur regularly. As such, it is expected that occasional, and largely concurrent utility failure events will occur.





4.28.4 – Vulnerability Assessment

Regionally, smaller utility suppliers generally have limited resources for mitigation. Thus, the large number of small utility service providers could mean greater vulnerability in the event of a major, widespread disaster, such as a major flood, severe winter storm or ice storm.

In recent years, regional electric power grid system failures in the western and east-central United States have demonstrated that similar failures could happen in Kansas Region J. This vulnerability is most appropriately addressed on a multi-state regional or national basis.

Since utility/infrastructure failure is generally a secondary or cascading impact of other hazards, it is not possible to quantify estimated potential losses specific to this hazard due to the variables associated with affected population, duration of outages, etc.

Although the limitless variables make it difficult to estimate future losses on a statewide basis, FEMA has developed standard loss of use estimates in conjunction with their Benefit-Cost Analysis methodologies to estimate the cost of lost utilities on a per-person, per-use basis.

Table 4.207: FEMA Benefit-Cost Analysis

Loss of Electric Power	Cost of Complete Loss of Service
Total Economic Impact	\$131 per person per day
Loss of Potable Water Service	Cost of Complete Loss of Service
Total Economic Impact	\$103 per person per day
Loss of Wastewater Service	Cost of Complete Loss of Service
Total Economic Impact	\$45 per person per day
Loss of Road/Bridge Service	Cost of Complete Loss of Service
Vehicle Delay Detour Time	\$29.63 per vehicle per hour (one-way trips)
Vehicle Delay Mileage	\$0.54 per mile (or current federal mileage rate)

Source: FEMA BCA Reference Guide, June 2009, Appendix C

4.28.5 – Impact and Consequence Analysis

As per EMAP requirements, the following table provides the Consequence Analysis.

Table 4.208: Utility/Infrastructure Failure Consequence Analysis

Subject	Impacts of Utility/Infrastructure Failure
Health and Safety of Persons in the Area of the Incident	Localized impact will be moderate to severe for persons with special needs and the elderly, depending on length of failure and time of year.
Responders	Impact to responders will be minimal if properly trained and equipped.
Continuity of Operations	Due to the nature of the hazard, the COOP plan is not expected to be activated. however, if the recovery time is excessive than temporary relocation may become necessary.
Property, Facilities, and Infrastructure	Impact is dependent on the nature of the incident, e.g., electric, water, sewage, gas, communication disruptions.
Environment	Impact, depending on the nature of the incident, should be minimal.
Economic Conditions	Economic conditions could be adversely affected depending on damages suffered, extent of damages, etc.





Table 4.208: Utility/Infrastructure Failure Consequence Analysis

Subject	Impacts of Utility/Infrastructure Failure
Public Confidence in Governance	Impact will be dependent on whether or not the government or non-government entities response, recovery, and planning were not timely and effective.



5.0 Capability Assessment

5.1 – Introduction

44 CFR 201.6 does not require a capability assessment to be completed for local hazard mitigation plans. However, 201.6(c)(3) states "A mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools."

This section of the plan discusses the current capacity of regional communities to mitigate the effects of identified hazards. A capability assessment is conducted to determine the ability of a jurisdiction to execute a comprehensive mitigation strategy, and to identify potential opportunities for establishing or enhancing specific mitigation policies, programs or projects.

A capability assessment helps to determine which mitigation actions are practical based on a jurisdiction's fiscal, staffing and political resources. A capability assessment consists of:

- An inventory of relevant plans, ordinances, or programs already in place
- An analysis capacity to carry them out.

A thoughtful review of jurisdictional capabilities will assist in determining gaps that could limit current or proposed mitigation activities, or potentially aggravate a jurisdiction's vulnerability to an identified hazard. Additionally, a capability assessment can detail current successful mitigation actions that should continue to receive support.

For this plan each participating jurisdiction was given an opportunity to present their capability assessment information.

5.2 – Granted Authority

In implementing a mitigation plan or specific action, a local jurisdiction may utilize any or all of the four broad types of government authority granted by the State of Kansas. The four types of authority are defined as:

- Regulation
- Acquisition
- Taxation
- Spending

Regulation

The scope of this local authority is subject to constraints, however, as all of Kansas' political subdivisions must not act without proper delegation from the State. Under a principle known as "Dillon's Rule," all power is vested in the State and can only be exercised by local governments to the extent it is delegated.





Acquisition

The power of acquisition can be a useful tool for pursuing local mitigation goals. Local governments may find the most effective method for completely “hazard-proofing” a particular piece of property or area is to acquire the property, thus removing the property from the private market and eliminating or reducing the possibility of inappropriate development occurring. Kansas legislation empowers cities, towns, counties to acquire property for public purpose by gift, grant, devise, bequest, exchange, purchase, lease or eminent domain (County Home Rule Powers, K.S.A. 19-101, 19-101a, 19-212).

Taxation

The power to levy taxes and special assessments is an important tool delegated to local governments by Kansas law. The power of taxation extends beyond merely the collection of revenue, and can have a profound impact on the pattern of development in the community. Communities have the power to set preferential tax rates for areas which are more suitable for development in order to discourage development in otherwise hazardous areas. Local units of government also have the authority to levy special assessments on property owners for all or part of the costs of acquiring, constructing, reconstructing, extending or otherwise building or improving flood control within a designated area. This can serve to increase the cost of building in such areas, thereby discouraging development. Because the usual methods of apportionment seem mechanical and arbitrary, and because the tax burden on a particular piece of property is often quite large, the major constraint in using special assessments is political. Special assessments seem to offer little in terms of control over land use in developing areas. They can, however, be used to finance the provision of necessary services within municipal or county boundaries. In addition, they are useful in distributing to the new property owners the costs of the infrastructure required by new development.

Spending

The Kansas General Assembly allocated the ability to local governments to make expenditures in the public interest. Hazard mitigation principles can be made a routine part of all spending decisions made by the local government, including the adoption of annual budgets and a Capital Improvement Plan. A Capital Improvement Plan is a schedule for the provision of municipal or county services over a specified period of time. Capital programming, by itself, can be used as a growth management technique, with a view to hazard mitigation. By tentatively committing itself to a timetable for the provision of capital to extend services, a community can control growth to some extent. In addition to formulating a timetable for the provision of services, a local community can regulate the extension of and access to services. A Capital Improvement Plan that is coordinated with extension and access policies can provide a significant degree of control over the location and timing of growth. These tools can also influence the cost of growth. If the Capital Improvement Plan is effective in directing growth away from environmentally sensitive or high hazard areas.





5.3 – Governance

All counties within Kansas Region J operate under a county commissioner form of governance, with the elected board of commissioners overseeing county operations.

Table 5.1: County Governance

Jurisdiction	Government Structure	Number of Commissioners
Anderson County	Commission	3
Coffey County	Commission	3
Franklin County	Commission	3
Linn County	Commission	3
Miami County	Commission	3
Osage County	Commission	3
Shawnee County	Commission	3

In general, the participating towns and cities in Kansas Region J operate either under a Mayoral form of governance or an elected city council form of governance.

5.4 – Jurisdictional Capabilities

Information as to the current capacity of participating jurisdictions is summarized in the following sections and tables. All capability information was provided by jurisdictional officials through the above referenced questions and through outreach from the MPC.

The ability of a local government to develop and implement mitigation projects, policies, and programs is directly tied to its ability to direct staff time and resources for that purpose. Administrative capability can be evaluated by determining how mitigation-related activities are assigned to local departments and if there are adequate personnel resources to complete these activities. The degree of intergovernmental coordination among departments will also affect administrative capability for the implementation and success of proposed mitigation activities.

Many smaller jurisdictions have very limited to no planning, management, response or mitigation capabilities. Often these jurisdictions rely on the county or nearby larger municipalities for assistance. This lack of capabilities is reflected in the following tables. Additionally, many very small or extremely limited participating small jurisdictions, largely townships, are not listed on the capability list. This in no way diminishes the participation in the process of these jurisdictions. Finally, special district capabilities are included in their overarching jurisdiction.

5.4.1 – Jurisdictional Planning Capabilities

The planning capability assessment is designed to provide a general overview of the key planning and regulatory tools or programs in place or under development. This information helps identify opportunities to address existing planning gaps and provides an opportunity to review areas that mitigation planning





actions can be utilized with existing plans. Jurisdictions were asked if they had completed the following plans:

Comprehensive Plan: A comprehensive plan establishes the overall vision for a jurisdiction and serves as a guide to decision making, and generally contains information on demographics, land use, transportation, and facilities. As a comprehensive plan is broad in scope the integration of hazard mitigation measures can enhance the likelihood of achieving risk reduction goals.

Critical Facilities Plan: A critical facilities plan is used to identify a jurisdiction's critical facilities, including fire stations, police stations, hospitals, schools, day care centers, senior care facilities, major roads and bridges, critical utility sites, and hazardous material storage areas. Additionally, this plan may be used to determine methods to mitigate damage to these facilities.

Debris Management Plan: A debris management plan covers the response and recovery from debris-causing incidents such as tornados or floods. Planning considerations include debris removal and disposal, disposal locations, equipment availability, and personnel training.

Emergency Operations Plan: An emergency operations plan outlines responsibility, means and methods by which resources are deployed during and following an emergency or disaster.

Evacuation Plan: A plan that outlines routes and methods by which populations are evacuated during and following an emergency or disaster.

Fire Mitigation Plan: A fire mitigation plan is used to mitigate a jurisdictions wildfire risk and vulnerability. The plan documents areas with an elevated risk of wildfires, and identifies the actions taken to decrease the risk. A fire mitigaion plan can influence and prioritize future funding for hazardous fuel reduction projects, including where and how federal agencies implement fuel reduction projects on federal lands.

Flood Mitigation Assistance Plan: The purpose of the flood mitigation assistance plan is to reduce or eliminate the long-term risk of flood damage to buildings and other structures insured under the NFIP.

Recovery Plan: A disaster recovery plan guides the recovery and reconstruction process following a disaster. Hazard mitigation principles should be incorporated into disaster recovery plans to assist in breaking the cycle of disaster loss.

Vulnerable Population Plan and/or Inventory: A vulnerable populations plan is used to develop a strategic approach for support to persons with functional or special needs before, during and following a disaster.

The table below summarizes relevant jurisdictional planning capabilities.





Table 5.2: Jurisdictional Planning Capabilities

Jurisdiction	Comprehensive Plan	Critical Facilities Plan	Debris Management Plan	Emergency Operations Plan	Evacuation Plan	Firewise or other Fire Mitigation Plan	Flood Mitigation Assistance Plan	Recovery Plan	Vulnerable Population Plan or Inventory
Anderson County		X	X	X	X				X
City of Colony			X	X					
City of Garnett	X		X	X					
City of Greeley			X	X					
City of Kincaid			X	X					
City of Westphalia			X	X					
Coffey County	X		X	X	X			X	
City of Burlington	X	X	X	X	X	X	X	X	X
City of Gridley			X	X				X	
City of Lebo			X	X				X	
City of LeRoy			X	X				X	
City of New Strawn			X	X				X	
City of Waverly			X	X				X	
Franklin County	X	X	X	X	X			X	
City of Lane			X	X					
City of Ottawa			X	X					
City of Pomona			X	X					
City of Princeton			X	X					
City of Rantoul			X	X					
City of Richmond			X	X					
City of Wellsville			X	X					
City of Williamsburg			X	X					
Linn County	X	X		X	X		X		
City of Blue Mound				X					
City of LaCygne	X	X							
City of Linn Valley	X								
City of Mound City	X								
City of Parker	X						X		
City of Pleasanton	X			X					
City of Prescott	X								
Miami County	X	X	X	X	X	X	X	X	
City of Fontana	X			X					
City of Louisburg	X			X					
City of Osawatimie		X	X	X	X	X			X
City of Paola	X		X	X			X		





Table 5.2: Jurisdictional Planning Capabilities

Jurisdiction	Comprehensive Plan	Critical Facilities Plan	Debris Management Plan	Emergency Operations Plan	Evacuation Plan	Firewise or other Fire Mitigation Plan	Flood Mitigation Assistance Plan	Recovery Plan	Vulnerable Population Plan or Inventory
Osage County			X	X	X				
City of Burlingame	X	X	X	X	X	X		X	
City of Carbondale	X	X	X	X	X				
City of Lyndon	X		X	X	X		X		
City of Melvern	X			X	X		X		
City of Osage	X	X		X			X	X	X
City of Overbrook	X	X		X			X		X
City of Quenemo	X			X			X		
City of Scranton	X			X					
Shawnee County	X	X	X	X	X		X	X	X
City of Auburn	X	X	X	X	X				
City of Rossville	X	X	X	X	X				
City of Silver Lake	X	X	X	X	X		X		
City of Topeka	X	X	X	X	X		X	X	X
City of Willard	X	X	X	X	X				

5.4.2 – Jurisdictional Codes and Ordinances

Participating jurisdictions were asked if the following codes and ordinances and plans were established and enforced:

Building Code: Many structural mitigation measures involve constructing and retrofitting homes, businesses and other structures according to standards designed to make the buildings more resilient to the impacts of natural hazards. Many of these standards are imposed through the building code.

Floodplain Ordinance: In general, floodplain ordinances are used to:

- Minimize the extent of floods by preventing obstructions that inhibit water flow and increase flood height and damage.
- Prevent and minimize loss of life, injuries, and property damage in flood hazard areas.
- Promote the public health, safety and welfare of citizens in flood hazard areas.

Floodplain ordinances may allow jurisdictions to:

- Manage planned growth
- Adopt local ordinances to regulate uses in flood hazard areas





- Enforce those ordinances
- Grant permits for use in flood hazard areas that are consistent with the ordinance

These ordinances can also help ensure meeting the minimum requirements of participation in the NFIP. The incentive for local governments adopting such ordinances is that they will afford their residents the ability to purchase flood insurance through the NFIP.

Stormwater Ordinance: The purpose of a stormwater ordinance is to protect the quality and quantity of local, regional and state waters from the potential harm of unmanaged stormwater. Stormwater ordinances include protection from activities that result in the degradation of properties, water quality, stream channels, and other natural resources.

Nuisance Ordinance: Local governments may use their ordinance-making power to abate “nuisances,” which could include, by local definition, any activity or condition making people or property more vulnerable to any hazard.

Zoning: Zoning is the traditional and most common tool available to local jurisdictions to control the use of land. Zoning is used to promote health, safety, and the general welfare of the community. Zoning is used to dictate the type of land use and to set minimum specifications for use such as lot size, building height and setbacks, and density of population. Local governments are authorized to divide their jurisdiction into districts, and to regulate and restrict the erection, construction, reconstruction, alteration, repair or use of buildings, structures, or land within those districts. Districts may include general use districts, overlay districts, special use districts or conditional use districts. Zoning ordinances consist of maps and written text.

The table below summarizes relevant jurisdictional policies and ordinances.

Table 5.3: Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Nuisance Ordinance	Storm Water Ordinance	Zoning Ordinance
Anderson County		x	x		x
City of Colony			x		
City of Garnett	x	x	x		x
City of Greeley		x	x		
City of Kincaid		x	x		
City of Westphalia		x	x		
Coffey County		x			
City of Burlington	x	x	x	x	x
City of Gridley		x	x		
City of Lebo		x	x		





Table 5.3: Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Nuisance Ordinance	Storm Water Ordinance	Zoning Ordinance
City of LeRoy		X	X		
City of New Strawn		X	X		
City of Waverly		X	X		
Franklin County		X	X		
City of Lane		X	X		
City of Ottawa		X	X		
City of Pomona		X	X		
City of Princeton		X	X		
City of Rantoul		X	X		
City of Richmond		X	X		
City of Wellsville		X	X		
City of Williamsburg		X	X		
Linn County		X	X		X
City of Blue Mound		X	X		
City of LaCygne	X	X	X	X	X
City of Linn Valley	X	X	X		X
City of Mound City	X	X	X		X
City of Parker	X	X	X		X
City of Pleasanton		X	X		X
City of Prescott		X	X		
Miami County	X	X	X	X	X
City of Fontana		X	X		
City of Louisburg	X	X	X	X	X
City of Osawatomie	X	X	X		X
City of Paola	X	X	X	X	X
Osage County		X	X		X
City of Burlingame	X	X	X		X
City of Carbondale		X	X		
City of Lyndon		X	X	X	X
City of Melvern		X	X		
City of Osage	X	X	X	X	X
City of Overbrook	X	X	X		X
City of Quenemo		X	X		
City of Scranton		X	X		
Shawnee County	X	X	X	X	X





Table 5.3: Jurisdictional Codes and Ordinances

Jurisdiction	Building Code	Floodplain Ordinance	Nuisance Ordinance	Storm Water Ordinance	Zoning Ordinance
City of Auburn	x	x	x		
City of Rossville	x	x	x		x
City of Silver Lake	x	x	x	x	x
City of Topeka	x	x	x	x	x
City of Willard		x	x		

5.4.3 – Jurisdictional Programs

This part of the capability’s assessment includes the identification and evaluation of existing programs for each participating jurisdiction:

Community Rating System program under the National Flood Insurance Program: The NFIP's Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Participants are offered flood insurance premium rates at a discount to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS. These goals are the reduction of flood damage to insurable property, the strengthening and support of insurance aspects of the NFIP, and the encouragement of a comprehensive approach to floodplain management.

Firewise Community Certification: The Firewise Communities Program encourages local solutions for safety by involving homeowners in taking individual responsibility for preparing their homes from the risk of wildfire. Firewise is a key component of Fire Adapted Communities, a collaborative approach that connects all those who play a role in wildfire education, planning and action with comprehensive resources to help reduce risk. The program is co-sponsored by the USDA Forest Service, the US Department of the Interior, and the National Association of State Foresters.

ISO Fire Rating: This assessment also includes the identification and evaluation of existing ISO fire ratings. The Fire Suppression Rating Schedule is a manual containing the criteria ISO uses in reviewing the fire prevention and fire suppression capabilities of individual communities or fire protection areas. The schedule measures the major elements of a community’s fire protection system and develops a numerical grading called a Public Protection Classification.

National Flood Insurance Program: In 1968, Congress created the NFIP to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP.





Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding.

National Weather Service StormReady Program: StormReady uses a grassroots approach to help communities develop plans to handle all types of severe weather. The program encourages communities to take a new, proactive approach to improving local hazardous weather operations by providing emergency managers with clear-cut guidelines on how to improve their hazardous weather operations

The table below summarizes relevant local programs.

Table 5.4: Jurisdictional Programs

Jurisdiction	Community Rating System program	Firewise Community Certification	ISO Fire Rating	National Flood Insurance Program	National Weather Service Storm Ready Certification
Anderson County			5/7/9	x	x
City of Colony			x	x	
City of Garnett	x		x	x	x
City of Greeley			x	x	
City of Kincaid			x	x	
City of Westphalia			x	x	
Coffey County			x	x	
City of Burlington	x	x	x	x	x
City of Gridley			x	x	
City of Lebo			x	x	
City of LeRoy			x	x	
City of New Strawn			x	x	
City of Waverly			x	x	
Franklin County			x	x	
City of Lane			x	x	
City of Ottawa			x	x	
City of Pomona			x	x	
City of Princeton			x	x	
City of Rantoul			x	x	
City of Richmond			x	x	
City of Wellsville			x	x	
City of Williamsburg			x	x	
Linn County			5/10	x	
City of Blue Mound			5/10	x	





Table 5.4: Jurisdictional Programs

Jurisdiction	Community Rating System program	Firewise Community Certification	ISO Fire Rating	National Flood Insurance Program	National Weather Service Storm Ready Certification
City of LaCygne			5/10	x	
City of Linn Valley			9/10	x	
City of Mound City			5/10	x	
City of Parker			5/10	x	
City of Pleasanton			5/10	x	
City of Prescott			5/10	x	
Miami County			4	x	
City of Fontana			x	x	
City of Louisburg			x	x	
City of Osawatomie			3	x	x
City of Paola			4	x	
Osage County			x	x	x
City of Burlingame			4	x	
City of Carbondale			x	x	
City of Lyndon			x	x	
City of Melvern			x	x	
City of Osage			x	x	
City of Overbrook	x		x	x	x
City of Quenemo			x	x	
City of Scranton			x	x	
Shawnee County	x			x	x
City of Auburn				x	
City of Rossville			x	x	
City of Silver Lake	x		5	x	
City of Topeka	x	x	x	x	x
City of Willard				x	

In addition, participating jurisdictions operate with mutual aid agreements. These are understandings among localities to lend assistance across jurisdictional boundaries. Mutual aid may be requested only when an emergency occurs that exceeds local resources.

5.4.4 – Jurisdictional Staffing and Departmental Capabilities

A comprehensive mitigation program relies on many skilled professionals. These professionals include:





- Planners
- Emergency managers
- Floodplain managers
- GIS personnel

While exact responsibilities differ from jurisdiction to jurisdiction, the general duties of applicable departments are described below:

Building Official: Building officials are generally the jurisdictional administrator of building and construction codes, engineering calculation supervision, permits, facilities management, and accepted construction procedures. They may also inspect structures to ensure compliance with the plans and to check workmanship as well as code compliance.

Emergency Management Coordinator: The Emergency Management office is responsible for the mitigation, preparedness, response and recovery operations that deal with both natural and man-made disaster events. The formation of an emergency management department in each county is mandated under Kansas General Statutes.

Local Emergency Planning Committee: Local Emergency Planning Committees are generally housed at the county or municipal level. They do not function in actual emergency situations, but attempt to identify and catalogue potential hazards, identify available resources, mitigate hazards when feasible, and write emergency plans. The role of the LEPC is to anticipate and plan the initial response for foreseeable disasters in their jurisdiction.

Mapping Specialist: A geographic information system (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data. A GIS mapping specialist uses this data to create county maps, including flood plain, fire hazard, drought and other mitigation maps.

NFIP Floodplain Administrator: The NFIP floodplain administrator ensures a jurisdiction is meeting the minimum requirements of participation in the NFIP, and often is tasked with applying for funding or grants.

Planning Department: A planning department usually provides management and oversight of development through the application of codes, ordinances, building regulations and public input.

Public Works Official: Public works officials usually provide management and oversight of infrastructure projects such as public buildings (municipal buildings, schools, hospitals), transport infrastructure (roads, railroads, bridges, pipelines, airports), public spaces (public squares, parks), public services (water supply, sewage, electrical grid, dams), and other physical assets and facilities.

The table below summarizes relevant local staffing and departmental capabilities.





Table 5.6: Jurisdictional Staffing and Departmental Capabilities

Jurisdiction	Building Code Official or Inspector	Emergency Management Coordinator	Local Emergency Planning Committee	Mapping Specialist	NFIP Floodplain Administrator	Planning Department	Public Works Official
Anderson County		X	X		X	X	X
City of Colony					X		X
City of Garnett	X	X	X		X	X	X
City of Greeley					X		X
City of Kincaid					X		X
City of Westphalia					X		X
Coffey County		X	X	X	X		X
City of Burlington	X	X	X		X	X	X
City of Gridley					X		X
City of Lebo					X		X
City of LeRoy					X		X
City of New Strawn					X		X
City of Waverly					X		X
Franklin County		X	X		X		X
City of Lane					X		X
City of Ottawa					X		X
City of Pomona					X		X
City of Princeton					X		X
City of Rantoul					X		X
City of Richmond					X		X
City of Wellsville					X		X
City of Williamsburg					X		X
Linn County		X	X	X	X	X	X
City of Blue Mound	X				X		X
City of LaCygne		X			X		X
City of Linn Valley	X				X		X
City of Mound City	X				X		X
City of Parker					X		X
City of Pleasanton	X				X		X
City of Prescott					X		X
Miami County	X	X	X	X	X	X	X
City of Fontana					X		X
City of Louisburg	X				X	X	X
City of Osawatomie	X	X	X	X	X	X	X
City of Paola	X		X		X	X	X





Table 5.6: Jurisdictional Staffing and Departmental Capabilities

Jurisdiction	Building Code Official or Inspector	Emergency Management Coordinator	Local Emergency Planning Committee	Mapping Specialist	NFIP Floodplain Administrator	Planning Department	Public Works Official
Osage County		x	x	x	x	x	x
City of Burlingame	x				x		x
City of Carbondale					x		x
City of Lyndon			x		x	x	x
City of Melvern					x		x
City of Osage	x				x	x	x
City of Overbrook	x		x		x	x	x
City of Quenemo					x		x
City of Scranton					x		x
Shawnee County	x	x	x	x	x	x	x
City of Auburn							x
City of Rossville	x				x		x
City of Silver Lake	x	x			x	x	x
City of Topeka	x	x	x	x	x	x	x
City of Willard					x		x

5.4.5 – Non-Governmental Organizations Capabilities

Non-Governmental Organizations (NGOs) are legally constituted corporations that operate independently from any form of government and are not conventional for-profit businesses. In the cases in which NGOs are funded totally or partially by a government agency, the NGO maintains its non-governmental status by excluding government representatives from membership in the organization. The following is a brief discussion of both the American Red Cross and the Salvation Army, both of which provide regional operations and coverage.

American Red Cross: The American Red Cross is a humanitarian organization that provides emergency assistance, disaster relief and education. In addition, they offer services in five other areas: community services that help the needy; communications services and comfort for military members and their family members; the collection, processing and distribution of blood and blood products; educational programs on preparedness, health, and safety; and international relief and development programs.

Salvation Army: The Salvation Army is a Christian denomination and international charitable organization. In addition to being among the first to arrive with help after natural or man-made disasters, the Salvation Army runs charity shops and operates shelters for the homeless.





5.4.6 – Jurisdictional Fiscal Capabilities

In general, the jurisdictions of the Kansas Region J receive the majority of their revenue through state and local sales tax and federal and state pass through dollars. Based on available revenue information, and given that both the state and counties are experiencing budget deficits, funding for mitigation programs and disaster response is at a premium. Adding to the budget crunch is the increased reliance on local accountability by the federal government.

The following provide brief definitions of applicable fiscal programs:

Application and Management of Grant Funding: The jurisdiction has the staffing and capabilities to apply for grant funding and oversee all necessary provisions of the funding.

Authority to Levy Taxes: The authority to levy taxes would allow the jurisdiction to tax its population base.

Authority to Withhold Spending in Hazard Prone Areas: The ability of a jurisdiction to not provide funding for activities or actions in an area that is known to be prone to specific hazards.

Incur Debt through General Obligation Bonds: General obligation bonds are issued with the belief that a municipality will be able to repay its debt obligation through taxation or revenue from projects. General obligation bonds can be used to generate funds for mitigation projects.

Usage of Capital Improvement Funding for Mitigation Projects: Capital improvement allows for spending on identified capital projects and for equipment purchases, in this context related to mitigation projects.

The following table highlights each jurisdiction’s fiscal capabilities.

Table 5.7: Jurisdictional Financial Capabilities

Jurisdiction	Apply for and Manage Grant Funding	Authority to levy taxes for specific purposes	Authority to Withhold spending in hazard prone areas	Incur Debt through General Obligation Bonds	Usage of Capital Improvement Funding for Mitigation Projects
Anderson County	X	X	X	X	X
City of Colony	X	X		X	X
City of Garnett	X	X	X	X	X
City of Greeley	X	X		X	X
City of Kincaid	X	X		X	X
City of Westphalia	X	X		X	X
Coffey County	X	X	X	X	X
City of Burlington	X	X	X	X	X





Table 5.7: Jurisdictional Financial Capabilities

Jurisdiction	Apply for and Manage Grant Funding	Authority to levy taxes for specific purposes	Authority to Withhold spending in hazard prone areas	Incur Debt through General Obligation Bonds	Usage of Capital Improvement Funding for Mitigation Projects
City of Gridley	X	X		X	X
City of Lebo	X	X		X	X
City of LeRoy	X	X		X	X
City of New Strawn	X	X		X	X
City of Waverly	X	X		X	X
Franklin County	X	X	X	X	X
City of Lane	X	X		X	X
City of Ottawa	X	X		X	X
City of Pomona	X	X		X	X
City of Princeton	X	X		X	X
City of Rantoul	X	X		X	X
City of Richmond	X	X		X	X
City of Wellsville	X	X		X	X
City of Williamsburg	X	X		X	X
Linn County	X	X	X	X	X
City of Blue Mound	X	X		X	X
City of LaCygne	X	X		X	X
City of Linn Valley	X	X		X	X
City of Mound City	X	X		X	X
City of Parker	X	X		X	X
City of Pleasanton	X	X		X	X
City of Prescott	X	X		X	X
Miami County	X	X	X	X	X
City of Fontana	X	X		X	X
City of Louisburg	X	X		X	X
City of Osawatomie	X	X	X	X	X
City of Paola	X	X	X	X	X
Osage County	X	X		X	X
City of Burlingame	X	X	X	X	X
City of Carbondale	X	X		X	X
City of Lyndon	X	X		X	X
City of Melvern	X	X		X	X
City of Osage	X	X	X	X	X
City of Overbrook	X	X		X	X
City of Quenemo	X	X		X	X
City of Scranton	X	X		X	X





Table 5.7: Jurisdictional Financial Capabilities

Jurisdiction	Apply for and Manage Grant Funding	Authority to levy taxes for specific purposes	Authority to Withhold spending in hazard prone areas	Incur Debt through General Obligation Bonds	Usage of Capital Improvement Funding for Mitigation Projects
Shawnee County	x	x	x	x	x
City of Auburn	x	x		x	x
City of Rossville	x	x		x	x
City of Silver Lake	x	x	x	x	x
City of Topeka	x	x	x	x	x
City of Willard	x	x		x	x

5.4.7 – School Capability Assessment

Participating school districts were provided with a different set of questions that participating governmental jurisdictions. These questions were asked to ascertain the level of preparedness of the institution.

The following provides brief definitions of terms used in the capability assessment of schools. Please note that some definitions have been provided in previous sections.

Access to Local, Regional and State Funds: The ability to use local, regional and state funding on school activities and improvements.

Active Shooter Plan: An active shooter plan outlines responsibility, means and methods by which resources are deployed during an active shooter scenario.

Capital Improvement Plan: A capital improvement plan guides scheduling of, and spending on, school improvements. A capital improvement plan can guide future development away from identified hazard areas, an incorporate identified mitigation strategies.

District Master Plan: A master plan establishes the overall vision and serves as a guide to decision making. A master plan generally contains information on demographics, land use, transportation, and facilities. As a master plan is broad in scope the integration of hazard mitigation measures can enhance the likelihood of achieving risk reduction goals.

Emergency Operations Plan/Evacuation Plan: An emergency operations plan outlines responsibility, means and methods by which resources are deployed during and following an emergency or disaster. Often included in these plans are detailed evacuation procedures and policies.





Incur Debt through General Obligation Bonds: General obligation bonds are issued with the belief that an entity will be able to repay its debt obligation through taxation or revenue from projects. General obligation bonds can be used to generate funds for mitigation projects.

School Safety or Resource Officer: A person with overall responsibility for safety of the school, students and staff.

Information as to the current capacity of participating schools, colleges and universities is summarized in the following table.

Table 5.8: College, Unified School District or University Capabilities

Jurisdiction	Access to Local, Regional and State funds	Active Shooter Plan or Policy	Capital Improvement Plan	District Master Plan	School Emergency and Evacuation Plans	School Safety or Resource Officers or Dedicated Law Enforcement
Anderson County						
USD #365 - Garnett	x	x	x		x	x
USD #479 - Crest	x	x		x	x	
Coffey County						
USD #243 - Lebo /Waverly	x	x		x	x	x
USD #244 - Burlington	x	x		x	x	x
USD #245 - LeRoy / Gridley	x	x		x	x	x
Franklin County						
USD #287 - West Franklin	x	x		x	x	x
USD #288 - Central Heights	x	x		x	x	x
USD #289 - Wellsville	x	x		x	x	x
USD #290 - Ottawa	x	x		x	x	x
Linn County						
USD #344 - Pleasanton	x	x	x	x	x	x
USD #346 - Mound City	x	x	x	x	x	x
USD #362 - Prairie View	x	x	x	x	x	x
Miami County						
USD #230 – Spring Hill	x	x		x	x	x
USD #367 - Osawatomie	x	x		x	x	x
USD #368 - Paola	x	x		x	x	x
USD #416 - Louisburg	x	x		x	x	x
Osage County						
Three Lakes Educational Cooperative	x	x			x	
USD #420 - Osage City	x	x	x	x	x	x
USD #421 - Lyndon	x	x		x	x	x





Table 5.8: College, Unified School District or University Capabilities

Jurisdiction	Access to Local, Regional and State funds	Active Shooter Plan or Policy	Capital Improvement Plan	District Master Plan	School Emergency and Evacuation Plans	School Safety or Resource Officers or Dedicated Law Enforcement
USD #434 - Santa Fe Trail	x	x		x	x	x
USD #454 - Burlingame	x	x		x	x	x
USD #456 - Marias Des Cygnes Valley	x	x	x		x	x
Shawnee County						
USD #321 - Kaw Valley	x	x	x	x	x	x
USD #345 - Seaman	x	x	x	x	x	x
USD #372 - Silver Lake	x	x	x	x	x	x
USD #437 - Auburn / Washburn	x	x	x	x	x	x
USD #450 - Shawnee Heights	x	x	x	x	x	x
USD #501 - Topeka	x	x	x	x	x	x
Washburn University	x	x	x	x	x	x

Additionally, under K.S.A. 72-5457 (General Provisions for the Issuance of Bonds), all Kansas USDs may issue general obligation bonds to:

- Purchase or improve any site or sites necessary for school district purposes including housing and boarding pupils enrolled in an area vocational school
- Acquire, construct, equip, furnish, repair, remodel or make additions to buildings including housing and boarding pupils enrolled in an area vocational school operated under the board of education of a school district

5.5 – Opportunities for Capability Improvement

As part of this plan update, the MPC identified the following opportunities for improvement across the region concerning current capabilities:

- **Local Funding**
 - Integration of mitigation plans with other local plans and programs, such as capital improvement plans
 - Adoption of cost-effective mitigation measures when developing capital improvement projects
- **Public Education and Outreach**
 - Regular deployment of hazard awareness campaigns to enhance public awareness





- **Land Use Planning and Regulations**

- Continued encouragement of using land use planning to identify areas at risk to natural hazards
- Stormwater retention/detention projects to reduce flooding
- Locally funded buyouts of hazard prone properties

- **Floodplain Management**

- Encourage and support new participation in the NFIP and in the CRS
- Continue the promotion and enforcement of NFIP and CRS floodplain management programs



6.0 Mitigation Strategy

6.1 – Introduction

As part of this planning effort, Kansas Region J and its participating jurisdictions worked to minimize the risk of future impacts from identified hazards to all citizens. In an attempt to shape future regulations, ordinances and policy decisions, the MPC reviewed and developed a hazard mitigation strategy. This comprehensive strategy includes:

- The consistent review and revision, as necessary, of obtainable goals and objectives
- The consistent review, revision and development of a comprehensive list of potential hazard mitigation actions

The development of a robust mitigation strategy allows for:

- The ability to effectively direct limited resources for maximum benefit
- The ability to prioritize identified hazard mitigation projects to maximize positive outcomes
- The increase in public and private level participation in hazard mitigation through transparency and awareness
- The potential direction of future policy decisions through awareness and education
- The achievement of the ultimate goal of a safer region for all our citizens

Considering the factors listed above, the MPC continues to implement the following mitigation strategy:

- **Implement** the recommendations of this plan.
- **Utilize** existing regulations, policies, programs, procedures, and plans already in place.
- **Share** information on Funding opportunities.
- **Communicate** the information contained in this plan so all jurisdictions and citizens have a clearer understanding of the hazards facing the region and what can be done to mitigate their impacts.
- **Publicize** the success stories that have been achieved through the region’s ongoing mitigation efforts.

6.2 – Emergency Management Accreditation Program Integration

As per requirements, in identifying and reviewing mitigation actions the following activities recommended by the EMAP were considered:

- The use of applicable building construction standards
- Hazard avoidance through appropriate land-use practices
- Relocation, retrofitting, or removal of structures at risk
- Removal or elimination of the hazard
- Reduction or limitation of the amount or size of the hazard
- Segregation of the hazard from that which is to be protected
- Modification of the basic characteristics of the hazard
- Control of the rate of release of the hazard
- Provision of protective systems or equipment for both cyber or physical risks





- Establishment of hazard warning and communication procedures
- Redundancy or duplication of essential personnel, critical systems, equipment, and information materials.

6.3 – Problem Statements

Based on the regionally identified hazards, problem statements have been developed to detail identified major concerns that can potentially be addressed through proposed mitigation actions. Problems statements were developed using the following inputs:

- Identify a key point of concern
- Is the problem getting worse, better, or staying the same?
- What are the identified or potential impacts?

The following table present regional problem statements to be utilized in informing the review, modification and development of hazard mitigation actions.

Table 6.1: Kansas Region J Problem Statements

Identified Hazard	Problem Statement	Current Condition (Same, Improving, Worsening)	Potential Impact(s)
All Hazards	Current public outreach initiatives need to be expanded	Same	Increased injuries, deaths and property damage
Flood	Numerous low water crossing throughout the region repeatedly flood	Same	Road damage, potential loss of life, cutoff of emergency services
Flood	The number of flood insurance policies have decreased from 2012 to Five years	Worsening	Loss of coverage for flood prone properties.
Tornado	Predictions indicate the number of tornados per year is expected to remain the same	Same	Increased injuries, deaths and property damage
Tornado	Current saferooms may not provide enough space to shelter all of those in need.	Same	Injuries and/or loss of life
Windstorm	Region J is located in Wind Region IV, the highest classification for inland winds.	Same	High potential for property damages, injuries and/or deaths
Windstorm	Current saferooms may not provide enough space to shelter all of those in need.	Same	Injuries and/or loss of life
Winter Storm	Ice storms may damage utilities	Same	Lack of service to citizens, potential adverse impacts due to loss of heat or power
Utility Failure	Power infrastructure is above ground and susceptible to a range of hazards	Worsening with age of infrastructure	Lack of service to citizens, potential adverse impacts due to loss of heat or power





Additionally, problem statements from the public survey are incorporated to provide a community wide view. Problems statements were developed using the following inputs:

- Location
- Identified hazard
- Key point of concern

The following table present problem statements for each county, generated through discussions with participating jurisdictions within that county, to be utilized in informing the review, modification and development of hazard mitigation actions.

Table 6.2: Kansas Region J Community Problem Statements

Jurisdiction	Identified Hazard(s)	Problem Statement
Anderson County	Flood	Poor drainage systems exacerbate flood situations.
Anderson County	Tornado	A lack of saferoom access in jurisdictions throughout the county.
Anderson County	Utility /Infrastructure Failure	Power failures occur on an occasional basis causing problems for vulnerable populations and businesses.
Coffey County	Flood	Flooding is a consistent threat to jurisdictions within the county.
Coffey County	Radiological Event	All of Coffey County is immediately susceptible to a release event form the Wolf Creek Generating Station.
Coffey County	Utility /Infrastructure Failure	Power outages impact the capabilities of all participating jurisdictions.
Franklin County	Flood	Flooding of roads and communities is a concern for all jurisdictions
Franklin County	Tornado	Not all communities and schools have adequate saferooms.
Linn County	All Hazards	Current public outreach initiatives need to be expanded
Linn County	Flood	Roads and communities are susceptible to negative impacts from flood events
Miami County	All Hazards	Current public outreach initiatives need to be expanded
Miami County	Tornado and Windstorm	A lack saferooms in jurisdictions throughout the county.
Miami County	Flood	Flooding is a consistent threat to jurisdictions within the county.
Osage County	Flood	Poor drainage systems exacerbate flood situations.
Osage County	Tornado	A lack of saferoom access in jurisdictions throughout the county.
Osage County	Utility /Infrastructure Failure	Unchecked tree growth and infrequent trimming cause power failures.
Osage County	Flood	Washed up brush in creeks and rivers that cause unnecessary flooding issues.
Shawnee County	All Hazards	Current public outreach initiatives need to be expanded
Shawnee County	All Hazards	The City of Topeka is a large population center that may be at increased risk to hazards.
Shawnee County	Dam and Levee Failure	Sherwood Dam has been identified by KDA as being non-compliant with regulations. Specifically, the flood routing of this dam has been determined to be hydrologically inadequate.
Shawnee County	Flood	Flooding of roads and communities is a concern for all jurisdictions





6.4 – Identification of Goals

44 CFR 201.6 (c)(3)(i) A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Through thorough discussions at stakeholder meetings, the MPC determined that the four previously identified primary hazard mitigation goals remained relevant and applicable. This was because the priorities of Kansas Region J in relation to hazard mitigation planning have not changed during the five-year planning cycle. These goals were reviewed through a well-established consideration process, instituted by the MPC during previous plan updates, which consisted of:

- A review of previously identified hazard mitigation goals
- A review of demographic and built environment data
- A review of identified hazards, hazard events, and vulnerabilities
- A review all identified hazard mitigation actions

The following goals represent the Kansas Region J vision for hazard mitigation and disaster resilience.

- **Goal 1:** Reduce or eliminate risk to the people and property of Kansas Region J from the impacts of the identified hazards in this plan.
- **Goal 2:** Strive to protect all vulnerable populations, structures, and critical facilities in Kansas Region J from the impacts of the identified hazards.
- **Goal 3:** Improve public outreach initiatives to include education, awareness and partnerships with all entities in order to enhance understanding of the risk Kansas Region J faces due to the impacts of the identified hazards.
- **Goal 4:** Enhance communication and coordination among all agencies and between agencies and the public.

6.5 – Completed Mitigation Actions

Since the completion of the previous HMP, each jurisdiction has been tracking the completion status of all identified hazard mitigation actions. Each of the following completed actions should be viewed as a testament to the effectiveness of the HMP and a positive step in creating safer and more resilient communities.

Table 6.3: County and Participating Jurisdictions Completed Hazard Mitigation Actions

Jurisdiction	Action Description
Anderson County	10-foot by 20-foot FEMA rated community saferoom in Welda (HMGP 2017)
Anderson County	10-foot by 20-foot FEMA rated community saferoom in Harris (HMGP 2018)
Anderson County	10 foot-by 20-foot FEMA rated community saferoom in Greeley (HMGP 2018)

Kansas Region J is committed to pursuing funding to complete all major hazard mitigation projects.





6.6 – Review and Addition of Mitigation Actions

For this plan update, members of the MPC and participating jurisdictions were asked to complete a thorough review of all not completed mitigation actions. Additionally, MPC members and participating jurisdictions were provided with the opportunity to identify and incorporate newly identified actions based on:

- Hazard events that have occurred since the last plan revision
- Updated risk assessments
- Identified goals and objectives
- Changing local capabilities
- New vulnerabilities.

In identifying new, or reviewing existing mitigation actions, the following general categories were considered:

Local Plans and Regulations: Actions that influence the way land and buildings are developed or constructed. Actions may include:

- Revision or institution planning and zoning ordinances
- Revision or institution of building codes
- Open space preservation
- Revision or institution floodplain regulations
- Revision or institution stormwater management regulations
- Drainage system maintenance
- Requirements for riverine setbacks

Structure and Infrastructure Projects: Actions that involve the modification of existing structures to protect, or remove from, a hazard or hazard area. Actions may include:

- Acquisition of hazard prone properties
- Relocation of hazard prone properties
- Revision or institution of building elevation requirements
- Critical facilities protection
- Installation or retrofitting of community safe rooms
- Requiring insurance
- Installation or update of warning systems

Natural Systems Protection: Actions that minimize hazard losses to natural systems. Actions may include:

- Mandatory floodplain area protection
- Revision or institution of comprehensive watershed management programs





- Requirements for riparian buffers
- Requirements for forest and shrub management
- Revision or institution of erosion and sediment control
- Wetland preservation and restoration
- Slope stabilization programs

Education and Awareness Programs: Actions to inform and educate about potential hazards and actions to mitigate against them. Actions may include:

- Educational outreach programs
- Speaker and/ or demonstration events
- Notifying citizens on where to get information
- School educational and event programs

Each action was reviewed using the following metrics, asking if it was:

- **Specific** – The action addresses a hazard or need
- **Measurable** – Achievement or progress can be measured
- **Attainable** – Accepted by those responsible for achieving it
- **Relevant** – Substantively addresses the problem
- **Time-bound** – Time period for achievement is clearly stated

Additionally, the MPC and each jurisdiction was instructed to provide a brief summary regarding the status of each of these actions using the following:

- **Not Started:** Action will provide reason(s) for lack of progress, which may include lack of Funding, differing priorities, changes in political climate, lack of technical skills, etc.
- **In progress:** Action will provide a summary, and if applicable, a of percentage work completed to date.
- **Deleted:** Actions deemed no longer viable were marked for deletion from the plan. These actions are detailed in the next section.

6.7 – Prioritization of Mitigation Actions

44 CFR 201.6 (c)(3)(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

All participating jurisdictions worked together to review and prioritize both previously identified and newly created hazard mitigation actions, with a self-analysis method used for prioritization. This methodology takes all considerations into account to ensure that, based on capabilities, funding, public wishes, political climate, and legal framework and context, reasonable actions are determined. Major





determining factors included the potential effects on the overall risk to life and property, ease of implementation, community and agency support, consistency with mitigation goals, and the availability of Funding.

Of major concern was the potential cost of each action. In general, identified actions were proposed to reduce future damages. As such, it is critical that selected and implemented actions provide a greater saving over the life of the action than the initial cost. For structural and property protection actions cost effectiveness is primarily assessed on:

- Likelihood of damages occurring
- Severity of the damages
- Potential effectiveness

For all other type of actions, including legislative actions, codes and ordinances, maintenance and education, cost effectiveness is primarily assessed on likely future benefits as these actions may not easily result in a quantifiable reduction in damage.

Based on this review, both previously identified and new action items were prioritized as per the following:

High priority:

- Actions that should be implemented as soon as possible
- Actions deemed most critical to achieve the identified mitigation goals

Medium priority:

- Actions that should be implemented in the long-term
- Actions deemed important to meet identified mitigation goals

Low priority

- Actions that should be implemented if Funding becomes available
- Actions that have lowest impact toward achieving mitigation goals

6.8 – Jurisdictional Mitigation Actions

44 CFR 201.6 (c)(3)(ii): A section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

44 CFR 201.6 (c)(3)(iv): For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

The following tables identify mitigation action items for each participating jurisdiction, along with the following information:





- Hazard addressed
- Responsible party
- Overall priority
- Goal(s) addressed
- Estimated cost
- Potential Funding source
- Proposed completion timeframe
- Current status
- New actions that have been added to this plan update are identified as such.
- Actions that are in support of NFIP compliance are identified with a bold type **NFIP**





6.8.1 – Anderson County and Participating Jurisdictions Mitigation Actions

Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Anderson County-1	Educate and promote local jurisdictional participation in the NFIP .	Flood	Director of Emergency Management	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Anderson County-2	Advertise and promote the availability of flood insurance to property owners by direct mail annually. (NFIP)	Flood	Director of Emergency Management	High	3,4	Staff Time	Local	Repeating	In progress
Anderson County-3	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Director of Emergency Management	High	3,4	Staff Time	Local	Repeating	In progress
Anderson County-4	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other community events drawing large crowds.	All Hazards	Director of Emergency Management	High	3,4	\$250.00 per workshop	Local, State, Federal	Repeating	In progress
Anderson County-5	Facilitate and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	Director of Emergency Management	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Anderson County-6	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	Director of Emergency Management	High	3,4	Staff Time	Local	Repeating	In progress
Anderson County-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	Director of Emergency Management	High	3,4	\$500.00 per year	Local, State, Federal	Repeating	In progress
Anderson County-8	Coordinate county and local government mitigation efforts with RECs	Utility/ Infrastructure Failure	Director of Emergency Management	High	3,4	Staff Time	Local	Five years	Not started, lack of funding
Anderson County-9	Anderson County is committed to continued voluntary participation and compliance with the NFIP .	Flood	Director of Emergency Management	High	1,2,3,4	Staff Time	State, FEMA	Repeating	In progress





Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Anderson County-10	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	Director of Emergency Management	High	1,2,4	Staff Time	Local, State, Federal	Repeating	In progress
Anderson County-11	Contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program, in addition to other flood protection measures (NFIP)	Flood	Director of Emergency Management	High	1,2,4	Staff Time	Local	Repeating	In progress
Anderson County-12	Identify flash-flood prone areas to consider flood reduction measures to county planners. (NFIP)	Flood	Director of Emergency Management	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Anderson County-13	Implement an appropriate stream buffer ordinance to further protect the jurisdiction's water resources and to limit future flood damages adjacent to major waterways. (NFIP)	Flood	Director of Emergency Management	High	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Anderson County-14	Regularly calculate and document the amount of flood prone property that is preserved as open space to reduce flood insurance burden to the county. (NFIP)	Flood	Director of Emergency Management	High	1,2,3,4	Staff Time	Local, State, Federal	Repeating	In progress
Anderson County-15	Incorporate the inspection and management of trees that may pose a threat to the county and incorporate cities routine maintenance system process.	All Hazards	Director of Emergency Management	Medium	1,2	Staff Time	Local	Repeating	In progress
Anderson County-16	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources.	Wildfire	Director of Emergency Management	High	1,2,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Anderson County-17	Evaluate the firefighting water supply resources within the County, including both fixed and mobile supply issues.	Wildfire	Director of Emergency Management	Medium	1,2	Staff Time	Local	Five years	In progress
Anderson County-18	Develop and implement a wildfire prevention/education program.	Wildfire	Director of Emergency Management	Medium	3,4	\$1200 per year	Local	Repeating	In progress





Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Anderson County-19	Conduct inventory/survey for the county emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Director of Emergency Management	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
Anderson County-20	Identify the most at-risk vital / critical facilities, and evaluate the potential mitigation techniques for protecting each facility in a cost effective manner.	All Hazards	Director of Emergency Management	Medium	1,2,4	Staff Time	Local, State	Repeating	In progress
Anderson County-21	Contact owners of high hazard dams in the county and inform them of their responsibility to provide and update Emergency Action Plans to Anderson County Emergency Management	Dam and Levee Failure	Director of Emergency Management	High	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding
Anderson County-22	Develop an annex to the LEOP for dam failure response and evacuation plans for the high hazard dam located in Anderson County.	Dam and Levee Failure	Director of Emergency Management	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Anderson County-23	Research, develop and recommend a resolution to the existing Anderson County Zoning Regulations to require installation of tornado shelters for any new major manufactured and/or mobile home parks with more than 10 mobile home spaces.	Tornado, Windstorm	Director of Emergency Management	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Anderson County-24	Research and recommend appropriate building codes for the County that include wind-resistant design techniques for new construction.	Tornado, Windstorm	Director of Emergency Management	High	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding
Anderson County-25	Seek funding to retain an engineer to design a community tornado shelter for the Township of Welda and apply for grant funding for construction.	Tornado	Director of Emergency Management	Medium	1,2	\$40,000	Local, State, Federal	Five years	Not started, lack of funding
Anderson County-26	Lyon-Coffey Electric Cooperative, Inc. will continue to coordinate mitigation efforts with county and local governments, encourage identification of hazards potentially affecting their	Utility/ Infrastructure Failure	Director of Emergency Management	Medium	4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding





Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.								
Anderson County-27	The Deer Creek Watershed Joint District No. 55 will continue to construct, operate, monitor, and maintain watershed-related structures and easements within their district	Dam and Levee Failure	Director of Emergency Management	Medium	1,2,4	Unknown	Local, State, Federal	Repeating	In progress
Anderson County - 28	The Pottawatomie Creek Watershed Joint District No. 90 will research funding options to repair damaged emergency spillway outlets and the possible construction of a new flood control dam.	Dam and Levee Failure	Director of Emergency Management	Medium	1,2,4	Staff Time	Local, State, Federal	Repeating	In progress
Colony-1	Coordinate county and local mitigation efforts with RECs and utilities	Utility/ Infrastructure Failure	City Manager	High	1,2	Staff Time	Local, State	Repeating	In progress
Colony-2	Conduct a study to determine the efficacy of the existing generators located within Critical Facility structures and fund options for any Critical Facilities that may require generators and/or transfer switches to maintain power in the event of severe weather events.	All Hazards	City Manager	High	1,2	Staff Time	Local, State	Repeating	Not started, lack of funding
Garnett-1	Educate and promote local jurisdictional participation in the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Garnett-2	Advertise and promote the availability of flood insurance to property owners by direct mail annually. (NFIP)	Flood	City Manager	High	3,4	\$500 per year	Local	Repeating	In progress
Garnett-3	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Garnett-4	Annually host a public "hazards workshop" in combination with local	All Hazards	City Manager	High	3,4	\$500 per workshop	Local, State, Federal	Repeating	In progress





Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	festivals, fairs, or other community events drawing large crowds								
Garnett-5	Encourage and seek funding for the design and construction of safe rooms.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Garnett-6	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Garnett-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	High	3,4	\$250.00 per year	Local, State, Federal	Repeating	In progress
Garnett-8	Coordinate county and local government mitigation efforts with RECs, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Utility/ Infrastructure Failure	City Manager	High	3,4	Staff Time	Local	Five years	Not started, lack of funding
Garnett-9	The City of Garnett is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA	Repeating	In progress
Garnett-10	Assess flood prone areas and recommend flood reduction measures to city officials. (NFIP)	Flood	City Manager	High	1,2,4	Staff Time	Local, State, Federal	Repeating	In progress
Garnett-11	Seek funding sources to develop a storm drainage improvement, inspection, and cleaning program for the City of Garnett, including the cleaning of catch-basins, sewers, ditches, and siphons at flood-prone areas. (NFIP)	Flood	City Manager	Medium	1,2,4	Unknown	Local	Five years	Not started, lack of funding
Garnett-12	Incorporate a vegetation management program, including the inspection and management of trees that may pose a threat	All Hazards	City Manager	Medium	1,2	\$8,000 per year	Local, State	Five years	Not started, lack of funding





Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	to the city's routine maintenance system process, to ensure that the city infrastructure and population are secure during and after a natural hazard event.								
Garnett-13	Update the existing building code requirements for the City of Garnett that include wind-resistant design techniques for new construction and remodeling. Educate the public and contractors on code requirements through newsletters and city meetings.	All Hazards	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Garnett-14	Research funding options and consider completion of the city's long-range water supply plan by installing a water line from the Cedar Creek Reservoir to the City of Garnett Water Plant.	Utility/ Infrastructure Failure	City Manager	Medium	1,2,4	Unknown	Local, State, Federal	Five years	Not started, lack of funding
Garnett-15	Promote the construction of safe rooms in new construction and remodels through annual construction meetings and city newsletters.	Tornado, Windstorm	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Garnett-16	Research and develop a vegetation management control program for the Cedar Creek dam to prevent erosion and downstream flooding. (NFIP)	Flood	City Manager	Medium	1,2,4	\$5,000	Local, State	Five years	Not started, lack of funding
Garnett-17	Monitor, evaluate, and repair drainage systems in the areas of Garnett which have experience repetitive flooding. (NFIP)	Flood	City Manager	Medium	1,2	\$20,000	Local	Five years	Not started, lack of funding
Garnett-18	Research and recommend that developers perform a storm water analysis prior to new development in an effort to minimize storm water runoff. (NFIP)	Flood	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Garnett-19	Research, recommend and complete the enlargement of culvert and drain lines in areas of flooding to increase storm water capacity.	Flood	City Manager	Medium	1,2,4	\$40,000	Local	Five years	Not started, lack of funding





Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Garnett-20	Research and recommend amendments to current ordinances for installation of backflow prevention devices for all new construction in an effort to alleviate damage due to storm water backup. (NFIP)	Flood	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Garnett-21	Provide public education on hazardous weather situations, including lightning strikes, for residents to protect themselves, their property, and the community.	All Hazards	City Manager	High	3,4	Staff Time	Local	Five years	Not started, lack of funding
Garnett-22	Research, develop and implement a special needs program for emergency notification and individual preparedness instructions for special needs citizens, including emergency evacuations plans for special needs residents.	All Hazards	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Garnett-23	Seek funding for advanced warning systems for hazardous weather events to allow construction sites and citizens to take mitigating steps prior to the onset of hazardous weather.	All Hazards	City Manager	Medium	1,2	\$30,000	Local	Five years	Not started, lack of funding
Garnett-24	Research, develop and implement a plan for education and outreach to the public, including mailings, media outreach, and strategic partnerships, regarding pipeline safety risks.	All Hazards	City Manager	High	3,4	Staff Time	Local	Five years	Not started, lack of funding
Garnett-25	Research, develop and implement a plan for public education and personal responsibility for planning the evacuation of pets in the case of an emergency.	All Hazards	City Manager	High	3,4	Staff Time	Local	Five years	Not started, lack of funding
Garnett-26	Conduct a study to determine the efficacy of the existing warning siren system within the City of Garnett, and research funding options to maintain existing sirens or install	Tornado, Windstorm	City Manager	Medium	1,2,4	\$25,000	Local	Five years	Not started, lack of funding





Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	new sirens as necessary to ensure future area coverage.								
Greeley-1	Educate and promote local jurisdictional participation in the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Greeley-2	Advertise and promote the availability of flood insurance to property owners by direct mail annually. (NFIP)	Flood	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Greeley-3	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	City Manager	High	3,4	\$500	Local	Repeating	In progress
Greeley-4	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other community events drawing large crowds	All Hazards	City Manager	High	3,4	\$500 per workshop	Local, State, Federal	Repeating	In progress
Greeley-5	Encourage and seek funding for the design and construction of safe rooms.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Greeley-6	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Greeley-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	High	3,4	\$250 per year	Local, State, Federal	Repeating	In progress
Greeley-8	Coordinate county and local government mitigation efforts with RECs, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Utility/ Infrastructure Failure	City Manager	High	3,4	Staff Time	Local	Five years	Not started, lack of funding
Greeley-9	Continued participation in the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Greeley-10	Research funding options and consider the purchase of emergency generators and/or transfer switches to provide backup power for Critical Facilities.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding





Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Kincaid-1	Educate and promote local jurisdictional participation in the NFIP.	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Kincaid-2	Advertise and promote the availability of flood insurance to property owners by direct mail annually. (NFIP)	Flood	City Manager	High	3,4	\$250	Local	Repeating	In progress
Kincaid-3	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Kincaid-4	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other community events drawing large crowds	All Hazards	City Manager	High	3,4	\$500 per workshop	Local, State, Federal	Repeating	In progress
Kincaid-5	Encourage and seek funding for the design and construction of safe rooms in public and private schools, day care centers and senior care facilities.	Utility/ Infrastructure Failure	City Manager	High	1,2	\$500,000	Local, State, Federal	Repeating	In progress
Kincaid-6	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Kincaid-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	High	3,4	\$250	Local, State, Federal	Repeating	In progress
Kincaid-8	Coordinate county and local government mitigation efforts with RECs, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Utility/ Infrastructure Failure	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Kincaid-9	Research funding options to purchase emergency generators and/or transfer switches to provide backup power for Critical Facilities. during severe weather events.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	\$40,000	Local, State, Federal	Five years	Not started, lack of funding
Kincaid-10	Continued participation in the NFIP.	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding





Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Westphalia-1	Educate and promote local jurisdictional participation in the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Westphalia-2	Advertise and promote the availability of flood insurance to property owners by direct mail annually. (NFIP)	Flood	City Manager	High	3,4	\$500	Local	Repeating	In progress
Westphalia-3	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Westphalia-4	Annually host a public "hazards workshop" in combination with local festivals, fairs, or other community events drawing large crowds	All Hazards	City Manager	High	3,4	\$500 per workshop	Local, State, Federal	Repeating	In progress
Westphalia-5	Encourage and seek funding for the design and construction of safe rooms in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	\$500,000	Local, State, Federal	Repeating	In progress
Westphalia-6	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Westphalia-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	High	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Westphalia-8	Coordinate county and local government mitigation efforts with RECs, encourage identification of hazards potentially affecting their infrastructure, assessment of the vulnerabilities of the infrastructure to these hazards, and identification of mitigation strategies.	Utility/ Infrastructure Failure	City Manager	High	3,4	Staff Time	Local	Five years	Not started, lack of funding
Westphalia-9	Continued participation in the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Westphalia-10	Research funding options for the purchase of emergency generators and/or transfer switches to provide backup power for Critical Facilities.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	\$40,000	Local, State, Federal	Five years	Not started, lack of funding





Table 6.4: Anderson County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD365-1	Develop and fund mitigation projects for the construction of tornado safe rooms for Unified School District 365 schools.	Tornado	Superintendent	Low	1,2	\$1,500,000	Local, State, Federal	Five years	Not started, lack of funding
USD365-2	Seek funding to retain a professional school safety and security firm to review and update the school's Security Plan for domestic acts of terrorism, building security, and contagious disease response.	Terrorism/ Agri-Terrorism, Civil Disorder	Superintendent	Low	1,2	\$40,000	Local, State, Federal	Five years	Not started, lack of funding
USD365-3	Seek funding options for the purchase and installation of backup power generators for the schools of USD 365.	Utility/ Infrastructure Failure	Superintendent	Medium	1,2	\$40,000	Local, State, Federal	Five years	Not started, lack of funding
USD479-1	Develop and fund mitigation projects for the construction of tornado safe rooms for Unified School District 479 schools.	Tornado	Superintendent	Low	1,2	\$1,000,000	Local, State, Federal	Five years	Not started, lack of funding
US479-2	Seek funding options for the purchase and installation of backup power generators for the schools of USD 479.	Utility/ Infrastructure Failure	Superintendent	Medium	1,2	\$40,000	Local, State, Federal	Five years	Not started, lack of funding





6.8.2 – Coffey County and Participating Jurisdictions Mitigation Actions

Table 6.5: Coffey County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Coffey County-1	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Emergency Manager	High	3,4	Staff Time	Local	Repeating	In progress
Coffey County-2	Annually host a public “hazards exhibition” in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Emergency Manager	High	3,4	\$500 per workshop	Local	Repeating	In progress
Coffey County-3	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities and early alert systems.	Tornado, Windstorm	Emergency Manager	Low	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Coffey County-4	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Emergency Manager	High	3,4	Staff Time	Local	Repeating	In progress
Coffey County-5	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	Emergency Manager	Medium	3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Coffey County-6	Coordinate County and local government mitigation efforts with RECs	Utility/ Infrastructure Failure	Emergency Manager	High	4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Coffey County-7	Research, develop, and recommend a Comprehensive Land Use Plan for Coffey County. (NFIP)	Flood	Emergency Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Coffey County-8	Identify the County’s most at-risk critical facilities, and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	Emergency Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding





Table 6.5: Coffey County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Coffey County-9	Develop an annex to the LEOP for dam failure response and evacuation plan for high hazard dams in Coffey County.	Dam and Levee Failure	Emergency Manager	Medium	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding
Coffey County-10	Research and recommend appropriate building codes for the county that include wind-resistant design techniques for new construction.	Tornado, Windstorm	Emergency Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Coffey County-11	Conduct an inventory/survey for the emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
Coffey County-12	Public Wholesale Supply District 12 will continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. The Water District will also seek funding sources to mitigate damage to critical infrastructure, and seek funding for various water main improvement projects .	All Hazards	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	In progress
Coffey County-13	Osage County RWD No. 4 will continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. The Water District will also seek funding sources to mitigate damage to critical infrastructure, and seek funding for various water main improvement projects.	All Hazards	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	In progress
Coffey County-14	Anderson County RWD No. 4 will continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. The Water District will also seek funding	All Hazards	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	In progress





Table 6.5: Coffey County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	sources to mitigate damage to critical infrastructure and seek funding for various water main improvement projects.								
Coffey County-15	Anderson County RWD No. 5 will continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. The Water District will also seek funding sources to mitigate damage to critical infrastructure, and seek funding for various water main improvement projects.	All Hazards	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	In progress
Coffey County-16	Coffey County RWD No. 2 will continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. The Water District will also seek funding sources to mitigate damage to critical infrastructure, and seek funding for various water main improvement projects.	All Hazards	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	In progress
Coffey County-17	Coffey County RWD No. 3 will continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. The Water District will also seek funding sources to mitigate damage to critical infrastructure, and seek funding for various water main improvement projects.	All Hazards	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	In progress
Coffey County-18	Wilson County RWD No. 9 will continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. The Water District will also seek funding sources to mitigate damage to critical	All Hazards	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	In progress





Table 6.5: Coffey County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	infrastructure and seek funding for various water main improvement projects.								
Coffey County-19	Continued voluntary participation and compliance with the NFIP	Flood	NFIP Administrator	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Burlington-1	Burlington is committed to continued voluntary participation and compliance with the NFIP	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Burlington-2	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Burlington-3	Annually host a public “hazards exhibition” in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	High	3,4	\$500 per workshop	Local	Repeating	In progress
Burlington-4	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities and early alert systems.	Tornado, Windstorm	City Manager	Low	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Burlington-5	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Burlington-6	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	M	3,4	\$500	Local, State, Federal	Five years	Not started, lack of funding
Burlington-7	Coordinate County and local government mitigation efforts with RECs	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Burlington-8	Assess flood prone areas and recommend flood reduction measures to city planners (NFIP)	Flood	City Manager	Medium	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding





Table 6.5: Coffey County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Burlington-9	Review the current floodplain regulations and update as necessary (NFIP)	Flood	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Gridley-1	Gridley is committed to continued voluntary participation and compliance with the NFIP	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Gridley-2	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Gridley-3	Annually host a public “hazards exhibition” in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Gridley-4	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities and early alert systems.	Tornado, Windstorm	City Manager	Low	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Gridley-5	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Gridley-6	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	M	3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Gridley-7	Coordinate County and local government mitigation efforts with RECs	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Gridley-8	Assess flood prone areas and recommend flood reduction measures to city planners (NFIP)	Flood	City Manager	Medium	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding
Lebo-1	Lebo is committed to continued voluntary participation and compliance with the NFIP	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress





Table 6.5: Coffey County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Lebo-2	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Lebo-3	Annually host a public “hazards exhibition” in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	High	3,4	\$500 per workshop	Local	Repeating	In progress
Lebo-4	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities and early alert systems.	Tornado, Windstorm	City Manager	Low	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Lebo-5	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Lebo-6	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	M	3,4	\$250	Local, State, Federal	Five years	Not started, lack of funding
Lebo-7	Coordinate County and local government mitigation efforts with RECs	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Lebo-8	Assess flood prone areas and recommend flood reduction measures to city planners (NFIP)	Flood	City Manager	Medium	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding
LeRoy-1	LeRoy is committed to continued voluntary participation and compliance with the NFIP	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
LeRoy-2	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
LeRoy-3	Annually host a public “hazards exhibition” in combination with local	All Hazards	City Manager	High	3,4	\$500 per workshop	Local	Repeating	In progress





Table 6.5: Coffey County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	festivals, fairs, or other appropriate events drawing large crowds.								
LeRoy-4	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities and early alert systems.	Tornado, Windstorm	City Manager	Low	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
LeRoy-5	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
LeRoy-6	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	M	3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
LeRoy-7	Coordinate County and local government mitigation efforts with RECs	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
LeRoy-8	Assess flood prone areas and recommend flood reduction measures to city planners (NFIP)	Flood	City Manager	Medium	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding
New Strawn-1	New Strawn is committed to continued voluntary participation and compliance with the NFIP	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
New Strawn-2	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
New Strawn-3	Annually host a public "hazards exhibition" in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	High	3,4	\$500 per workshop	Local	Repeating	In progress
New Strawn-4	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities and early alert systems.	Tornado, Windstorm	City Manager	Low	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding





Table 6.5: Coffey County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
New Strawn-5	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
New Strawn-6	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	M	3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
New Strawn-7	Coordinate County and local government mitigation efforts with RECs	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
New Strawn-8	Assess flood prone areas and recommend flood reduction measures to city planners (NFIP)	Flood	City Manager	Medium	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding
Waverly-1	Waverly is committed to continued voluntary participation and compliance with the NFIP	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Waverly-2	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Waverly-3	Annually host a public "hazards exhibition" in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	High	3,4	\$500 per workshop	Local	Repeating	In progress
Waverly-4	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities and early alert systems.	Tornado, Windstorm	City Manager	Low	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Waverly-5	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Waverly-6	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	M	3,4	\$250	Local, State, Federal	Five years	Not started, lack of funding





Table 6.5: Coffey County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Waverly-7	Coordinate County and local government mitigation efforts with RECs	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Waverly-8	Assess flood prone areas and recommend flood reduction measures to city planners (NFIP)	Flood	City Manager	Medium	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding
USD243-1	Develop and fund mitigation projects for the construction of tornado safe rooms for USD 243 schools.	Tornado, Windstorm	Superintendent	Medium	1,2	\$1,000,000	FEMA	Five years	Not started, lack of funding
USD244-1	Develop and fund mitigation projects for the construction of tornado safe rooms for USD 244 schools.	Tornado, Windstorm	Superintendent	Medium	1,2	\$1,000,000	FEMA	Five years	Not started, lack of funding
USD245-1	Develop and fund mitigation projects for the construction of tornado safe rooms for USD 245 schools.	Tornado, Windstorm	Superintendent	Medium	1,2	\$1,000,000	FEMA	Five years	Not started, lack of funding





6.8.3 – Franklin County and Participating Jurisdictions Mitigation Actions

Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Franklin County-1	Educate and promote local jurisdictional participation in the NFIP .	Flood	County Planner	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Franklin County-2	Franklin County is committed to continued voluntary participation and compliance with the NFIP .	Flood	Emergency Manager	High	1,2,3,4	Staff Time	State, FEMA	Repeating	In progress
Franklin County-3	Prepare and adopt an Outdoor Warning Sirens Plan for the county. Seek funding to install new warning sirens in accordance with the plan recommendations.	Tornado, Windstorm	Emergency Manager	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
Franklin County-4	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners.	All Hazards	Emergency Manager	High	3,4	\$500	Local	Repeating	In progress
Franklin County-5	Coordinate county and local government mitigation efforts with RECs and Utilities,	Utility/ Infrastructure Failure	Emergency Manager	High	4	Staff Time	Local	Five years	Not started, lack of funding
Franklin County-6	Annually host a public "hazards workshop" for the residents of the jurisdictions, in combination with local festivals, fairs, or other events drawing large crowds.	All Hazards	Emergency Manager	Medium	3,4	\$1,000 per workshop	Local, State, Federal	Repeating	In progress
Franklin County-7	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	Emergency Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Franklin County-8	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	Emergency Manager	High	3,4	Staff Time	Local	Repeating	In progress
Franklin County-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism	Emergency Manager	High	3,4	Staff Time	Local, State, Federal	Repeating	In progress





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Franklin County-10	Identify the most at-risk vital / critical facilities, and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	Terrorism/ Agri-Terrorism, Civil Disorder	Emergency Manager	Medium	1,2,4	Staff Time	Local, State	Partially completed.	Not started, lack of funding, Critical facilities portion has been identified
Franklin County-12	Develop cross-departmental information collection capabilities, and incorporate cadastral (building/parcel) data utilizing a GIS	All Hazards	Emergency Manager	Medium	4	Staff Time	State	Five years	Not started, lack of funding
Franklin County-13	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. Franklin County will apply for grant funding to acquire flood-prone parcels of land as acquisition data becomes available. (NFIP)	Flood	Emergency Manager	High	1,2	Staff Time	Local, KDEM, FEMA	Five years	Not started, lack of funding
Franklin County-14	Contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program, in addition to other flood protection measures. (NFIP)	Flood	Emergency Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Franklin County-15	Advertise and promote the availability of flood insurance to county property owners (NFIP)	Flood	Emergency Manager	High	3,4	\$500	Local	Repeating	In progress
Franklin County-16	Regularly calculate and document the amount of flood prone property that is preserved as open space to reduce flood insurance burden to the county.	Flood	County Planner	High	1,2,4	Staff Time	Local	Repeating	In progress





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Franklin County-17	Identify flash-flood prone areas to consider flood reduction measures to city/county planners. (NFIP)	Flood	County Planner	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Franklin County-18	Research, design, and recommend an appropriate stream buffer ordinance to protect water resources and to limit future flood damages (NFIP)	Flood	County Planner	High	1,2	\$20,000	Local, State, Federal	Five years	Not started, lack of funding
Franklin County-19	Research and develop an ordinance/resolution to require the jurisdiction's Manufactured Housing and Travel Trailer Park Ordinance to install tornado shelters for major manufactured and/or mobile home parks.	Tornado, Windstorm	County Planner	High	1,2	Staff Time	Local	Five years	Not started, lack of funding
Franklin County-20	Develop and implement a wildfire prevention/education program.	Wildfire	Emergency Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress
Franklin County-21	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources.	Wildfire	Emergency Manager	High	4	Staff Time	Local	Five years	Not started, lack of funding, 2013 the MOUs were updated.
Franklin County-22	Evaluate the firefighting water supply resources within the County.	Wildfire	Emergency Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding, fire department received training on hauling and providing





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
									water supply.
Franklin County-23	Distribute assessment report examples provided by the Kansas Forest Service to applicable parties to develop an understanding of the Community Wildfire Protection Plan (CWPP). Recommend joining the program and completing an assessment report for approval.	Wildfire	Emergency Manager	High	1,2,3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Franklin County-24	Appoint a rural fire committee to schedule meetings with the Kansas Forest Service to map suspected hazardous wildfire areas in the county for potential participation in the CWPP.	Wildfire	Emergency Manager	Medium	4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Franklin-25	Incorporate wildfire maps, develop actions and projects for wildfire prevention, and complete an assessment report to meet CWPP requirements for submittal to the Kansas Forest Service.	Wildfire	Emergency Manager	Medium	1,2,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Franklin County-26	In cooperation with the City of Ottawa, implement a study to determine the residual flood risk in levee-protected areas (NFIP)	Flood	Floodplain Manager	Medium	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding
Franklin-27	The Franklin County RWD No. 6 will continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	All Hazards	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	In progress





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Franklin-28	The Franklin County RWD No. 2 will seek funding sources to mitigate damage to critical infrastructure, including water line enhancements and the replacement of water pumps. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	All Hazards	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	In progress
Lane-1	Educate and promote local jurisdictional participation in the NFIP .	Flood	County Planner	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Lane-2	The city of Lane is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA	Repeating	In progress
Lane-3	Prepare and adopt an Outdoor Warning Sirens Plan for the city. Seek funding to install new warning sirens in accordance with the plan recommendations.	Tornado, Windstorm	City Manager	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
Lane-4	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners,	All Hazards	City Manager	High	3,4	Staff time	Local	Repeating	In progress
Lane-5	Coordinate county and local government mitigation efforts with RECs and Utilities,	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local	Five years	Not started, lack of funding
Lane-6	Annually host a public "hazards workshop" for residents in combination with local festivals, fairs, or other events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$750 per workshop	Local, State, Federal	Repeating	In progress





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Lane-7	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Lane-8	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Lane-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	High	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Lane-10	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	All Hazards	City Manager	Medium	1,2,4	\$40,000	Local, State	Five years	Not started, lack of funding
Lane-11	Conduct inventory/survey for the county and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	City Manager	Medium	4	Staff Time	Local, State	Five years	Not started, lack of funding
Lane-12	Develop cross-departmental information collection capabilities, and incorporate cadastral data utilizing a GIS	All Hazards	City Manager	Medium	4	Staff Time	State	Five years	Not started, lack of funding
Lane-13	Appoint a planning committee to assess flood prone areas and recommend flood reduction measures to city officials. (NFIP)	Flood	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Lane-14	Investigate alternative methods of reducing flood impact to the generator located at the City of	Flood	City Manager	Medium	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	Lane sewage lift station or conduct a study to assess the possible relocation of the lift station due to flooding issues. (NFIP)								
Lane-15	Conduct a study to determine the efficacy of the existing warning siren system within the City of Lane and maintain existing sirens or install new sirens as necessary to ensure area coverage.	All Hazards	City Manager	Medium	1,2	\$25,000	Local	Five years	Not started, lack of funding
Lane-16	Conduct a study to determine the efficacy of the existing generators located within Critical Facility structures and consider funding options for any Critical Facilities that may require generators and/or transfer switches to maintain power in the event of severe weather events.	Utility/ Infrastructure Failure	City Manager	Medium	1,2,4	\$40,000	Local, State, Federal	Five years	Not started, lack of funding
Ottawa-1	The city of Ottawa is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Planner/Flood Plain Manager	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Ottawa-2	Prepare and adopt an Outdoor Warning Sirens Plan for the city. Seek funding to install new warning sirens in accordance with the plan recommendations.	Flood	City Planner/Floodplain Manager	High	1,2,3,4	Staff Time	State, FEMA	Repeating	In progress
Ottawa-3	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners,	Tornado, Windstorm	City Director of Utilities	Medium	1,2,4	\$65,000	Local	Five years	Not started, lack of funding
Ottawa-4	Coordinate county and local government mitigation efforts with RECs and Utilities.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Ottawa-5	Annually host a public "hazards workshop" for residents in combination with local festivals, fairs, or other events drawing large crowds.	Utility/ Infrastructure Failure	City Director of Utilities	High	4	Staff Time	Local	Five years	Not started, lack of funding





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Ottawa-6	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	All Hazards	City Fire Police and Planning Departments	Medium	3,4	\$500 per workshop	Local, State, Federal	Repeating	In progress
Ottawa-7	Educate residents about driving in winter storms and handling winter-related health effects.	Tornado, Windstorm	City Building Inspector	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Ottawa-8	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Ottawa-9	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	All Hazards	City Fire Department	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
Ottawa-10	Conduct inventory/survey for the county and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Operations Manager	Medium	4	Staff Time	Local, State	Five years	Not started, lack of funding
Ottawa-11	Develop cross-departmental information collection capabilities, and incorporate cadastral data utilizing a GIS	All Hazards	City Manager	Medium	4	Staff Time	State	Five years	Not started, lack of funding
Ottawa-12	Determine the residual flood risk in levee- protected areas. Levee owners or communities have the responsibility to provide documentation that a levee meets the requirements of Title 44 of the CFR, Section 65.10 of	Flood	Floodplain Manager	High	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	the NFIP regulations (44CFR Section 65.10) (NFIP)								
Ottawa-13	Assess flood prone areas and recommend flood reduction measures to city planners (NFIP)	Flood	City Planner	High	1,2	Staff Time	Local	Five years	Not started, lack of funding
Ottawa-14	The City of Ottawa will continue to operate and maintain their levee system in accordance with the provisional PM 43 certification requirements as approved by FEMA.	Dam and Levee Failure	Public Works	High	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Ottawa-15	Minimize flood damage to existing development by maximizing the effectiveness of the storm sewer infrastructure. Implement a routine maintenance schedule for community storm sewers, drainage channels, and detention facilities. (NFIP)	Flood	Public Works	Medium	1	Unknown	Local	Repeating	In progress
Ottawa-16	Conduct a study to determine the efficacy of the existing generators located within Critical Facility structures and consider funding options for any Critical Facilities that may require generators and/or transfer switches to maintain power in the event of severe weather events.	Utility / Infrastructure Failure	City Utility and Public Works Departments	Medium	1,2,4	\$30,000	Local, State, Federal	Five years	Not started, lack of funding
Ottawa-17	Incorporate the inspection and management of trees that may pose a threat to the city's routine maintenance system process.	Utility / Infrastructure Failure	City Utility Department	Medium	1,2	\$8,000	Local	Repeating	In progress
Ottawa-18	Acquisition of flood prone properties along Rock Creek. Acquisition and conservation of flood prone areas along creek will protect existing homes and development. (NFIP)	Flood	City Planner/Floodplain Manager	Medium	1,2,4	75,000	Unknown	Ten years	Not started, lack of funding
Pomona-1	The city of Pomona is committed to continued voluntary	Flood	County Planner	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	participation and compliance with the NFIP .								
Pomona-2	Prepare and adopt an Outdoor Warning Sirens Plan for the city. Seek funding to install new warning sirens in accordance with the plan recommendations.	Tornado, Windstorm	City Manager	Medium	1,2,4	\$75,000	Local	Five years	Not started, lack of funding
Pomona-3	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners,	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Pomona-4	Coordinate county and local government mitigation efforts with RECs and Utilities.	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local	Five years	Not started, lack of funding
Pomona-5	Annually host a public "hazards workshop" for residents in combination with local festivals, fairs, or other events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local, State, Federal	Repeating	In progress
Pomona-6	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Pomona-7	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Pomona-8	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	High	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Pomona-9	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to	All Hazards	City Manager	Medium	1,2,4	\$30,000	Local, State	Five years	Not started, lack of funding





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	maintain power in the event of severe weather events.								
Pomona-10	Conduct inventory/survey for the county and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
Pomona-11	Develop cross-departmental information collection capabilities, and incorporate cadastral data utilizing a GIS	All Hazards	City Manager	Medium	4	Staff Time	State	Five years	Not started, lack of funding
Pomona-12	Incorporate the inspection and management of trees that may pose a threat to the county's routine maintenance system process	Utility/ Infrastructure Failure	City Manager	Medium	1,2	\$8,000	Local	Repeating	In progress
Pomona-13	Conduct a study to determine the efficacy of the existing generators located within Critical Facility structures and consider funding options for any Critical Facilities that may require generators and/or transfer switches to maintain power in the event of severe weather events.	Utility/ Infrastructure Failure	City Manager	Medium	1,2,4	\$40,000	Local, State, Federal	Five years	Not started, lack of funding
Pomona-14	Promote the use of NOAA All Hazards Weather Radio for the entire community of Pomona. Seek funding to subsidize purchase and distribution of weather radios.	All Hazards	City Manager	Medium	1,2,3,4	\$15,000	Local, State, Federal	Repeating	In progress
Pomona-15	Conduct a study to determine the efficacy of the existing warning siren system within the City of Pomona and maintain existing sirens or install new sirens as necessary to ensure area coverage.	Tornado, Windstorm	City Manager	Medium	1,2,4	\$30,000	Local	Five years	Not started, lack of funding
Pomona-16	Seek funding to complete a stormwater drainage study/plan for the City of Pomona that will lead to a stormwater management ordinance. (NFIP)	Flood	City Manager	Medium	1,2	Unknown	Local, State, Federal	Five years	Not started, lack of funding





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Pomona-17	Research, develop, and recommend an ordinance/resolution to require installation of tornado shelters for major manufactured and/or mobile home parks with more than 10 mobile home spaces	Tornado, Windstorm	City Manager	High	1,2,4	\$500,000	Local	Five years	Not started, lack of funding
Pomona-18	Seek funding to retain an engineer to design a safe room within the Pomona City Hall and apply for grant funding for construction	Tornado	City Manager	Medium	1,2	\$25,000	Local, State, Federal	Five years	Not started, lack of funding
Princeton-1	The city of Princeton is committed to continued voluntary participation and compliance with the NFIP .	Flood	County Planner	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Princeton-2	Prepare and adopt an Outdoor Warning Sirens Plan for the city. Seek funding to install new warning sirens in accordance with the plan recommendations.	Tornado, Windstorm	City Manager	Medium	1,2,4	\$45,000	Local	Five years	Not started, lack of funding
Princeton-3	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners,	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Princeton-4	Coordinate county and local government mitigation efforts with RECs and Utilities.	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local	Five years	Not started, lack of funding
Princeton-5	Annually host a public "hazards workshop" for residents in combination with local festivals, fairs, or other events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local, State, Federal	Repeating	In progress
Princeton-6	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Princeton-7	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Princeton-8	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	High	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Princeton-9	Create additional acceptable community storm shelters for residents. Would like to construct a new City Hall with a storm shelter/safe room.	Tornado, Windstorm	City Clerk	High	1,2	\$1,000,000	Unknown	Five years	New
Princeton-10	Provide educational materials about natural hazards and risks in city utility bills.	All Hazards	City Clerk	High	3,4	Staff Time	Unknown	Five years	Not started, lack of funding
Princeton-11	Identify the most at-risk vital / critical facilities, and evaluate the potential mitigation techniques for protecting each facility in a cost effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	All Hazards	City Manager	Medium	1,2,4	Unknown	Local, State	Five years	Not started, lack of funding
Princeton-12	Conduct inventory/survey for the county and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
Princeton-13	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	City Manager	Medium	4	Staff Time	State	Five years	Not started, lack of funding
Princeton-14	Conduct a study to determine the efficiency of the existing warning siren system within the City of Princeton and maintain existing sirens or install new	Tornado, Windstorm	City Manager	Medium	1,2,4	\$30,000	Local	Five years	Not started, lack of funding





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	sirens as necessary to ensure area coverage.								
Princeton-15	Conduct a study to determine the efficacy of the existing generators located within Critical Facility structures and consider funding options for any Critical Facilities that may require generators and/or transfer switches to maintain power in the event of severe weather events.	Utility/ Infrastructure Failure	City Manager	Medium	1,2,4	\$15,000	Local, State, Federal	Five years	Not started, lack of funding
Princeton-16	Conduct a study to assess the periodic flooding of the City of Princeton sewage lagoons, which are located outside of the city limits. (NFIP)	Flood	City Manager	Medium	1,2,3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Rantoul-1	The city of Rantoul is committed to continued voluntary participation and compliance with the NFIP.	Flood	County Planner	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Rantoul-2	The city of Rantoul is committed to continued voluntary participation and compliance with the NFIP.	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA	Repeating	In progress
Rantoul-3	Prepare and adopt an Outdoor Warning Sirens Plan for the city. Seek funding to install new warning sirens in accordance with the plan recommendations.	Tornado, Windstorm	City Manager	Medium	1,2,4	\$45,000	Local	Five years	Not started, lack of funding
Rantoul-4	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners,	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Rantoul-5	Coordinate county and local government mitigation efforts with RECs and Utilities.	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local	Five years	Not started, lack of funding
Rantoul-6	Annually host a public "hazards workshop" for residents in combination with local festivals, fairs, or other events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local, State, Federal	Repeating	In progress





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rantoul-7	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Rantoul-8	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Rantoul-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism	City Manager	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
Rantoul-10	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	All Hazards	City Manager	Medium	4	Staff Time	State	Five years	Not started, lack of funding
Rantoul-11	Conduct inventory/survey for the county and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	City Manager	High	1,2,3,4	Staff Time	Local	Five years	Not started, lack of funding
Rantoul-12	Develop cross-departmental information collection capabilities, and incorporate cadastral data utilizing a GIS	All Hazards	City Manager	Medium	4	Staff Time	State	Five years	Not started, lack of funding
Rantoul-13	Assess flood prone areas and recommend flood reduction measures to city officials. (NFIP)	Flood	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Rantoul-14	Conduct a study to determine the efficacy of the existing warning siren system and maintain existing sirens or install new sirens as necessary to ensure area coverage.	Tornado, Windstorm	City Manager	Medium	1,2,4	\$30,000	Local	Five years	Not started, lack of funding





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rantoul-15	Conduct a study to determine the efficacy of the existing generators located within Critical Facility structures and consider funding options for any Critical Facilities that may require generators and/or transfer switches to maintain power in the event of severe weather events.	Utility/ Infrastructure Failure	City Manager	Medium	1,2,4	\$30,000	Local, State, Federal	Five years	Not started, lack of funding
Richmond-1	The city of Richmond is committed to continued voluntary participation and compliance with the NFIP .	Flood	County Planner	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Richmond-2	Prepare and adopt an Outdoor Warning Sirens Plan for the city. Seek funding to install new warning sirens in accordance with the plan recommendations.	Tornado, Windstorm	City Manager	Medium	1,2,4	\$45,000	Local	Five years	Not started, lack of funding
Richmond-3	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners,	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Richmond-4	Coordinate county and local government mitigation efforts with RECs and Utilities.	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Local	Five years	Not started, lack of funding
Richmond-5	Annually host a public "hazards workshop" for residents in combination with local festivals, fairs, or other events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local, State, Federal	Repeating	In progress
Richmond-6	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Richmond-7	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Richmond-8	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/Agri- -terrorism, Civil Disorder	City Manager	High	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Richmond-9	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	All Hazards	City Manager	Medium	1,2,4	\$30,000	Local, State	Five years	Not started, lack of funding
Richmond-10	Conduct inventory/survey for the county and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
Richmond-11	Develop cross-departmental information collection capabilities, and incorporate cadastral data utilizing a GIS	All Hazards	City Manager	Medium	4	Staff Time	State	Five years	Not started, lack of funding
Richmond-12	Conduct a study to determine the efficacy of the existing warning siren system within the City of Richmond and maintain existing sirens or install new sirens as necessary to ensure area coverage.	Tornado, Windstorm	City Manager	Medium	1,2,4	\$45,000	Local	Five years	Not started, lack of funding
Richmond-13	Conduct a study to determine the efficacy of the existing generators located within Critical Facility structures and consider funding options for any Critical Facilities that may require generators and/or transfer switches to maintain power in the event of severe weather events.	Utility/ Infrastructure Failure	City Manager	Medium	1,2,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Richmond-14	Assess flood prone areas and recommend flood reduction measures to city officials. (NFIP)	Flood	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Wellsville-1	The city of Wellsville is committed to continued voluntary participation and compliance with the NFIP .	Flood	County Planner	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Wellsville-2	The city of Wellsville is committed to continued voluntary participation and compliance with the NFIP.	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA	Repeating	In progress
Wellsville-3	Prepare and adopt an Outdoor Warning Sirens Plan for the city. Seek funding to install new warning sirens in accordance with the plan recommendations.	Tornado, Windstorm	City Manager	Medium	1,2,4	\$65,000	Local	Five years	Not started, lack of funding
Wellsville-4	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners,	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Wellsville-5	Coordinate county and local government mitigation efforts with RECs and Utilities.	Utility/Infrastructure Failure	City Manager	High	4	Staff Time	Local	Five years	Not started, lack of funding
Wellsville-6	Annually host a public "hazards workshop" for residents in combination with local festivals, fairs, or other events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local, State, Federal	Repeating	In progress
Wellsville-7	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Wellsville-8	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Wellsville-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	High	3,4	Staff Time	Local, State, Federal	Repeating	In progress





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Wellsville-10	Identify the most at-risk vital / critical facilities and evaluate the potential mitigation techniques for protecting each facility in a cost-effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
Wellsville-11	Conduct inventory/survey for the county and incorporated cities emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	City Manager	Medium	1,2,4	Staff time	Local, State	Five years	Not started, lack of funding
Wellsville-12	Develop cross-departmental information collection capabilities, and incorporate cadastral data utilizing a GIS	All Hazards	City Manager	Medium	4	Staff Time	State	Five years	Not started, lack of funding
Wellsville-13	Evaluate, and seek funding for the construction of community storm shelters for the city.	Tornado, Windstorm	City Manager	High	1,2	\$500 - \$5,000,000	State, FEMA, Federal	Five years	Not started, lack of funding
Williamsburg-1	The city of Williamsburg is committed to continued voluntary participation and compliance with the NFIP .	Flood	County Planner	High	1,2,3,4	Staff Time	Local, State	Repeating	In progress
Williamsburg-2	Prepare and adopt an Outdoor Warning Sirens Plan for the city. Seek funding to install new warning sirens in accordance with the plan recommendations.	Tornado, Windstorm	City Manager	Medium	1,2,4	\$30,000	Local	Five years	Not started, lack of funding
Williamsburg-3	Collect and distribute educational materials on individual and family preparedness / mitigation measures for property owners,	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Williamsburg-4	Coordinate county and local government mitigation efforts with RECs and Utilities.	Utility/ Infrastructure Failure	City Manager	High	4	Staff time	Local	Five years	Not started, lack of funding





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Williamsburg-5	Encourage the construction of safe rooms and storm shelters in mobile home parks and public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Williamsburg-6	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism	City Manager	High	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Williamsburg-7	Identify the most at-risk vital / critical facilities, and evaluate the potential mitigation techniques for protecting each facility in a cost effective manner. Also seek funding sources options for generators and/or transfer switches to maintain power in the event of severe weather events.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local, State	Five years	Not started, lack of funding
USD287-1	Develop and fund mitigation projects for the construction of tornado safe rooms for Unified School District 287 schools.	Tornado	Superintendent	Medium	1,2	\$1,000,000	Local, State, Federal	Five years	Not started, lack of funding
USD287-2	Obtain funding for the purchase and installation of backup power generators and/or transfer switches for the schools of USD 287.	Utility/ Infrastructure Failure	Superintendent	Medium	1,2	\$45,000	Local, State, Federal	Five years	Not started, lack of funding
USD288-1	Develop and fund mitigation projects for the construction of tornado safe rooms for Unified School District 288 schools.	Tornado	District Emergency Coordinator	Medium	1,2	\$45,000	Local, State, Federal	Four years	Not started, lack of funding
USD288-2	Obtain funding for the purchase and installation of backup power generators and/or transfer switches for the schools of USD 288.	Utility/ Infrastructure Failure	District Emergency Coordinator	Medium	1,2	\$45,000	Local, State, Federal	Five years	Not started, lack of funding
USD288-3	Purchase and install outdoor warning system for all school buildings	Tornado, Lightning, Windstorm	District Emergency Coordinator	Medium	1,2	\$20,000	Local, State, Federal	Three years	Not started, lack of funding





Table 6.6: Franklin County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD289-1	Backflow valves. Work with contractor to fix issues.	Utility/Infrastructure Failure	Head of Maintenance	High	1,2	\$10,000	Local, State, Federal	Three years	Not started, lack of funding
USD289-2	Evaluate buildings for safe areas. Determine if action is needed to keep our students safe. Get different experts to look at buildings and get ideas of what to do.	All Hazards	Superintendent	Medium	1,2,4	Staff time	Local, State, Federal	Three years	Not started, lack of funding
USD289-3	Develop and fund mitigation projects for the construction of tornado safe rooms for Unified School District 289 schools.	Tornado	Superintendent	Medium	1,2	\$1,000,000	Local, State, Federal	Four years	Not started, lack of funding
USD290-1	Develop and fund mitigation projects for the construction of tornado safe rooms for Unified School District 290 schools.	Tornado	Superintendent	Medium	1,2	\$1,000,000	Local, State, Federal	Five years	Not started, lack of funding
USD290-2	Obtain funding for the purchase and installation of backup power generators and/or transfer switches for the schools of USD 290.	Utility/Infrastructure Failure	Superintendent	Medium	1,2	\$25,000	Local, State, Federal	Five years	Not started, lack of funding
RWD6-1	Seek funding to purchase generators and/or transfer switches to maintain power in the event of severe weather events.	Utility/Infrastructure Failure	Manager	High	1,2	Unknown	Unknown	Repeating	Not started, lack of funding





6.8.4– Linn County and Participating Jurisdictions Mitigation Actions

Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Linn County-1	Linn County is committed to continued voluntary participation and compliance with the National Flood Insurance Program (NFIP).	Flood	Public Works Administrator	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Linn County-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program, in addition to other flood protection measures. (NFIP)	Flood	Public Works Administrator	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Linn County-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	Public Works Administrator	High	3,4	Staff Time	Local	Repeating	In progress
Linn County-4	Prepare and adopt an Outdoor Warning Sirens Plan for the county. Seek funding to install new warning sirens in accordance with the plan recommendations.	Tornado	Emergency Management Coordinator	High	1,2,4	\$45,000	Local, State, Federal	Five years	Not started, lack of funding
Linn County-5	Collect and distribute educational materials on individual and family preparedness/mitigation measures for property owners.	All Hazards	Emergency Management Coordinator	High	3,4	Staff Time	Local	Repeating	In progress
Linn County-6	Identify the jurisdiction's most at-risk critical facilities and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	Emergency Management Coordinator	Medium	1,2,4	Staff Time	Local	Repeating	In progress
Linn County-7	Annually host a public "hazards workshop" for the residents of the jurisdictions, in combination with local festivals, fairs, or other County	All Hazards	Emergency Management Coordinator	Medium	3,4	\$500 per workshop	Local	Repeating	In progress





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	or community events drawing large crowds.								
Linn County-8	Encourage the construction of safe rooms and storm shelters in public and private schools, day care centers, and senior care facilities and senior centers and communities.	Tornado, Windstorm	Emergency Management Coordinator	High	1,2	Staff Time	Local, State, Federal	Repeating	Not started, lack of funding
Linn County-9	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	Emergency Management Coordinator	High	3,4	Staff Time	Local	Repeating	In progress
Linn County-10	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues	Terrorism/ Agri-Terrorism, Civil Disorder	Emergency Management Coordinator	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Linn County-11	Form a planning committee to develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams/levees in the jurisdiction.	Dam and Levee Failure	Emergency Management Coordinator	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Linn County-12	Coordinate mitigation efforts with RECs.	Utility/ Infrastructure Failure	Emergency Management Coordinator	High	1,2,4	Staff Time	Local	Repeating	In progress
Linn County-13	Heartland Rural Electric Cooperative requires upgrade and enhancement of existing power lines to protect infrastructure and future exposure to natural hazards. Replacement of (33) miles of CWC single-phase line of enhanced design. The (33) miles selected met several points of prioritization and evaluation and represent a small percentage of total CWC miles in the Heartland distribution system. Replacing the (33) miles would significantly mitigate losses due to damages and greatly enhance	Utility/ Infrastructure Failure	Emergency Management Coordinator / REC Director	High	1,2	\$627,000	FEMA	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	reliability in the surrounding areas. The aged CWC construction has sustained much damage over the years and was not built to current and acceptable standards. Nearly all of HREC’s membership in the county would directly if not indirectly benefit from improved safety and improved reliability of such replacements.								
Linn County-14	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. Land acquisition is an effective mitigation technique to permanently eliminate the potential for damages from future flood events. The County can apply for grant funding to acquire flood-prone parcels of land from voluntary and willing property owners.	Flood	Public Works Administrator	High	1,2	Unknown	Local, State, Federal	Repeating	In progress
Linn County-15	Initiate a planning committee to identify flash-flood prone areas to consider flood reduction measures to planners. (NFIP)	Flood	Public Works Administrator	Medium	1,2,4	Staff time	Local	Five years	Not started, lack of funding
Linn County-16	Conduct an inventory/survey for the county’s emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Management Coordinator	Medium	1,2,4	Staff Time	Local, State	Repeating	In progress





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Linn County-17	Research and recommend an ordinance/ resolution to require installation of tornado shelters for new major manufactured and/or mobile home parks with more than 30 mobile home spaces.	Tornado, Windstorm	Emergency Management Coordinator	Medium	1,2,4	Staff Time	Local, State, Federal	Three years	Not started, lack of funding
Linn County-18	Develop cross-departmental information collection capabilities, and incorporate cadastral data utilizing GIS	All Hazards	GIS Director	High	4	Staff Time	Local, State, Grants	Repeating	In progress
Linn County-19	Develop and implement a wildfire prevention/education program.	Wildfire	Emergency Management Coordinator	Medium	3,4	\$500 per year	Local	Repeating	In progress
Linn County-20	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources, including existing auto aid agreements.	Wildfire	Emergency Management Coordinator	Medium	4	Staff Time	Local	Repeating	In progress
Linn County-21	Create a working group to evaluate the firefighting water supply resources within the jurisdiction, including both fixed and mobile supply issues.	Wildfire	Emergency Management Coordinator	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Linn County-22	Conduct a study to determine what County structures are or may be damaged due to expansive soils, determine (engineer) solutions or abatements for the damage and implement designed solutions to prevent future or further damage to County owned facilities and infrastructure.	Expansive Soils	Emergency Management Coordinator	Low	1,2	Staff Time	Unknown	Five years	Not started, lack of funding
BlueMound-1	Blue Mound is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff time	State, FEMA, Grants	Repeating	In progress





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
BlueMound-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program.	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
BlueMound-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
BlueMound-4	Collect educational materials on individual and family preparedness/mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff time	Local	Repeating	In progress
BlueMound-5	Identify the jurisdiction's most at-risk critical facilities and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	Public Works Director	Medium	1,2,4	Staff Time	Local	Repeating	In progress
BlueMound-6	Annually host a public "hazards workshop" for the residents of the jurisdictions, in combination with local festivals, fairs, or other County or community events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress
BlueMound-7	Encourage the construction of safe rooms and tornado shelters in critical facilities that are accessible to the community.	Tornado	City Manager	High	1,2	\$250,000	Local, State, FEMA	Five years	Not started, lack of funding
BlueMound-8	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
BlueMound-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
BlueMound-10	Assist county in forming a planning committee to develop an annex to the LEOP for dam/levee failure response	Dam and Levee Failure	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	and evacuation plans for high hazard dams/levees in the jurisdiction.								
BlueMound-11	Incorporate the inspection and management of trees that may threaten infrastructure into the city's routine maintenance process.	All Hazards	City Manager	Medium	1,2	\$8,000	Local	Five years	Partially completed - on an as needed basis
BlueMound-12	Appoint a planning committee to assess flood prone areas and recommend flood reduction measures to city planners. (NFIP)	Flood	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
BlueMound-13	Periodically conduct inventory / survey for the city's emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment, or required resources, and also create a list of private resources in the event of an emergency. Seek funding for shortfalls after the completion of inventory analysis.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
BlueMound-14	Develop and fund mitigation projects for the installation of backup generators at the Senior Center to prevent loss of electrical power and services from severe weather events.	Utility/ Infrastructure Failure	City Manager	High	1,2	\$30,000	Local, State, Federal	Five years	Not started, lack of funding
BlueMound-15	Upgrade electric power lines. This is needed because the system is aging and becoming susceptible to ice storms and high wind events during storms.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	\$500,00	Local, State, Federal	Five years	Not started, lack of funding
BlueMound-16	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	Unknown	Local, State, Federal	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
LaCynge-1	La Cygne is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
LaCynge-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
LaCynge-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
LaCynge-4	Collect educational materials on individual and family preparedness/mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
LaCynge-5	Identify the jurisdiction's most at-risk critical facilities and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local	Repeating	In progress
LaCynge-6	Annually host a public "hazards workshop" for the residents of the jurisdictions, in combination with local festivals, fairs, or other County or community events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress
LaCynge-7	Construct safe rooms and tornado shelters that are accessible to the community.	Tornado	Emergency Management Chair	Medium	1,2,4	900000	Local, State, Federal	Five years	Not started, lack of funding
LaCynge-8	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
LaCynge-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
LaCyngge-10	Form a planning committee to develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams/levees in the jurisdiction.	Dam and Levee Failure	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
LaCyngge-11	Promote the use of weather radios in commercial, city and residential buildings. Seek funding to purchase and initiate the program	Tornado	Emergency Management Chair	High	1,2	15000	FEMA	Two years	Not started, lack of funding
LaCyngge-12	Appoint a committee to conduct a security assessment survey for La Cygne's gas and water service supply system to evaluate potential terrorist and bio-terrorism exposure and develop a plan to secure and protect the water supply. Seek funding to implement study results.	Terrorism/ Agri-Terrorism, Civil Disorder	Emergency Management Chair	Medium	1,2,4	5000	Local, State, Federal	Three years	Not started, lack of funding
LaCyngge-13	Appoint a committee to assess flood prone areas and recommend flood reduction measures to city planners. Seek funding for retention projects to decrease exposure to flooding (NFIP)	Flood	Emergency Management Chair	Medium	1,2,4	80000	Local, State, Federal	Three years	Not started, lack of funding
LaCyngge-14	Conduct an inventory/survey for the jurisdiction's emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Management Chair	Medium	1,2,4	5000	Local, State	One year	Not started, lack of funding
LaCyngge-15	In the event of an emergency requiring evacuation of the city and its residents, a plan should be developed to accomplish the evacuation. Develop a plan, along with Linn County Emergency Management, to coordinate a plan of evacuation in the least amount of time possible, with the least amount of traffic congestion possible.	Dam and Levee Failure	Emergency Management Chair	Medium	1,2,4	5000	Local	Two years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
LaCynge-16	A committee should be formed or appointed to conduct a study to determine feasibility and cost of replacing existing overhead primary electric lines to underground.	Utility/ Infrastructure Failure	Emergency Management Chair	Low	1,2,4	Unknown	Local, State, Federal	Five years	Not started, lack of funding
LaCynge-17	Identify critical facilities that are vulnerable to natural and man-made hazards. Determine what actions or improvements may be made to the facilities to make them less vulnerable.	Flood, Tornado, Wildfire	Emergency Management Chair	High	1,2	5000	Local	Five years	Not started, lack of funding
LaCynge-18	Identify possible funding sources for projects related to hazard mitigation. Specific plans cannot be formulated until we are able to identify and study the hazards to which we are most vulnerable.	Wildfire, Winter Storm, Windstorm, Tornado, Hail, Hazardous Material	Emergency Management Chair	High	1,2	Staff Time	Local	Five years	Not started, lack of funding
LaCynge-19	Emergency generators. Determine size of emergency power supply needed to operate City Hall and Public Works; purchase and install.	Utility/ Infrastructure Failure	Emergency management Chair	High	1,2	100000	Local, State, Federal	Five years	Not started, lack of funding
LaCynge-20	Determine how we can prevent lightning strikes and/or electrical failure problems. Install whatever protective equipment necessary.	Utility/ Infrastructure Failure	Emergency Management Chair	High	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
LaCynge-21	Study should be conducted to determine the vulnerability of critical infrastructure and lifeline utilities, including water and gas distribution systems, to identify and prioritize projects for risk reduction.	Utility/ Infrastructure Failure	Emergency Management Chair	High	1,2	\$20,000	Local, State, Federal	Five years	Not started, lack of funding
LaCynge-22	Study should be conducted to determine the vulnerability of critical facilities, including police and fire, to identify and prioritize projects for risk reduction.	Utility/ Infrastructure Failure	Emergency Management Chair	High	1,2	Staff Time	Local	Five years	Not started, lack of funding
LaCynge-23	Canvass the population to determine those individuals who are considered	All Hazards	Emergency Management Chair	High	1,2	Staff Time	Local	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	vulnerable needs to provide aid as required.								
LaCyngge-24	Drainage needs to be evaluated and a plan of remedy developed. Perform a street-by-street study/evaluation of all drainage and storm sewer systems to determine what action should be taken to minimize damage. (NFIP)	Flood	Emergency Management Chair	Medium	1,2	Unknown	Local	Five years	Not started, lack of funding
LaCyngge-25	Update flood damage prevention ordinance to include new FEMA digital flood insurance rate maps. (NFIP)	Flood	Emergency Management Chair	Medium	1,2	5000	Local	Five years	Not started, lack of funding
LaCyngge-26	Provide educational materials about natural hazards and risks in La Cygne to customers in utility bills. Prepare and distribute informational brochures for potential hazardous situations.	All Hazards	Emergency Management Chair	Medium	1,2	3500	Local	Five years	Not started, lack of funding
LaCyngge-27	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures (fencing, buildings, etc.) for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	Unknown	Local, State, Federal	Five years	Not started, lack of funding
LinnValley-1	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through FEMA program. (NFIP)	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
LinnValley-2	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
LinnValley-3	Identify the jurisdiction's most at-risk critical facilities and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	City Manager	Medium	1,2,4	Staff time	Local	Repeating	In progress





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
LinnValley-4	Annually host a public "hazards workshop" for the residents of the jurisdictions, in combination with local festivals, fairs, or other County or community events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress
LinnValley-5	Encourage the construction of safe rooms and storm shelters in public and private schools, day care centers, and senior care facilities and senior centers and communities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
LinnValley-6	Educate residents about driving in winter storms and handling winter-related health effects	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
LinnValley-7	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
LinnValley-8	Form a planning committee to develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams/levees in the jurisdiction.	Dam and Levee Failure	City Manager	High	1,2,4	Staff time	Local	Five years	Not started, lack of funding
LinnValley-9	Continued participation in the NFIP .	Flood	City Manager	High	1,2,4	Staff Time	Local	Three years	Not started, lack of funding
LinnValley-10	Appoint a planning committee to develop and submit an EAP for the Linn Valley Estates Dam NO. 4, State identification number: KS07341. Approval is granted through the DWR - State Engineering Office.	Dam and Levee Failure	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
LinnValley-11	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures (fencing,	Utility/ Infrastructure Failure	City Manager	Medium	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	buildings, etc.) for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.								
MoundCity-1	Mound City is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
MoundCity-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
MoundCity-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
MoundCity-4	Collect educational materials on individual and family preparedness/mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
MoundCity-5	Identify the jurisdiction's most at-risk critical facilities and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local	Repeating	In progress
MoundCity-6	Annually host a public "hazards workshop" for the residents of the jurisdictions, in combination with local festivals, fairs, or other County or community events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress
MoundCity-7	Seek funding to design and build a Safe Room(s) for the community of Mound City.	Tornado	City Manager	Medium	1,2	\$800,000	Local, State, Federal	Five years	Not started, lack of funding
MoundCity-8	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
MoundCity-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
MoundCity-10	Form a planning committee to develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams/levees in the jurisdiction.	Dam and Levee Failure	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
MoundCity-11	Maintain and add additional outdoor warning sirens as the city grows.	Tornado, Windstorm	City Manager	Medium	1,2	\$20,000	Local, State, Federal	Repeating	In progress
MoundCity-12	Initiate a planning committee to identify flash-flood prone areas to consider flood reduction measures to jurisdiction planners. (NFIP)	Flood	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
MoundCity-13	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures (fencing, buildings, etc.) for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Parker-1	Parker is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Parker-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program, in addition to other flood protection measures. (NFIP)	Flood	City Manager	High	1,2,3,4	Staff time	Local	Repeating	In progress
Parker-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	City Manager	High	3,4	Staff Time	Local	Repeating	In progress





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Parker-4	Collect educational materials on individual and family preparedness/mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Parker-5	Identify the jurisdiction's most at-risk critical facilities and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local	Repeating	In progress
Parker-6	Annually host a public "hazards workshop" for the residents of the jurisdictions, in combination with local festivals, fairs, or other County or community events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress
Parker-7	Seek funding to design and build Safe Rooms for the town of Parker.	Tornado	City Manager	Medium	1,2	\$500,000	State, FEMA	Five years	Not started, lack of funding
Parker-8	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Parker-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Parker-10	Form a planning committee to develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams/levees in the jurisdiction.	Dam and Levee Failure	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Parker-11	Promote the use of weather radios in commercial, city and residential buildings. Seek funding to implement program.	Tornado	City Manager	High	1,2	\$1000	FEMA	Five years	Not started, lack of funding
Parker-12	Appoint a planning committee to assess flood prone areas and recommend flood	Flood	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	reduction measures to city planners. (NFIP)								
Parker-13	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures (fencing, buildings, etc.) for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Pleasanton-1	Continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Pleasanton-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	City Manager	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Pleasanton-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Pleasanton-4	Collect educational materials on individual and family preparedness/ mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Pleasanton-5	Identify the jurisdiction's most at-risk critical facilities and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local	Repeating	In progress
Pleasanton-6	Annually host a public "hazards workshop" for the residents of the jurisdictions, in combination with local festivals, fairs, or other County or community events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Pleasanton-7	Seek funding to design and build Safe Rooms for the town.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Pleasanton-8	Educate residents about driving in winter storms and handling winter-related health effects.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Pleasanton-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Dam and Levee Failure	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Pleasanton-10	Conduct a study of the existing storm warning system and seek funding to upgrade or replace the warning sirens for the City of Pleasanton.	Tornado	City Manager	High	1,2	\$25,000	Local, State, Federal	Five years	Not started, lack of funding
Pleasanton-11	Identify specific critical facilities that could serve as tornado shelters, and seek funding to design and build safe rooms for the citizens of Pleasanton.	Tornado	City Manager	Medium	1,2	\$500,000	State, FEMA	Five years	Not started, lack of funding
Pleasanton-12	Initiate a planning committee to identify flash-flood prone areas to consider flood reduction measures to jurisdiction planners. (NFIP)	Flood	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Pleasanton-13	Appoint a planning committee to develop and submit an EAP for the Pleasanton Lake/West Upper Dam, NID: KS02498. Approval is granted through the KDA-DWR - State Engineering Office.	Dam and Levee Failure	City Manager	High	1,2,4	Staff Time	Local	Three years	Not started, lack of funding
Pleasanton-14	East Pleasanton Lake Spillway Restoration Project. Construct a bridge over the spillway structure and repair/rehabilitate the spillway to stop the migration of water that is undercutting the emergency spillway.	Dam and Levee Failure, Flood	City Manager	High	1,2	\$500,000	Unknown	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Pleasanton-15	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures (fencing, buildings, etc.) for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	Unknown	Local, State, Federal	Five years	Not started, lack of funding
Prescott-1	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	City Manager	High	1,2,3,4	Unknown	Local	Repeating	In progress
Prescott-2	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Prescott-4	Collect educational materials on individual and family preparedness/ mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Prescott-5	Identify the jurisdiction's most at-risk critical facilities and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	City Manager	Medium	1,2,4	Staff Time	Local	Repeating	In progress
Prescott-6	Annually host a public "hazards workshop" for the residents of the jurisdictions, in combination with local festivals, fairs, or other County or community events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress
Prescott-7	Seek funding to design and build Safe Rooms for the town.	Tornado	City Manager	High	1,2	\$15,000	FEMA	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Prescott-8	Educate residents about driving in winter storms and handling winter-related health effects.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Prescott-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Prescott-10	Form a planning committee to develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams/levees in the jurisdiction.	Dam and Levee Failure	City Manager	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Prescott-11	Seek funding for the purchase of backup generators to provide electricity to shelters during periods of utility failure.	Winter Storm	City Manager	High	1,2	\$30,000	Local, State, Federal	Five years	Not started, lack of funding
Prescott-12	Seek funding for an assessment of alternative city lighting and other safety measures that can be taken during utility failure. Seek the funding to implement findings of the assessment.	Winter Storm, Utility/ Infrastructure Failure	City Manager	High	1,2	Unknown	FEMA, Grants	Five years	Not started, lack of funding
Prescott-13	Work with the local electric providers to inspect and reposition as many utility lines as possible underground. Consider a local ordinance to require the placement of all new utility lines underground.	Winter Storm, Utility/ Infrastructure Failure	City Manager	High	1,2	Unknown	FEMA, Grants	Five years	Not started, lack of funding
Prescott-15	Initiate a planning committee to identify flash-flood prone areas to consider flood reduction measures to jurisdiction planners. (NFIP)	Flood	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Prescott-16	Prescott has many areas containing expansive soils that cause significant damage to facilities and infrastructure during times of excessive moisture or drought conditions. The solution to this problem is to conduct a study to	Expansive Soils	City Manager	Low	1,2,4	Staff Time	Unknown	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	determine what City structures are or may be damaged due to these expansive soils, determine (engineer) solutions or abatements for the damage and implement designed solutions to prevent future or further damage to City owned facilities and infrastructure.								
Prescott-17	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures (fencing, buildings, etc.) for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	Unknown	Local, State, Federal	Five years	Not started, lack of funding
Prescott-18	Continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
USD344-1	Develop and fund mitigation projects for the construction of tornado safe rooms in Unified School District 344 schools.	Tornado	Superintendent	Medium	1,2	\$1,000,000	Local, State, Federal	Five years	Not started, lack of funding
USD344-2	Assess elevations and water flow in the district to qualify the benefit of flood control projects in the district. The Pleasanton Unified School District #344 would like to analyze the potential benefits of constructing soil-based berms, and other flood control projects, around various facilities in the district to mitigate the effects from potential flooding.	Flood	Superintendent	Medium	1,2	Staff Time	Local, State, Federal	Five years	Partially completed.
USD346-2	Purchase and install emergency generators at all school buildings.	Utility/ Infrastructure Failure, Extreme Temperatures	Superintendent	Medium	1,2	\$50,000	Unknown	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD346-3	Purchase and install recommended equipment Lightning/Electrical Equipment Protection as per consultant recommendation.	Utility/ Infrastructure Failure, Lightning	Superintendent	High	1,2	Unknown	Unknown	Five years	Not started, lack of funding
USD346-4	Upgrade/Expand/Improve Storm Water Management Systems.	Utility/ Infrastructure Failure, Flood	Superintendent	Medium	1,2	Unknown	Unknown	Five years	Not started, lack of funding
USD362-1	Develop and fund mitigation projects for the construction of tornado safe rooms in Unified School District 362 schools.	Tornado	Superintendent	Medium	1,2	\$1,000,000	Local, State, Federal	Five years	Not started, lack of funding
USD362-2	Drought has caused buildings to settle, leading to cracked foundations, walls, floors and broken windows. The problem can be solved by piling the foundation to bedrock.	Drought, Expansive Soils	Superintendent	High	1,2	90000	Unknown	Five years	Not started, lack of funding
USD362-3	Heavy snows have increased the time it takes to remove snow and to reopen schools. Besides the loss of instructional time, schools may be used as shelters during catastrophes. In addition to the equipment on hand, we would need a four wheel drive tractor along with a snow thrower.	Winter Storm	Superintendent	High	1,2	\$70,000	Unknown	Five years	Not started, lack of funding
USD362-4	Lightning/Electrical Equipment Protection. The school district continues to sustain damage to electronic and computer equipment as a result of damage sustained in lightning events. Evaluate cost effective solutions to assure protection of electrical and building systems during lightning storms. The district would then need to purchase and install recommended equipment.	Utility/ Infrastructure Failure	Superintendent	High	1, 2	Unknown	Unknown	Five years	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD362-5	Emergency Generator Back Up Power at Critical Facilities during power loss events it is essential to keep school facilities operating. Identify all school facilities and that lack adequate emergency generator back up power. Determine minimum needs in regards to sizing of backup generator. Establish timeline and funding to install emergency backup generators in all identified facilities.	Utility/ Infrastructure Failure	Superintendent	High	1, 2	\$30,000	Local, State and Federal	Five years	Not started, lack of funding
RWD1-1	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures (fencing, buildings, etc.) for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	District Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	Not started, lack of funding
RWD2-1	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures (fencing, buildings, etc.) for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	District Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	Not started, lack of funding
RWD3-1	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures (fencing, buildings, etc.) for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	District Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
RWD3-2	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment, as well as the possibility of enclosures (fencing, buildings, etc.) for distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	District Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	Not started, lack of funding
WSD13-1	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. Assess the demands that may be placed on Water Supply District #13's distribution lines, systems, and equipment by Linn County's growing population, and seek funding sources to mitigate any damage to critical infrastructure.	Utility/ Infrastructure Failure	Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	Not started, lack of funding
WSD13-2	Provide Backup Power. Loss of electrical power will cause citizens to lose potable water supply. Purchase generators for remote locations.	Utility/ Infrastructure Failure	Manager	High	1,2	\$200,000	Unknown	Two years	Not started, lack of funding
WSD13-3	Seek Financing and technical assistance for hazard mitigation projects. System vulnerable to service interruptions. Acquire funds for study to implement plans.	Utility/ Infrastructure Failure	Manager	High	1,2	Unknown	Unknown	One year	Not started, lack of funding
WSD13-4	Identify critical facilities vulnerable to hazards. Be proactive on future problems. Acquire knowledge to stop problems before they happen.	Utility/ Infrastructure Failure	Manager	High	1,2	\$10,000	Unknown	One year	Not started, lack of funding
WSD13-5	Conduct regular dam maintenance. Ensure that the Critzer Dam remains safe in the future. Funds are not available for future dam maintenance. Acquire funding for future dam maintenance program.	Dam and Levee Failure	Manager	High	1,2	\$10,000	Unknown	One year	Not started, lack of funding





Table 6.7: Linn County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
WSD13-6	Evaluate cost effective solutions to assure protection of electric and building systems in lightning storms.	Utility/ Infrastructure Failure	Manager	High	1,2	\$100,000	Unknown	Two years	Not started, lack of funding





6.8.5 – Miami County and Participating Jurisdictions Mitigation Actions

Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Miami County-1	Educate and promote local jurisdictional participation in the NFIP .	Wildfire	Louisburg Fire Chief	High	1,2,4	None	None	One year	In progress
Miami County-2	Educate on the Community Rating System. On an annual basis, property owners identified to be in high risk flood areas will be contacted and informed of the availability of flood insurance. (NFIP)	Flood	CFM/Planner	High	1,2,3,4	Staff Time	Local, State, Federal	Repeating	In progress
Miami County-3	Miami County is committed to continued voluntary participation and compliance with the NFIP . The County will adopt and enforce floodplain management regulations that meet or exceed the minimum requirements of the program.	Flood	Emergency Management Coordinator	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Miami County-4	Evaluate each area to determine causes and potential remediation measures to reduce or eliminate the flash flood potential. Develop long term plans to complete identified remediation measures. (NFIP)	Flood	Project Manager	High	1,2	\$500,000 annual	Local, State, Federal	Repeating	Not started, lack of funding
Miami County-5	Evaluate the current needs of river level monitoring and pursue funding to provide additional monitoring stations to provide early warning of rising waters. (NFIP)	Flood	CFM/Planner	High	1,2,3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Miami County-6	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	Emergency Management Coordinator	High	1,2	Unknown	Local, State, Federal	Three years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Miami County-7	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	County and City Planners	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Miami County-8	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	CFM/Planner	High	1,2	Dependent on Fair Market Value	Local, State, Federal	Repeating	Not started, lack of funding
Miami County-9	Develop a plan to lower the ISO rating County wide.	Wildfire	County and City Planners	High	3,4	Staff Time	Local	Repeating	In progress
Miami County-10	Collect educational materials on individual and family preparedness /mitigation measures for property owners.	All Hazards	Emergency Management Coordinator	High	3,4	Staff Time	Local	Repeating	In progress
Miami County-11	Evaluate funding options to connect all residents in Fontana Kansas to a rural water supply.	Utility/ Infrastructure Failure	Emergency Management Coordinator	High	1,2	Unknown	Local, State, Federal	Five years	Not started, lack of funding
Miami County-12	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	Emergency Management Coordinator	High	4	Staff Time	Electrical Coop, State, Federal	Five years	Not started, lack of funding
Miami County-13	Purchase emergency generator back-up power for all Critical Facilities.	Utility/ Infrastructure Failure	County Administrator	Medium	1,2	\$350,000	Local, State, Federal	Five years	Not started, lack of funding
Miami County-14	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Emergency Management Coordinator	High	3,4	\$500 per workshop	Local	Repeating	In progress
Miami County-15	Evaluate existing buildings for safe areas from severe weather and prioritize replacements and upgrades to existing facilities. Future facilities should be constructed with safe areas from severe weather.	Tornado, Windstorm	Emergency Management Coordinator	High	1,2	\$2,000,000	Local, State, Federal	Two years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Miami County-16	Encourage the regular calculation and documentation of the amount of flood prone property that is preserved as open space to reduce the flood insurance burden.	Flood	County Flood Manager/Planner	High	1,2	Staff Time	Property Owners	Repeating	Not started, lack of staff
Miami County-17	Encourage the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	Emergency Management Coordinator	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Miami County-18	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	Emergency Management Coordinator	High	3,4	Staff time	Local, State, Federal	Repeating	In progress
Miami County-19	Provide educational materials to the public to educate them on all identified hazards.	All Hazards	Emergency Management Coordinator	Medium	3,4	\$2,000 per year	Private, Local, State, Federal	Repeating	Not started, lack of funding
Miami County-20	Emergency response needs and capabilities should be assessed to identify existing needs and shortfalls in terms of personnel, equipment, specialization or required resources. Identified needs and shortfalls should be documented and result in recommendations to the governing authority for emergency response enhancements.	All Hazards	Emergency Management Coordinator	Medium	1,2,3,4	Staff Time	None	Two years	Not started, lack of staff
Miami County-21	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	Emergency Management Coordinator	Medium	3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Miami County-22	Seek funding for the purchase and installation of warning sirens. Consider adapting local building code/zoning to require new subdivisions to install sufficient outdoor warning sirens	Tornado, Windstorm	Emergency Management Coordinator	Medium	1,2	\$45,000	None	Three years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Miami County-23	Develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams in Miami County.	Dam and Levee Failure	Emergency Management Coordinator	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Miami County-24	A thorough evaluation of potential mitigation opportunities for Miami County's critical facilities should be completed. This inventory should include information on the location and risk to each facility, and should also document any cost-effective mitigation techniques to consider when funding becomes available	All Hazards	Emergency Management Coordinator	Medium	1,2,4	\$3,000	Local, State, Federal	Three years	Not started, lack of funding
Miami County-25	Regularly calculate and document the amount of flood prone property that is preserved as open space to reduce flood insurance burden to the county.	Flood	County Planner	Medium	1,2	Staff Time	NA	Repeating	In progress
Miami County-26	Develop procedures and extend access to mapping and other GIS information to emergency response agencies.	All Hazards	Planning Director	Medium	1,2,4	\$30,000	Local, State, Federal	Five years	Not started, lack of funding
Miami County-27	Identify flash-flood prone areas to consider flood reduction measures to county planners. (NFIP)	Flood	Emergency Management Coordinator	High	1,2	Staff Time	Local	Five years	Not started, lack of funding
Miami County-28	Appointment of a planning committee to develop an annex to the County Emergency Operation Plan for dam failure response and evacuation is encouraged. GIS could be utilized, along with technical information, to map potential hazard areas downstream of dams.	Dam and Levee Failure	Emergency Management Coordinator	Medium	1,2,4	\$2,000	Local, State, Federal	4 years	Not started, lack of funding
Miami County-29	Recommend a revision to the Flood Damage Prevention Ordinance to include a “no-rise (in base flood elevation)” clause for the county. (NFIP)	Flood	Emergency Management Coordinator	Medium	1,2	Staff Time	Local	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Miami County-30	Research and design an appropriate stream buffer ordinance to further protect the jurisdiction's water resources and to limit future flood damages adjacent to major waterways. (NFIP)	Flood	County Planner	High	1,2	Unknown	Local, State, Federal	Five years	Not started, lack of funding
Miami County-31	Implement a study to determine the residual flood risk in levee-protected areas. (NFIP)	Flood	County Planner	Medium	1,2,4	\$30,000	Local	Five years	Not started, lack of funding
Miami County-32	Identify the county's most at-risk critical facilities and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	Emergency Management Coordinator	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Miami County-33	Utility Failure. Long term planning goals that will reduce exposure to loss of utilities (electric, water, natural gas/propane) are beneficial to all organizations and citizens within the jurisdiction.	Utility/ Infrastructure Failure	Emergency Management Coordinator	Low	1,2,4	Staff Time	None	Repeating	Not started, lack of staff
Miami County-34	Heartland Rural Electric Cooperative requires upgrade and enhancement of existing power lines to protect infrastructure and future exposure to natural hazards. The majority of these lines were built 40-plus years ago. Most of the conductor is small in size with long spans between poles. This type of line design struggles with ice and wind. Problems: (1) age of the line, (2) storms the lines have endured, (3) remote areas they transverse, and (4) need for reliable electricity. Collectively these issues will not allow Heartland to supply electricity to the people of Miami County to meet today's needs. Needs: Replacement of (5½) miles of #6CWC three-phase line between the Parker and Miami sub	Utility/ Infrastructure Failure	Emergency Management Coordinator	Low	1,2	\$15,000,000	FEMA	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	<p>stations. This three-phase tie interconnects the Parker and Miami substations and does not possess adequate capacity for back feed in the event of emergencies. The aged #6CWC construction has sustained much damage over the years and was not built to current and acceptable standards. This line directly provides power to (2) communications sites. In addition; the two sub stations provide power to (11) communication sites (incl. cell towers, state and local communications links, fiber-optic sites, phone equipment, etc.), (8) water district services and (2) schools (one of which is the area’s consolidated school district campus). A large, newly incorporated, public wholesale water district supplying water to this region is now under construction. The main plant as well as several ancillary services will be powered by the Miami substation. This water district will supply many other public water districts and municipalities in the region. The Parker substation provides power to (545) meters. The Miami substation provides power to (490) meters. Replacement of this line would significantly mitigate losses to damages and greatly enhance reliability in the surrounding area. Benefits: Reliable power lines built to endure ice and wind load conditions with the benefits of being able to provide backup power between substations. Avoid cost accrued</p>								





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	due to storm damaged power lines; labor and material cost, revenue lost, public losses due to lack of power.								
Miami County-35	<p>Heartland Rural Electric Cooperative – Project #3: requires upgrade and enhancement of existing power lines to protect infrastructure and future exposure to natural hazards. The majority of these lines were built 40-plus years ago. Most of the conductor is small in size with long spans between poles. This type of line design struggles with ice and wind. Problems: (1) age of the line, (2) storms the lines have endured, (3) remote areas they transverse, and (4) need for reliable electricity. Collectively these issues will not allow Heartland to supply electricity to the people of Miami County to meet today’s needs. Needs: Replacement of (2) miles of #6CWC on the east feeder (R2-7) of Linn substation. This portion of line directly feeds (92) meters which includes mostly residences (1) cell tower and (1) water district service. This line traverses a river and timbered area of poor access. The aged #6CWC construction has sustained much damage over the years and was not built to current and acceptable standards. Replacement of this line would significantly mitigate losses to damages and greatly enhance reliability in the surrounding area. Benefits: Reliable power lines built to endure ice and wind load conditions with the benefits of</p>	Utility/ Infrastructure Failure	Emergency Management Coordinator	Medium	1,2	\$15,000,000	FEMA	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	being able to provide backup power between substations. Avoid cost accrued due to storm damaged power lines; labor and material cost, revenue lost, public losses due to lack of power. Increased safety to the public.								
Miami County-36	Heartland Rural Electric Cooperative requires upgrade and enhancement of existing power lines to protect infrastructure and future exposure to natural hazards. The majority of these lines were built 40-plus years ago. Most of the conductor is small in size with long spans between poles. This type of line design struggles with ice and wind. Problems: (1) age of the line, (2) storms the lines have endured, (3) remote areas they transverse, and (4) need for reliable electricity. Collectively these issues will not allow Heartland to supply electricity to the people of Miami County to meet today's needs. Needs: Replacement of (10) miles of CWC single-phase line of enhanced design. The (10) miles selected met several points of prioritization and evaluation and represent a small percentage of total CWC miles in the Heartland distribution system. Replacing the (10) miles would significantly mitigate losses due to damages and greatly enhance reliability in the surrounding areas. The aged CWC construction has sustained much damage over the years and was not built to current and acceptable standards. Nearly all of HREC's membership in the county	Utility/ Infrastructure Failure	Emergency Management Coordinator	Low	1,2	\$10,000,000	FEMA	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	would directly if not indirectly benefit from improved safety and improved reliability of such replacements. Benefits: Reliable power lines built to endure ice and wind load conditions with the benefits of being able to provide backup power between substations. Avoid cost accrued due to storm damaged power lines; labor and material cost, revenue lost, public losses due to lack of power. Increased safety to the public.								
Miami County-37	Conduct an inventory/survey for the county's emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources. A survey should be completed in order to verify the county's current Emergency services are adequate to protect public health and safety from most probable hazard events. Any identified needs or shortfalls should become documented and result in specific recommendations to the County Commission for emergency service enhancements.	All Hazards	Emergency Management Coordinator	High	1,2	Staff Time	Local, State	Five years	Not started, lack of funding
Miami County-38	Research, develop, and recommend an amendment to county building codes that requires installation of tornado shelters for new major manufactured and/or mobile home parks with more than 10 mobile home spaces	All Hazards	Emergency Management Coordinator	Medium	1,2	Staff Time	Local	Five years	Not started, lack of funding
Miami County-39	Develop cross-departmental information collection capabilities and incorporate cadastral (building/parcel) data utilizing GIS.	All Hazards	Emergency Management Coordinator	High	4	Staff Time	Local, KDEM, Grants	Repeating	In progress





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Miami County-40	Develop and implement a wildfire prevention/education program.	Wildfire	Emergency Management Coordinator	Medium	3,4	\$250 per workshop	Local	Repeating	In progress
Miami County-41	Examine the current agreements within the county and assess the need to expand or update cooperative agreements for firefighting resources.	Wildfire	Emergency Management Coordinator	High	4	Staff Time	Local	Repeating	In progress
Miami County-42	Appoint a working group to evaluate the firefighting water supply resources within the county, including both fixed and mobile supply issues.	Wildfire	Emergency Management Coordinator	High	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Miami County-43	Evaluate existing flood warning systems and needs for system upgrades and coverage. Seek grant funding to purchase and install systems. (NFIP)	Flood	County Planner	High	1,2	Unknown	Local, State	Five years	Not started, lack of funding
Fontana-1	Educate and promote local jurisdictional participation in the NFIP and CRS . On an annual basis, property owners identified to be in high risk flood areas will be contact and informed of the availability of flood insurance.	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Fontana-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	County and City Planners	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Fontana-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	County and City Planners	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Fontana-4	Collect educational materials on individual and family preparedness /mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Fontana-5	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Electrical Coop, State, Federal	Five years	Not started, lack of funding
Fontana-6	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	High	3,4	\$500 per workshop	Local	Repeating	In progress
Fontana-7	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Fontana-8	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local, State, FEMA	Repeating	In progress
Fontana-9	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri- Terrorism, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, FEMA	Five years	Not started, lack of funding
Fontana-10	Develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams in Miami County.	Dam and Levee Failure	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Fontana-11	Pursue funding for the purchase and installation of emergency backup generators for protection of critical facility infrastructure.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	\$50,000	Local, State, Federal	Five years	Not started, lack of funding
Louisburg-1	Emergency response needs and capabilities should be assessed to identify existing needs and shortfalls in terms of personnel, equipment, specialization or required resources.	All Hazards	Fire Chief	High	4	Staff Time	Local, State, Federal	Repeating	Not started, lack of staff





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Louisburg-2	Seek funding for the purchase and installation of Warning sirens.	Tornado, Windstorm	Police Chief	High	1,2	\$45,000	Local, State, Federal	Two years	Not started, lack of funding
Louisburg-3	A thorough evaluation of potential mitigation opportunities for Louisburg's critical facilities should be completed.	All Hazards	Planner	High	1,2,4	Staff Time	Local, State, Federal	Two years	Not started, lack of staff
Louisburg-4	Seek funding for generators for all critical facilities that require one.	Utility/ Infrastructure Failure	Police Chief	High	1,2	\$50,000	Local, State, Federal	One year	Not started, lack of funding
Louisburg-5	Seek funding for the improvement/construction of safe rooms and implement policy that requires new construction have safe room	Tornado, Windstorm	Planner	High	1,2	\$350,000	None	Two years	Not started, lack of funding
Louisburg-6	Louisburg is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Louisburg-7	Educate and promote local jurisdictional participation in the NFIP and CRS. On an annual basis, property owners identified to be in high risk flood areas will be contact and informed of the availability of flood insurance. Miami County will work Cities to contact identified property owners. (NFIP)	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Louisburg-8	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program (NFIP)	Flood	County and City Planners	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Louisburg-9	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	County and City Planners	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Louisburg-10	Collect educational materials on individual and family preparedness	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	/mitigation measures for property owners.								
Louisburg-11	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Electrical Coop, State, Federal	Five years	Not started, lack of funding
Louisburg-12	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	High	3,4	\$500 per workshop	Local	Repeating	In progress
Louisburg-13	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Louisburg-14	Educate residents about driving in winter storms and handling winter-related health effects.	Utility/ Infrastructure Failure	City Manager	High	3,4	Staff Time	Local, State, FEMA	Repeating	In progress
Louisburg-15	Deliver all hazard public information and awareness preparedness /mitigation education to the public.	All Hazards	Planner	Medium	3,4	Staff Time	None	Repeating	In progress
Louisburg-16	Coordinate local mitigation efforts with major utilities including electric, water, sewer and natural gas/propane. Encourage identification of hazards potentially affecting their infrastructure. Assess vulnerabilities of infrastructure to the hazards and identify mitigation strategies.	Utility/ Infrastructure Failure	Planner	Medium	1,2,4	Staff Time	Unknown	Repeating	In progress
Louisburg-17	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3,4	Staff time	Local, State, FEMA	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Louisburg-18	Pursue funding to upgrade identified infrastructure to endure ice and wind load conditions.	Utility/ Infrastructure Failure	Planner	Medium	1,2	Unknown	Unknown	Two years	Not started, lack of funding
Louisburg-19	Develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams in Miami County.	Dam and Levee Failure	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Louisburg-20	Appoint a planning committee to assess flood prone areas and recommend flood reduction measures to city planners.	Flood	City Planner	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Louisburg-21	Seek funding to purchase/upgrade and install warning sirens	Tornado	City Manager	Medium	1,2	Staff Time	Local	Five years	Not started, lack of funding
Osawatomie-1	Seek funding to purchase and install warning sirens.	All Hazards	City Manager	High	1,2	60000	Local, State, Federal	Three years	Not started, lack of funding
Osawatomie-2	Osawatomie is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Osawatomie-3	Educate and promote local jurisdictional participation in the NFIP and CRS. On an annual basis, property owners identified to be in high risk flood areas will be contact and informed of the availability of flood insurance. (NFIP)	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding
Osawatomie-4	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	County and City Planners	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Osawatomie-5	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	County and City Planners	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Osawatomie-6	Collect educational materials on individual and family preparedness	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	/mitigation measures for property owners.								
Osawatomie-7	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	City Manager	High	4	Staff Time	Electrical Coop, State, Federal	Five years	Not started, lack of staff
Osawatomie-8	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	High	3,4	\$500 per workshop	Local	Repeating	In progress
Osawatomie-9	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Osawatomie-10	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local, State, FEMA	Repeating	In progress
Osawatomie-11	Conduct a study to determine potential causes of the 2007 overtopping of Osawatomie Levee System. Determine steps needed to mitigate this potential in future floods. Work to certify levees surrounding the City of Osawatomie	Dam and Levee Failure	City Manager	High	1,2	Staff Time	Local, State, Federal	Two years	Not started, lack of staff
Osawatomie-12	Life Safety - Storm Shelters in Public/Governmental Facilities Evaluate existing buildings for safe areas from severe weather and prioritize and seek funding for replacements and upgrades to existing facilities. Future facilities should be constructed with safe areas from severe weather.	Tornado, Windstorm	City Manager	Medium	1,2	\$500,000	Local, State, Federal	Two years	Not started, lack of funding
Osawatomie - 13	Promote and educate the jurisdiction’s public and private sectors on potential	Terrorism/ Agri-	City Manager	Medium	3,4	Staff Time	Local, State, FEMA	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	agricultural terrorism and bio-terrorism issues.	Terrorism, Civil Disorder							
Osawatomie-14	Prevention - Emergency Generator Back Up Power at Critical Facilities. Determine minimum needs in regard to sizing of backup generator. Establish timeline and funding to install emergency backup generators in all identified facilities.	Utility/ Infrastructure Failure	City Manager	Medium	1,2	\$40,000	Local, State	Four years	Not started, lack of funding
Osawatomie-15	Develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams in Miami County.	Dam and Levee Failure	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Osawatomie-16	Property Protection - Utility Failure. Coordinate local mitigation efforts with major utilities including electric, water, sewer and natural gas/propane. Encourage identification of hazards potentially affecting their infrastructure. Assess vulnerabilities of infrastructure to the hazards and identify mitigation strategies	Utility/ Infrastructure Failure	City Manager	Low	1,2	Staff Time	None	Two years	Not started, lack of staff
Osawatomie-17	Seek funding sources to fulfill the requirements provided in Title 44, Chapter 1, Part 65, Section 65.10 of the Code of Federal Regulations for levee certification.	Dam and Levee Failure	City Planner	Low	1,2	Unknown	Local	Five years	Not started, lack of funding
Osawatomie-18	Conduct a study to determine potential causes of the 2007 overtopping of Osawatomie Levee System. The jurisdiction has expressed concern regarding the current height of the levee after the flood of 2007 produced water levels that overtopped the levee walls.	Dam and Levee Failure	City Manager	High	1,2,4	Unknown	USACE, FEMA	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Osawatomie-19	Conduct a study to determine the year-built and level of protection for each local emergency facility. On completion of the study, consider seeking funding for mitigation projects for emergency facilities not currently designed for protection from flooding. Reduce the possibility of damages to emergency facilities from flooding. (NFIP)	Flood	City Manager	Low	1,2,4	Unknown	Local, State, FEMA	Five years	Not started, lack of funding
Osawatomie-20	Conduct a survey of all water retention and detention areas to ensure proper depth and runoff control. Restore to design specifications as necessary.	Dam and Levee Failure	City Planner	Medium	1,2	Unknown	Local, State, FEMA	Five years	Not started, lack of funding
Osawatomie-21	Conduct a study to determine the best locations for flood monitoring systems along the Marais Des Cygnes River and Pottawatomie Creek. Seek funding to purchase and install the monitoring systems (NFIP)	Flood	City Planner	Low	1,2,4	Unknown	Local, State	Five years	Not started, lack of funding
Osawatomie-22	Incorporate the inspection and management of trees into the city's routine maintenance process to remove trees that may increase the risk of power failure at critical facilities.	Utility/ Infrastructure Failure	City Manager	Low	1,2	\$10,000	Local	Repeating	In progress
Paola-1	Appointment of a planning committee to develop an annex to the County Emergency Operation Plan for dam failure response and evacuation is encouraged. GIS could be utilized.	Dam and Levee Failure	Planner	High	1,2,4	600000	Local, State, Federal	Repeating	Not started, lack of funds
Paola-2	Paola is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Paola-3	Educate and promote local jurisdictional participation in the NFIP and CRS . On an annual basis, property owners identified to be in high risk flood areas	Flood	City Manager	High	1,2,3,4	Staff Time	Local, State, Federal	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	will be contact and informed of the availability of flood insurance. Miami County will work Cities to contact identified property owners.								
Paola-4	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	County and City Planners	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Paola-5	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	County and City Planners	High	1,2,3,4	Staff Time	Local	Repeating	In progress
Paola-6	Collect educational materials on individual and family preparedness /mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Paola-7	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	City Manager	High	4	Staff time	Electrical Coop, State, Federal	Five years	Not started, lack of funding
Paola-8	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	High	3,4	\$500 per workshop	Local	Repeating	In progress
Paola-9	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Paola-10	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	High	3,4	Staff Time	Local, State, FEMA	Repeating	In progress





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Paola-11	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, FEMA	Five years	Not started, lack of funding
Paola-12	Develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams in Miami County.	Dam and Levee Failure	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Paola-13	Appoint a committee to develop an Emergency Action Plan for the Heatherwood Estates Dam in accordance with Corps of Engineers requirements.	Dam and Levee Failure	City Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Paola-14	Appoint a planning committee to identify flood prone areas to consider flood reduction measures to city planners. (NFIP)	Flood	Floodplain Manager	Medium	1,2,4	Staff Time	Local	Five years	Not started, lack of funding
Paola-15	Citywide installation of wet fire hydrants.	Wildfire	Fire Chief	Medium	1,2,3,4	\$2,200,000	City	Five years	Not started, lack of funding
Paola-16	Emergency Response Capabilities. Emergency response needs and capabilities should be assessed to identify existing needs and shortfalls in terms of personnel, equipment, specialization or required resources. Identified needs and shortfalls should be documented and result in recommendations to the governing authority for emergency response enhancements.	All Hazards	Fire Chief	Medium	1,2,4	None	None	Five years	Not started, lack of funding
Paola-17	Purchase and install emergency generator back-up power at Critical Facilities.	Utility/ Infrastructure Failure	Planner	Medium	1,2	30000	Local, State, Federal	Five years	Not started, lack of funding
Paola-18	Outdoor Storm Warning Sirens. Develop procedures and seek funding for long term plan for replacement of	All Hazards	City Planner	Medium	1,2	\$45,000	None	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	current outdoor warning sirens based off of manufacturer's information, availability of parts, updates in technology, age etc. Consider adapting local building code/zoning to require new subdivisions to install sufficient outdoor warning sirens to cover all lots. Sirens should meet minimum requirements set by local jurisdiction								
Paola-19	Property Protection - Utility Failure Coordinate local mitigation efforts with major utilities including electric, water, sewer and natural gas/propane. Encourage identification of hazards potentially affecting their infrastructure. Assess vulnerabilities of infrastructure to the hazards and identify mitigation strategies	Utility/ Infrastructure Failure	City Manager	Medium	1,2,4	Unknown	Local, State, Federal	Five years	Not started, lack of funding
Paola-20	Utility Failure - Upgrades to Electrical Services. Pursue funding to upgrade identified infrastructure to endure ice and wind load conditions.	Utility/ Infrastructure Failure	Planner	Medium	1,2	Unknown	Local, State, Federal	Five years	Not started, lack of funding
Paola-21	Life Safety - Storm Shelters in Public/Governmental Facilities. Evaluate existing buildings and seek funding for safe areas from severe weather and prioritize replacements and upgrades to existing facilities. Future facilities should be constructed with safe areas from severe weather.	Tornado, Windstorm	Planner	Low	1,2	100000	Local, State, Federal	Five years	Not started, lack of funding
Paola-22	Prevention - Flash Flood Prone Areas. Identify areas within the jurisdiction that are prone to flash flooding by using current flood zone mapping, watershed districts and past knowledge of flash flooding. Evaluate each area to	Flood	Planner	Low	1,2	None	None	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	determine causes and potential remediation measures to reduce or eliminate the flash flood potential. Develop long term plans to complete identified remediation measures. (NFIP)								
Paola-23	GIS and mapping. Develop cross departmental and jurisdictional information collection capabilities, and incorporate utilization of GIS information for the purposes of conducting more detailed hazard risk assessments. Develop procedures and extend access to mapping and other GIS information to emergency response agencies.	All Hazards	Planner	Low	1,2	Staff Time	Unknown	Five years	Not started, lack of funding
Paola-24	Property Protection - ISO Fire Rating. Encourage City and Fire Service leaders and members of the public to consider developing a plan to lower the ISO rating City wide. This would require evaluating current fire protection/suppression services and identifying benefits if successful in lowering the rating.	Wildfire	Fire Chief	Low	4	\$100,000	Local, State, Federal	Five years	Not started, lack of funding
Paola-25	All Hazard Public Information and Awareness- Preparedness/Mitigation Education of the public is essential to garnering support and assistance to mitigating damage prior to an event. FEMA and other government agencies provide free educational materials on property protection measures. Acquiring and providing these at local events and static sites such as County and City buildings is an effective means of distribution.	All Hazards	Planner	Low	3,4	Staff Time	None	Five years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD230-1	Develop and fund mitigation projects for the construction of tornado safe rooms in Unified School District 230 schools.	Tornado	Superintendent	Medium	1,2	\$1,000,000	Local, State, Federal	Five years	Not started, lack of funding
USD367-1	Develop and fund mitigation projects for the construction of tornado safe rooms in Unified School District 367 schools.	Tornado	Superintendent	High	1,2	\$4,000,000	Local, State, Federal	Three years	Not started, lack of funding
USD367-2	Prevention-Emergency Generator Back Up Power at Critical Facilities. Determine minimum needs in regard to sizing of backup generator. Establish timeline and funding to install emergency backup generators in all identified facilities.	Utility/ Infrastructure Failure	Superintendent	Medium	1,2	\$50,000	Local, State, Federal	Five years	Not started, lack of funding
USD367-3	Property Protection - Utility Failure. Coordinate mitigation efforts with major utilities including electric, water, sewer and natural gas/propane to ensure continued provision of service by USD.	Utility/ Infrastructure Failure	Superintendent	Medium	1,2,4	Unknown	Local, State, Federal	Five years	Not started, lack of funding
USD368-1	Develop and fund mitigation projects for the construction of tornado safe rooms in Unified School District 368 schools.	Tornado	Building and Grounds Director	Medium	1,2	\$4,000,000	Local, State, Federal	Three years	Not started, lack of funding
USD368-2	Property Protection - Utility Failure. Coordinate mitigation efforts with major utilities including electric, water, sewer and natural gas/propane to ensure continued provision of service by USD	Utility/ Infrastructure Failure	Building and Grounds Director	Medium	1,2,4	Unknown	Private, Local, State, Federal	Five years	Not started, lack of funding
USD368-3	Prevention-Emergency Generator Back Up Power at Critical Facilities. Determine minimum needs in regard to sizing of backup generator. Establish timeline and funding to install emergency backup generators in all identified facilities.	Utility/ Infrastructure Failure	Building and Grounds Director, Superintendent	Medium	1,2	\$50,000	Local, State, Federal	Five years	Not started, lack of funding
USD416-1	Develop and fund mitigation projects for the construction of tornado safe rooms in Unified School District 416 schools.	Tornado	Assistant Superintendent	Medium	1,2	\$4M	Local, State, Federal	Three years	Not started, lack of funding





Table 6.8: Miami County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD416-2	Prevention-Emergency Generator Back Up Power at Critical Facilities. Determine minimum needs in regard to sizing of backup generator. Establish timeline and funding to install emergency backup generators in all identified facilities.	Utility/ Infrastructure Failure	Assistant Superintendent	Medium	1,2	\$50,000	Local, State, Federal	Five years	Not started, lack of funding
USD416-3	Property Protection - Utility Failure. Coordinate mitigation efforts with major utilities including electric, water, sewer and natural gas/propane to ensure continued provision of service by USD	Utility/ Infrastructure Failure	Superintendent	Medium	1,2,4	Unknown	Unknown	Five years	Not started, lack of funding
RWD3-1	Continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure. With over 53,000 square acres that Rural Water District No. 3 serves in Miami County as well as portions of Linn, Franklin, and Anderson County maintaining distribution capabilities are the jurisdictions top priority.	Utility/ Infrastructure Failure	Superintendent	High	1,2	Unknown	Local, State, Federal	Five years	Not started, lack of funding





6.8.6– Osage County and Participating Jurisdictions Mitigation Actions

Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Osage County-1	Identify vulnerable needs population in Osage County and develop a program or system for supporting vulnerable populations during emergency events. Conduct a study to identify vulnerable needs population. Create a database and GIS mapping locations for persons with special needs. Develop a plan and actions needed to protect and assist people with critical needs.	All Hazards	Emergency Management Coordinator	High	1,2,4	\$10,000	Local, HMGP	Five years	Not started, lack of funding
Osage County-2	Increase radio repeaters/antenna height to expand radio coverage throughout Osage County for law enforcement, fire, and emergency medical services. Seek funding to implement purchases.	All Hazards	Emergency Management Coordinator	High	1,2,4	\$100,000	Local, 911, HMGP	Five years	Not started, lack of funding
Osage County-3	Purchase and Distribute NOAA Weather Radios.	Tornado, Windstorm, Winter Storm, Lightning	Emergency Management Coordinator	High	1,2	\$5,000	HMGP, Local	Two years	Not started, lack of funding
Osage County-4	Continue compliance with the NFIP and adoption of a new floodplain ordinance.	Flood	Emergency Management Coordinator	High	1,2,3,4	Staff Time	Local, HMGP	Repeating	In progress
Osage County-5	Buyout of flood prone property. . Identify habitable buildings in the floodplain and/or are subject to flooding, prioritize locations, and purchase buildings as funding becomes available. (NFIP)	Flood	Emergency Management Coordinator	High	1,2	Determined by market value	HMGP, CDBG	Repeating	Not started, lack of funding
Osage County-6	Update Building code Regulations.	All Hazards	Emergency Management Coordinator	High	1,2,4	Staff Time	Local, Federal	Repeating	Not started, lack of funding
Osage County-7	Acquire and install a permanently mounted emergency generator for the Osage County courthouse.	Utility/ Infrastructure Failure	Emergency Management Coordinator	Medium	1,2	\$25,000	Local, HMGP	Five years	Not started, lack of funding





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Osage County-8	Seek funding to purchase and install warning sirens.	Tornado, Windstorm	Emergency Management Coordinator	Medium	1,2	\$60,000	Local, HMGP	Five years	Not started, lack of funding
Osage County-9	Purchase two generators for two fire stations – one in Lyndon and one in Vassar in FD #5. Then also develop a shelter plan for both stations.	Lightning, Tornado, Utility/ Infrastructure Failure, Winter Storm, Windstorm	Emergency Management Coordinator	Medium	1,2	\$25,000	Local, State, Federal	One year	Not started, lack of funding
Osage County-10	Seek funding for the design and construction of community safe rooms.	Tornado, Windstorm	Emergency Management Coordinator	Medium	1,2,3,4	\$350,000	Unknown	Repeating	Not started, lack of funding
Osage County-11	Address Scour on County bridges through viable repair/replace projects. (NFIP)	Flood	Emergency Management Coordinator	Medium	1,2	Unknown	Local, HMGP	Repeating	Not started, lack of funding
Burlingame-1	Provide Wildfire Public Education.	Wildfire	City Manager	Low	3,4	\$500 per workshop	KS Forest Service and Grants	Repeating	In progress
Burlingame-2	Coordinate county and local government mitigation efforts with RECs	Wildfire	City Manager	Low	3,4	\$30 per student per training session	KS Forest Service, State, Federal, and Grants	Repeating	Not started, lack of funding
Burlingame-3	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	City Manager	Low	1,2	\$85/acre	KS Forest Service, WUI Grant	Repeating	Not started, lack of funding
Burlingame-4	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination events drawing large crowds.	All Hazards	City Clerk	High	1,2	\$500 per workshop	Local, Federal	Repeating	In progress
Burlingame-5	Seek funding to design and construct a community safe room.	Tornado, Windstorm	City Clerk	High	1,2	Unknown	Local, Federal	Repeating	Not started, lack of funding
Burlingame-6	Continued NFIP compliance	Flood	City Clerk	High	1,2,3,4	Staff Time	None	Repeating	In progress





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Burlingame-7	Purchase and install two new outdoor warning sirens.	Tornado, Windstorm	City Clerk/Building Inspector	High	1,2	\$60,000	Local, HMGP	Five years	Not started, lack of funding
Burlingame-8	Educate residents about driving in winter storms and handling winter-related health effects.	Utility/ Infrastructure Failure	City Clerk/Building Inspector	High	1,2	\$40,000	Local	Five years	Not started, lack of funding
Burlingame-9	Bridge Replacement. The current bridge in the 300 block of N. Kansas Avenue is deteriorating and needs replaced. Rebuild a new bridge in the 300 block of N. Kansas Avenue which is within the city limits.	Utility/ Infrastructure Failure	City Clerk/Building Inspector	High	1,2	Unknown	KDA-DWR, KDEM, FEMA	Five years	Not started, lack of funding
Burlingame-10	Purchase new generator for lift station.	Utility/ Infrastructure Failure	City Clerk/Building Inspector	High	1,2	\$40,000	Unknown	Five years	Not started, lack of funding
Burlingame-11	Support a program to replace existing overhead primary electric lines to underground.	Utility/ Infrastructure Failure	City Clerk/Building Inspector	High	1,2	\$50,000,000	Local, Federal	Five years	Not started, lack of funding
Burlingame-12	Establish and maintain disaster evacuation routes.	All Hazards	City Clerk/Building Inspector	High	1,2,3,4	Staff Time	Local, State, Federal	Repeating	Not started, lack of staff
Burlingame-13	Upgrade and enhance the power lines as funding becomes available	Utility/ Infrastructure Failure	City Clerk/Building Inspector	High	1,2	\$20,000,000	Local, State, Federal	Ten years	Not started, lack of funding
Burlingame-14	Buyout of flood prone properties. (NFIP)	Flood	NFIP Administrator	High	1,2	Determined by market value	HMGP, Local	Five years	Not started, lack of funding
Carbondale-1	Provide wildfire public education.	Wildfire	City Administrator	Low	3,4	\$500 per workshop	KS Forest Service and Grants	Repeating	In progress
Carbondale-2	Increase public and fire department training on wildland urban interface fires.	Wildfire	City Administrator	Low	3,4	\$30 per student per training session	KS Forest Service, State, Federal, and Grants	Repeating	Not started, lack of funding





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Carbondale-3	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	City Administrator	Low	1,2	\$85/acre	KS Forest Service, WUI Grant	Repeating	Not started, lack of funding
Carbondale-4	Continued NFIP compliance	Flood	City Administrator	High	1,2,3,4	Staff Time	None	Repeating	In progress
Carbondale-5	Mitigation Measures along Bury Creek. A local engineering firm has completed an assessment along Bury Creek. The Plan includes channel improvements, replacement of a culvert for the Market Street crossing which is currently a low water bridge, repair and/or replacement of Market Street bridge, and placement of guardrails on the Osage Street Bridge. (NFIP)	Flood	City Administrator	High	1,2	\$103,000	Local, HMGP, Grants	Within two years	Not started, lack of funding
Carbondale-6	Stormwater Management. Conduct a study of the stormwater lagoons to determine the best solution for flooding issues, and implement the solution. (NFIP)	Flood	City Administrator	High	1,2	Unknown	Local	One year	Not started, lack of funding
Carbondale-7	Seek funding for the design and construction of Public building tornado Safe Rooms The City will consider the addition of tornado safe rooms in all future buildings built by the City.	Tornado, Windstorm	City Administrator	High	1,2	\$350,000	Local, Federal	Unknown	Not started, lack of funding
Carbondale-8	Install Outdoor Warning Sirens. Purchase and install 2 new outdoor warning sirens.	Tornado, Windstorm	City Administrator	Medium	1,2	\$100,000	HMGP, Grant	Three years if funding is available	Not started, lack of funding
Lyndon-1	Provide wildfire public education.	Wildfire	City Manager	Low	3,4	\$500 per workshop	KS Forest Service and Grants	Repeating	In progress
Lyndon-2	Increase public and fire department training on wildland urban interface fires.	Wildfire	City Manager	Low	3,4	\$30 per student per training session	KS Forest Service, State,	Repeating	Not started, lack of funding





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
							Federal, and Grants		
Lyndon-3	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	City Manager	Low	1,2	\$85/acre	KS Forest Service, WUI Grant	Repeating	Not started, lack of funding
Lyndon-4	Flood protection of Lyndon Community Building. A study needs to be completed of mitigation actions for this area. Once the best alternative is identified, apply for funding and implement solution. (NFIP)	Flood	City Manager	High	1,2,3,4	\$40,000	Unknown	Five years	Not started, lack of funding
Lyndon-5	Continued NFIP compliance	Flood	City Manager	High	1,2,3,4	None	None	Repeating	In progress
Lyndon-6	Purchase and installation of generator at City Hall.	Lightning, Tornado, Utility/ Infrastructure Failure, Winter Storm, Windstorm	City Manager	Medium	1,2	\$9,000	Local, KDEM, FEMA	Five years	Not started, lack of funding
Melvern-1	Provide wildfire public education.	Wildfire	City Manager	Low	3,4	\$500 per workshop	KS Forest Service and Grants	Repeating	In progress
Melvern-2	Increase public and fire department training on wildland urban interface fires.	Wildfire	City Manager	Low	3,4	\$30 per student per training session	KS Forest Service, State, Federal, and Grants	Repeating	Not started, lack of funding
Melvern-3	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	City Manager	Low	1,2	\$85/acre	KS Forest Service, WUI Grant	Repeating	Not started, lack of funding
Melvern-4	Purchase & install outdoor tornado warning sirens.	Tornado, Windstorm	City Manager	High	1,2	\$50,000	Local, State, Federal	Two years if funds are available	Not started, lack of funding
Melvern-5	Purchase NOAA weather radios for citizens.	All Hazards	City Manager	High	1,2	\$25 x 205 households	HMGP	One year after funds are secured	Not started, lack of funding





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Melvern-6	Construct Tornado safe rooms in new city own buildings.	Tornado, Windstorm	City Manager	Medium	1,2	\$250,000 per shelter	HMGP	Two - eight years	Not started, lack of funding
Melvern-7	Continued NFIP compliance	Flood	NFIP Administrator	High	1,2,3,4	None	None	Repeating	In progress
Melvern-8	Buyout of flood prone properties. (NFIP)	Flood	NFIP Administrator	High	1,2	Determined by market value	HMGP, Local	Five years	Not started, lack of funding
Osage-1	Provide wildfire public education.	Wildfire	City Manager	Low	3,4	\$500 per workshop	KS Forest Service and Grants	Repeating	In progress
Osage-2	Increase public and fire department training on wildland urban interface fires.	Wildfire	City Manager	Low	3,4	\$30 per student per training session	KS Forest Service, State, Federal, and Grants	Repeating	Not started, lack of funding
Osage-3	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	City Manager	Low	1,2	\$85/acre	KS Forest Service, WUI Grant	Repeating	Not started, lack of funding
Osage-4	The City would like to purchase an outdoor Emergency Alert Systems. It would have voice activation capabilities to notify residents of all kinds of hazards.	All Hazards	City Manager	High	1,2	100000	HMGP, FEMA	Five years	Not started, lack of funding
Osage-5	Continued NFIP compliance	Flood	NFIP Administrator	High	1,2,3,4	None	None	Repeating	In progress
Osage-6	Buyout of flood prone properties. (NFIP)	Flood	NFIP Administrator	High	1,2	Determined by market value	HMGP, Local	Five years	Not started, lack of funding
Osage-7	Purchase and install a swinging floodgate sign for the road in flooding times to prevent people from walking & driving through the area. (NFIP)	Flood	City Manager	Medium	1,2	Unknown	HMGP, Other as identified	One - Five years	Not started, lack of funding





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Overbrook-1	Provide wildfire public education.	Wildfire	City Manager	Low	3,4	\$500 per workshop	KS Forest Service and Grants	Repeating	In progress
Overbrook-2	Increase public and fire department training on wildland urban interface fires.	Wildfire	City Manager	Low	3,4	\$30 per student per training session	KS Forest Service, State, Federal, and Grants	Repeating	Not started, lack of funding
Overbrook-3	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	City Manager	Low	1,2	\$85/acre	KS Forest Service, WUI Grant	Repeating	Not started, lack of funding
Overbrook-4	Continued participation and compliance with the NFIP .	Flood	City Clerk	High	1,2,3,4	Staff Time	None	Repeating	In progress
Overbrook-5	Purchase and install a new outdoor warning siren	Tornado, Windstorm	City Clerk	Medium	1,2	50000	FEMA HMGP, Grants	One year	Not started, lack of funding
Overbrook-6	Seek funding to construct a community safe room the ball diamond/fairgrounds.	Tornado, Windstorm	City Clerk	Low	1,2	30000	Local, Grants	Ten years	Not started, lack of funding
Overbrook-7	Identify and seek additional methods of financial and technical assistance for hazard mitigation projects.	All Hazards	City Clerk	High	1,2,4	3000	Unknown	Repeating	Not started, lack of staff
Overbrook-8	Develop and implement a local hazard training plan.	All Hazards	City Clerk	High	1,2,3,4	800	Unknown	One year	Not started, lack of funding
Overbrook-9	Acquire a permanent back-up generator for the city. Backup for wells and 2 lift stations.	Utility/ Infrastructure Failure	City Clerk	Medium	1,2	\$15,000 - \$20,000	Local, Grants	One year	Not started, lack of funding
Overbrook-10	Seek funding for the design and constructions of a safe room at the Overbrook Attendance Center or new library	Tornado, Windstorm	Superintendent of Schools	Low	1,2	200000	Local, Grants	Five years	Not started, lack of funding
Overbrook-11	Upgrade/Expand/Improve stormwater management systems. We would like to design plan for town and implement over time.	Flood, Soil Erosion	City Clerk	High	1,2,4	\$2,000 for plan	Local	20 years	Not started, lack of funding





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Overbrook-12	Conduct regular dam maintenance. We will have to hire an inspector every three years and take other preventative measures taken during the intervening years.	Dam and Levee Failure	City Clerk	Medium	1,2	\$4,000 every three years	Unknown	Repeating	Not started, lack of funding
Overbrook-13	Improve coordination, planning, and investment in long-term water supplies to meet demands of ongoing growth and development. Assess vulnerability of critical infrastructure and lifeline utilities, including water distribution systems, to identify and prioritize projects for risk reduction.	Utility/ Infrastructure Failure	City Clerk	High	4	Unknown	Unknown	Eight years	Not started, lack of funding
Overbrook-14	Enhance existing GIS program to improve capabilities in mitigation, preparedness, and response for all hazards.	Utility/ Infrastructure Failure	City Clerk	Low	1,2,4	\$750 per year	Unknown	Repeating	Not started, lack of staff
Overbrook-15	Improve lighting and traffic controls at critical intersections and roadways to improve safety during events. We would like to work with KDOT and engineer to evaluate options and come up with a solution.	Utility/ Infrastructure Failure	City Clerk	High	1,2	\$30,000	Local, Grants	Three years	Not started, lack of funding
Overbrook-16	Continue and enhance housing rehabilitation program.	Utility/ Infrastructure Failure	City Clerk	Medium	1,2	\$25,000	Grant	Six years	Not started, lack of funding
Overbrook-17	Provide educational materials about natural hazards and risks.	All Hazards	City Clerk	High	3,4	\$75 per year	Local	Repeating	Not started, lack of staff
Overbrook-18	Buyout of flood prone properties. (NFIP)	Flood	NFIP Administrator	High	1,2	Determined by market value	HMGP, Local	Five years	Not started, lack of funding
Quenemo-1	Provide wildfire public education.	Wildfire	City Clerk	Low	3,4	\$500 per workshop	KS Forest Service and Grants	Repeating	In progress





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Quenemo-2	Increase public and fire department training on wildland urban interface fires.	Utility/ Infrastructure Failure	City Clerk	Low	3,4	\$30 per student per training session	KS Forest Service, State, Federal, and Grants	Repeating	Not started, lack of funding
Quenemo-3	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	City Clerk	Low	1,2	\$85/acre	KS Forest Service, WUI Grant	Repeating	Not started, lack of funding
Quenemo-4	Continued participation and compliance with the NFIP . Adoption of new floodplain ordinance.	Flood	City Clerk	High	1,2,3,4	Staff Time	None	Repeating	In progress
Quenemo-5	Purchase and install new outdoor warning sirens.	Tornado	City Manager and City Council	High	1,2	\$20,000	Local and HMGP	Five years	Not started, lack of funding
Quenemo-6	Buyout of flood prone properties. (NFIP)	Flood	NFIP Administrator	High	1,2	Determined by market value	HMGP, Local	Five years	Not started, lack of funding
Scranton-1	Provide wildfire public education.	Wildfire	Fire Chief	Low	3,4	\$500 per workshop	KS Forest Service and Grants	Repeating	In progress
Scranton-2	Increase public and fire department training on wildland urban interface fires.	Wildfire	Fire Chief	Low	3,4	\$30 per student per training session	KS Forest Service, State, Federal, and Grants	Repeating	Not started, lack of funding
Scranton-3	Reduce hazardous fuels in prioritized wildfire risk areas.	Wildfire	Fire Chief	Low	1,2	\$85/acre	KS Forest Service, WUI Grant	Repeating	Not started, lack of funding
Scranton-4	Continued participation and compliance with the NFIP . Adoption of new floodplain ordinance.	Flood	City Manager	High	1,2,3,4	Staff Time	None	Repeating	In progress
Scranton-5	Purchase NOAA weather radios for citizens.	Hail, Tornado, Wildfire, Windstorm, Winter Storm	City Manager	High	1,2	\$8,750	HMGP	One year after funds are secured	Not started, lack of funding





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Scranton-6	Build new Fire Station & Public Safety Building with tornado safe room.	Extreme Temperatures, Wildfire, Tornado, Windstorm	City Manager	High	1,2		Local, HMGP, Grants	Five years	Not started, lack of funding
Scranton-7	Three or four new bridges are needed. Rebuild new bridges in three or four locations within the City. Prevent water standing in town. (NFIP)	Flood	City Manager	High	1,2	Unknown	Local, HMGP, Grants	Two years after funds are available	Not started, lack of funding
Scranton-8	Purchase & install new outdoor warning siren.	Tornado, Windstorm	City Manager	Medium	1,2	\$50,000	HMGP, Grant	One year after funds are secured	Not started, lack of funding
FD#6-1	Purchase generator for fire station.	Utility/ Infrastructure Failure	Training and Safety Officer	High	1,2	\$25,000	Local, State, Federal	Five years	Not started, lack of funding
FD#6-2	Design and construct tornado safe rooms in all Fire District buildings.	Tornado, Windstorm	Training and Safety Officer	High	1,2		Local, State, Federal	Five years	Not started, lack of funding
USD420-1	Construct tornado safe rooms in all USD 420 buildings.	Tornado, Windstorm	Superintendent	High	1,2		Bond	Five years	Not started, lack of funding
USD421-1	Construct tornado safe rooms in all USD 421 buildings..	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	HMGP and USD421 budget	Dependent upon funding	Not started, lack of funding
USD434-1	Construct tornado safe rooms in all USD 434 buildings.	Tornado, Windstorm	Superintendent	High	1,2	\$1,000,000	HMGP and USD434 budget	Five years	Not started, lack of funding
USD434-2	Supporting Vulnerable Populations during Emergency Events. The school district will make available buildings of the school district for any emergency situation that will arise.	All Hazards	Superintendent	Medium	1,2			Five years	





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
USD454-1	Construct tornado safe rooms in all USD 454 buildings.	Tornado, Windstorm	Superintendent of Schools	High	1,2	\$1,000,000	HMGP, USD 454 Budget	Five years	Not started, lack of funding
USD454-2	Supporting Vulnerable Populations during Emergency Events. The school district will make available buildings of the school district for any emergency situation that will arise.	All Hazards	Superintendent of Schools	Medium	1,2,4	Staff Time	Local	Repeating	In progress
USD456-1	Construct tornado safe rooms in all USD 454 buildings.	Tornado, Windstorm	Superintendent of Schools	High	1,2	\$1,000,000	HMGP, USD456 Budget	Five years	Not started, lack of funding
Three Lakes Educational Coop-1	Construct tornado safe rooms in all Three Lakes Education COOP buildings.	Tornado, Windstorm	Director of Special Education	High	1,2	\$1,000,000	HMGP and TLEC	Five years	Not started, lack of funding
Three Lakes Educational Coop-2	Purchase and install audio visual emergency communication and notification systems.	All Hazards	Director of Special Education	Medium	1,2	\$20,000	HMGP, Local	Five years	New
Frontier Extension District	Construct tornado safe rooms in all district buildings.	Tornado, Windstorm	Director	High	1,2	\$1,000,000	Local, State, HMGP	Five years	New
Osage Water Dist#3-1	Purchase back-up generators to run the intact pump at Lake Pomona.	Flood, Utility/ Infrastructure Failure	District Secretary	High	1,2	\$50,000	KDEM, FEMA	One year after funds are secured	Not started, lack of funding
Osage Water Dist#3-2	Purchase 2 GPS Handheld Units Ability for new employees to find satellite-identified water lines and meters.	Flood, Utility/ Infrastructure Failure	District Secretary	High	1,2	\$3,000	Unknown	One year after funds are secured	Not started, lack of funding
Osage Water Dist#3-3	Continue with the Zebra mussel project. Zebra mussels were responsible for major water supply problems in area lakes. We have no other water supply available if an infestation occurs in Pomona Lake. Therefore, it is imperative we are proactive in our approach to protect our water source.	Utility/ Infrastructure Failure	District Secretary	High	1,2	\$55,000 - \$65,000	Unknown	Five years	Not started, lack of funding





Table 6.9: Osage County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Osage Water Dist#3-4	Purchasing Radio Red Monitors. The plan is to purchase Radio Read Monitors that would be installed on each monitoring well. Ability to read meters even after heavy rains. Ability to find meters situated in brushy areas.	Flood, Winter Storm	District Secretary	Medium	1,2	\$86,000 (half of need)	Unknown	Two years after funds are available	Not started, lack of funding
Lyon-Coffey Electric Coop - 1	Replace copper weld wire spans and poles to current National Electric Codes and Standards	Tornado, Windstorm, Winter Storm	District Secretary	High	1,2	\$7,750,000	Rural Utilities Service, FEMA HMGP	Three years	Not started, lack of funding





6.8.7 – Shawnee County and Participating Jurisdictions Mitigation Actions

Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Shawnee County-1	Shawnee County is committed to continued voluntary participation and compliance with the NFIP .	Flood	Emergency Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Shawnee County-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	Emergency Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Shawnee County-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	Emergency Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Shawnee County-4	Collect educational materials on individual and family preparedness/ mitigation measures for property owners.	All Hazards	Emergency Manager	High	3,4	Staff Time	Local	Repeating	In progress
Shawnee County-5	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	Emergency Manager	Medium	4	Staff Time	Local	Three years	Not started, lack of funding
Shawnee County-6	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	Emergency Manager	Medium	3,4	\$1,000 per workshop	Local	Repeating	In progress
Shawnee County-7	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	Emergency Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Shawnee County-8	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	Emergency Manager	Medium	3,4	Staff Time	Local	Repeating	In progress





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Shawnee County-9	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism	Emergency Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Shawnee County-10	Form a planning committee to develop an annex to the LEOP for dam/levee failure response and evacuation plans for high hazard dams/levees in Shawnee County.	Terrorism/ Agri-Terrorism, Civil Disorder	Emergency Manager	High	1,2,4	Staff Time	Local	Three years	Not started, lack of funding
Shawnee County-11	Form a coordinating entity to accumulate and consolidate all types of data for levees in Shawnee County and its jurisdictions.	Dam and Levee Failure	Emergency Manager	High	1,2,4	Staff Time	Local, State, Federal	Three years	Not started, lack of funding
Shawnee County-12	Develop a plan that provides guidance for future maintenance, reconstruction, and PM 43 compliance issues for all levee systems in Shawnee County.	Dam and Levee Failure	Emergency Manager	High	1,2,4	Staff Time	Local, State, Federal	Three years	Not started, lack of funding
Shawnee County-13	Develop a program to acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	Emergency Manager	Medium	1,2	Staff Time, dependent upon fair market value	Local, State, Federal	Three years	Not started, lack of funding
Shawnee County-14	Regularly calculate and document the amount of flood prone property that is preserved as open space to reduce flood insurance burden to the county. CRS credit is given for areas that are permanently preserved as open space. (NFIP)	Flood	Emergency Manager	High	1,2	Staff Time	NA	Repeating	In progress
Shawnee County-15	Appoint a planning committee to identify flash-flood prone areas to recommend flood reduction measures to county planners. (NFIP)	Flood	Emergency Manager	Medium	1,2,4	Staff Time	Local	Three years	Not started, lack of funding
Shawnee County-16	Develop and amend the Flood Damage Prevention Ordinance to include a “no-rise (in base flood elevation)” clause for the county. (NFIP)	Flood	Emergency Manager	Medium	1,2	Staff Time	Local	Three years	Not started, lack of funding





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Shawnee County-17	Research and design an appropriate stream buffer ordinance to further protect the jurisdiction's water resources and to limit future flood damages adjacent to major waterways. (NFIP)	Flood	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Three years	Not started, lack of funding
Shawnee County-18	Conduct an inventory/survey for emergency response services to identify any existing needs or shortfalls in terms of personnel, equipment or required resources.	All Hazards	Emergency Manager	Medium	1,2,4	Staff Time	Local, State	Three years	Not started, lack of funding
Shawnee County-19	Amend existing or adopt new zoning and subdivision ordinances to require installation of onsite tornado shelters for any new Manufactured Housing and Travel Trailer Parks with more than 30 mobile home spaces.	Tornado, Windstorm	Emergency Manager	Medium	1,2,4	Staff Time	Local, State	Three years	Not started, lack of funding
Shawnee County-20	Develop cross-departmental information collection capabilities, and incorporate cadastral data utilizing GIS for purposes of conducting more detailed hazard risk assessments.	All Hazards	Emergency Manager	High	4	Staff Time	Local, State, Grants	Three years	Not started, lack of funding
Shawnee County-21	Develop and implement a wildfire prevention/education program.	Wildfire	Emergency Manager	Medium	1,2,3	Staff Time	Local	Repeating	In progress
Shawnee County-22	Examine the current agreements within the county and assess the need to expand to update cooperative agreements for firefighting resources.	Wildfire	Emergency Manager	Medium	4	Staff Time	Local	Three years	Not started, lack of funding
Shawnee County-23	Emergency Services. Create a working group to evaluate the firefighting water supply resources within the County, including both fixed and mobile supply issues.	Wildfire	Emergency Manager	Medium	4	Staff Time	Local	Three years	Not started, lack of funding
Shawnee County-24	Distribute assessment report examples provided by the Kansas Forest Service to applicable parties to develop an understanding of the Community	Wildfire	Emergency Manager	High	3,4	Staff Time	Local, State, Federal, Grants	Three years	Not started, lack of funding





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	Wildfire Protection Plan (CWPP). Recommend joining the program and completing an assessment report for approval.								
Shawnee County-25	Appoint a rural fire committee to schedule meetings with the Kansas Forest Service to map suspected hazardous wildfire areas in the county for potential participation in the CWPP.	Wildfire	Emergency Manager	High	4	Staff Time	Local, State, Federal	Three years	Not started, lack of funding
Shawnee County-26	Incorporate wildfire maps, develop actions and projects for wildfire prevention, and complete an assessment report to meet CWPP requirements for submittal to the Kansas Forest Service.	Wildfire	Emergency Manager	High	1,2,4	Unknown	Local, State, Federal	Three years	Not started, lack of funding
Shawnee County-27	Seek funding to replace the undersized culverts located across SW 40th Street to eliminate excessive erosion in the lower end of the Lake Sherwood watershed due to current and future development runoff. (NFIP)	Flood	Emergency Manager	Medium	1,2	\$225,000	Local, State, FEMA	Three years	Not started, lack of funding
Shawnee County-28	Develop and submit an Emergency Action Plan (EAP) for the Lake Sherwood High Hazard Dam to the State of Kansas and the Shawnee County Emergency Management Department. Approval is granted through the KDA-DWR - State Engineering Office.	Dam and Levee Failure	Emergency Manager	High	1,2,4	Staff Time	Unknown	Two years	Not started, lack of funding
Shawnee County-29	Identify the most at-risk critical facilities and evaluate potential mitigation techniques for protecting each facility to the maximum extent possible.	All Hazards	Emergency Manager	Medium	1,2,4	Staff Time	Local	Three years	Not started, lack of funding
Shawnee County-30	The Cross Creek Watershed will continue to construct, operate, and maintain water detention dams for flood reduction in the watershed district.	Dam and Levee Failure	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Repeating	In progress





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Shawnee County-31	Develop and submit an EAP for the High Hazard Dam owned by Cross Creek Watershed Joint District No. 42. Approval is granted through the Department of Agriculture's Water Resources Division - State Engineering Office.	Dam and Levee Failure	Emergency Manager	High	1,2,4	Unknown	Local	Two years	Not started, lack of funding
Shawnee County-32	The Kaw River Drainage District will continue to perform flood control and river bank stabilization within the Drainage District.	Dam and Levee Failure	Emergency Manager	Medium	1,2	Staff Time	Local, State, Federal	Three years	In progress
Shawnee County-33	The North Topeka Drainage District will continue to maintain and operate flood control levees, flood gate structures, and channels, allowing storm water runoff to pass through the District without causing flooding of property.	Dam and Levee Failure	Emergency Manager	Medium	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Shawnee County-34	The North Topeka Drainage District will seek funding to repair Soldier Creek levees and channel damaged by flood waters.	Dam and Levee Failure	Emergency Manager	Medium	1,2	Staff Time	Local, State, Federal	Three years	Not started, lack of funding
Shawnee County-35	The North Topeka Drainage District will seek funding for an upgrade of the levee located along the north side of the Kansas River within the drainage district.	Dam and Levee Failure	Emergency Manager	Medium	1,2	Unknown	Local, State, Federal	Three years	Not started, lack of funding
Shawnee County-36	The Shawnee County Consolidated RWD No. 1 will continue to assess the impact of natural hazards on water distribution lines, systems, and equipment. Seek funding sources to mitigate damage to critical infrastructure.	Utility/ Infrastructure Failure	Emergency Manager	Medium	1,2	Staff Time	Local, State, Federal	Three years	Not started, lack of funding
Shawnee County-37	The Shunganunga Drainage District will continue the care and maintenance of the Shunganunga Drainage District Dams,	Dam and Levee Failure	Emergency Manager	Medium	1,2	Staff Time	Local, State, Federal	Three years	Not started, lack of funding





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	including the South Branch Dam and the Burnett Dam. The Kaw River Drainage District encompasses the area along Shunganunga Creek in Shawnee County, but is responsible only for the maintenance of the dams located on the Creek. Requested projects include cement-work on the spillways of each dam and possible raising the level of the South Branch Dam to meet state regulations.								
Shawnee County-38	Develop and submit an EAP for the Burnett Dam, a high hazard dam, owned and maintained by the Shunganunga Drainage District. Approval is granted through the KDA-DWR - State Engineering Office.	Dam and Levee Failure	Emergency Manager	High	1,2,4	Staff time	Local	Three years	Not started, lack of funding
Shawnee County-39	The Tri County Drainage District No. 1 will continue to construct, operate, and maintain levee systems along the Kansas River and a portion of Cross Creek and Bourbanois Creek for flood protection.	Dam and Levee Failure	Emergency Manager	Medium	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Shawnee County-40	Develop and submit an EAP for the Lake Shawnee (State ID #DSN-0017) High Hazard Dam. Approval is granted through the KDA-DWR- State Engineering Office.	Dam and Levee Failure	Emergency Manager	High	1,2,4	Staff Time	Local	Three years	Not started, lack of funding
Shawnee County-41	Excavate and fill rodent holes and remove and fil tree roots on and near Lake Sherwood Dam.	Dam and Levee Failure	Emergency Manager	High	1,2	\$15,000	Local, State, Federal	Two years	New
Shawnee County-42	Contract a licensed engineer to inspect and identify hydraulic inadequacies of Sherwood Dam and identify a plan to bring dam into compliance with KDA requirements.	Dam and Levee Failure	Emergency Manager	Medium	1,2	\$50,000	Local, State, Federal	One year	New





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Shawnee County-43	Conduct recommended corrective actions identified by licensed engineer to bring Sherwood Dam into compliance with KDDA requirements.	Dam and Levee Failure	Emergency Manager	High	1,2	Dependent on study	Local, State, Federal	Two years	New
Auburn-1	Auburn is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Auburn-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program, in addition to other flood protection. (NFIP)	Flood	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Auburn-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year.	Flood	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Auburn-4	Collect educational materials on individual and family preparedness/mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Auburn-5	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	City Manager	Medium	4	Staff Time	Local	Three years	Not started, lack of funding
Auburn-6	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$250 per workshop	Local	Repeating	In progress
Auburn-7	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	\$1,000,000	Local, State, Federal	Five years	In progress





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Auburn-8	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	Medium	3,4	Staff Time	Local	Repeating	In progress
Auburn-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Auburn-10	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to the city's Floodplain Manager / Mitigation Officer. (NFIP)	Flood	Floodplain Manager, Mitigation Officer	Medium	1,2,4	Staff Time	Local	Three years	Not started, lack of funding
Auburn Township	Encourage and seek funding for the construction of community safe rooms and storm shelters.	Tornado, Windstorm	Trustee	High	1,2	\$500,00	Local, State, Federal	Five years	Not started, lack of funding
Rossville-1	Underground Electric on Main Street. Including sidewalk & stormwater runoff. These are outdated and in need of repair.	Utility/ Infrastructure Failure	Code Enforcement Administrator	High	1,2	700000	KDOT, Local	12 months	Not started, lack of funding
Rossville-2	Rossville is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Rossville-3	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Rossville-4	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Rossville-5	Collect educational materials on individual and family preparedness/mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Rossville-6	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	City Manager	Medium	4	Staff Time	Local	Three years	Not started, lack of funding
Rossville-7	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress
Rossville-8	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Rossville-9	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	Medium	3,4	Staff Time	Local	Repeating	In progress
Rossville-10	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri- Terrorism,, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Rossville-11	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to the city’s Floodplain Manager / Mitigation Officer. (NFIP)	Flood	Floodplain Manager, Mitigation Officer	Medium	1,2,4	Staff Time	Local	Three years	Not started, lack of funding
Rossville-12	Seek funding to complete a stormwater drainage study/plan for the City that will lead to a stormwater management ordinance. (NFIP)	Flood	Floodplain, Utility Superintendent	High	1,2	\$20,000	Local, State, Federal	Three years	Not started, lack of funding
Rossville-13	Seek funding to retain an engineer to design a community tornado shelter and apply for grant funding for construction.	Tornado	Zoning Administrator	High	1,2	\$40,000	FEMA	Three years	Not started, lack of funding
SilverLake-1	Silver Lake is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
SilverLake-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
SilverLake-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
SilverLake-4	Collect educational materials on individual and family preparedness/mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
SilverLake-5	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	City Manager	Medium	4	Staff Time	Local	Three years	Not started, lack of funding
SilverLake-6	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	Utility/ Infrastructure Failure	City Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress
SilverLake-7	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
SilverLake-8	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	Medium	3,4	Staff Time	Local	Repeating	In progress
SilverLake-9	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism,, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
SilverLkae-10	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to the	Flood	Floodplain Manager, Mitigation Officer	Medium	1,2,4	Staff Time	Local	Three years	Not started, lack of funding





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	city's Floodplain Manager / Mitigation Officer. (NFIP)								
SilverLake-11	Develop a plan to reduce flooding in areas of the City of Silver Lake currently located within a floodplain and seek funding for any needed projects. (NFIP)	Flood	Silver Lake Mitigation Officer, Floodplain Manager	Medium	4	Staff Time	Local, State, Federal	Three years	Not started, lack of funding
SilverLake-12	Seek funding to retain an engineer to design a community tornado shelter and apply for grant funding for construction.	Tornado	Silver Lake Mitigation Officer, Zoning Administrator	High	1,2	\$40,000	FEMA	Three years	Not started, lack of funding
Topeka-1	Topeka is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Topeka-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Topeka-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Topeka-4	Collect educational materials on individual and family preparedness/ mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Topeka-5	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	City Manager	Medium	4	Staff Time	Local	Three years	Not started, lack of funding
Topeka-6	Annually host a public "hazards workshop" for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$1000 per workshop	Local	Repeating	In progress





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Topeka-7	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Topeka-8	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	Medium	3,4	Staff time	Local	Repeating	In progress
Topeka-9	Promote and educate the jurisdiction's public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism,, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress
Topeka-10	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to the city's Floodplain Manager / Mitigation Officer. (NFIP)	Flood	Floodplain Manager, Mitigation Officer	Medium	1,2,4	Staff Time	Local	Three years	Not started, lack of funding
Topeka-11	Develop and submit EAPs for the High Hazard Dams owned by the City of Topeka. Approval is granted through the Department of Agriculture's Water Resources Division - State Engineering Office.	Dam and Levee Failure	City Manager	High	1,2,4	Unknown	Local	Three years	Not started, lack of funding
Topeka-12	The City of Topeka will continue to operate and maintain their levee systems in accordance with the provisional PM 43 certification granted by FEMA and will continue to work with other jurisdictions and levee owners for future compliance issues.	Dam and Levee Failure	City Manager	High	1,2	Unknown	Local, State, Federal	Two years	Not started, lack of funding
Topeka-13	Seek funding to retain an engineer to design Storm Shelters within several city-owned buildings and apply for grant funding for construction.	Tornado	City Manager	High	1,2	\$60,000	FEMA	Three years	Not started, lack of funding





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Willard-1	Willard is committed to continued voluntary participation and compliance with the NFIP .	Flood	City Manager	High	1,2,3,4	Staff Time	State, FEMA, Grants	Repeating	In progress
Willard-2	On an annual basis, contact owners identified in high-risk flood areas and inform them of potential availability of assistance through the Federal Flood Mitigation Assistance (FEMA) program. (NFIP)	Flood	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Willard-3	Advertise and promote the availability of flood insurance to property owners by direct mail once a year. (NFIP)	Flood	City Manager	High	1,2,3	Staff Time	Local	Repeating	In progress
Willard-4	Collect educational materials on individual and family preparedness/mitigation measures for property owners.	All Hazards	City Manager	High	3,4	Staff Time	Local	Repeating	In progress
Willard-5	Coordinate county and local government mitigation efforts with RECs.	Utility/ Infrastructure Failure	City Manager	Medium	4	Staff Time	Local	Three years	Not started, lack of funding
Willard-6	Annually host a public “hazards workshop” for the residents of the jurisdiction, in combination with local festivals, fairs, or other appropriate events drawing large crowds.	All Hazards	City Manager	Medium	3,4	\$500 per workshop	Local	Repeating	In progress
Willard-7	Encourage and seek funding for the construction of safe rooms and storm shelters in public and private schools, day care centers and senior care facilities.	Tornado, Windstorm	City Manager	High	1,2	Staff Time	Local, State, Federal	Repeating	In progress
Willard-8	Educate residents about driving in winter storms and handling winter-related health effects.	Winter Storm	City Manager	Medium	3,4	Staff Time	Local	Repeating	In progress
Willard-9	Promote and educate the jurisdiction’s public and private sectors on potential agricultural terrorism and bio-terrorism issues.	Terrorism/ Agri-Terrorism, Civil Disorder	City Manager	Medium	3,4	Staff Time	Local, State, Federal	Repeating	In progress





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
Willard-10	Appoint a planning committee to identify flash-flood prone areas to consider flood reduction measures to the city's Floodplain Manager / Mitigation Officer. (NFIP)	Flood	City Manager	Medium	1,2,4	Staff Time	Local	Three years	Not started, lack of funding
Willard-11	Research, develop, and adopt a Floodplain Management Plan for the City of Willard. (NFIP)	Flood	City Manager	Medium	1,2,4	Staff Time	Local, State, Federal	Three years	Not started, lack of funding
USD321-1	Construct tornado safe rooms in all USD 321 buildings.	Tornado	Superintendent	Medium	1,2	\$500,000	Local, State, Federal	Three years	Not started, lack of funding
USD321-2	Assess elevations and water flow in the Kaw Valley Unified School District 321 to qualify the benefit of flood control projects at the Rossville Grade School.	Flood	Superintendent	Medium	1,2	Unknown	Local, State, Federal	Three years	Not started, lack of funding
USD345-1	Construct tornado safe rooms in all USD 345 buildings.	Tornado	Superintendent	Medium	1,2	\$1,000,000	Local, State, Federal	Three years	Not started, lack of funding
USD372-1	Construct tornado safe rooms in all USD 372 buildings.	Tornado	Superintendent	Medium	1,2	\$1,000,000	Local, State, Federal	Three years	Not started, lack of funding
USD437-1	Construct tornado safe rooms in all USD 437 buildings.	Tornado	Superintendent	Medium	1,2	\$1,000,000	Local, State, Federal	Three years	Not started, lack of funding
USD450-1	Construct tornado safe rooms in all USD 450 buildings.	Tornado	Superintendent	Medium	1,2	\$1,000,000	Local, State, Federal	Three years	Not started, lack of funding
USD501-1	Construct tornado safe rooms in all USD 501 buildings.	Tornado	Superintendent	Medium	1,2	\$1,500,000	Local, State, Federal	Three years	Not started, lack of funding
Washburn University-1	Construct tornado safe rooms in all Washburn University buildings.	Tornado	President	Medium	1,2	\$1,000,000	Local, State, Federal	Three years	Not started, lack of funding
Washburn University-2	Appoint a committee to develop a radio communications plan between campus security units and outside agencies The	All Hazards	President	Medium	1,2,4	Staff Time	Washburn University,	Three years	Not started, lack of funding





Table 6.10: Shawnee County and Participating Jurisdictions Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Current Status
	Plan should address equipment compatibility and upgrade requirements to implement the Plan.						Topeka, County		
Washburn University-3	Appoint a committee to research and implement enhancements to the University's early warnings systems for students and staff for weather alerts and campus emergencies.	All Hazards	President	Medium	1,2,4	Staff Time	Local, State, Federal	Three years	Not started, lack of funding
Consolidated Rural Water District No. 3 -1	Purchase back-up generators at critical facilities.	Utility/ Infrastructure Failure	Director	High	1,2	\$50,000	Local, State, HMGP	One year	New
Consolidated Rural Water District #4-1	Purchase back-up generators at critical facilities.	Utility/ Infrastructure Failure	Director	High	1,2	\$50,000	Local, State, HMGP	One year	New
Kaw Valley Drainage District-1	Purchase back-up generators at critical facilities.	Utility/ Infrastructure Failure	Director	High	1,2	\$50,000	Local, State, HMGP	One year	New
North Topeka Drainage District-1	Purchase back-up generators at critical facilities.	Utility/ Infrastructure Failure	Director	High	1,2	\$50,000	Local, State, HMGP	One year	New
Shawnee County Rural Water District #8-1	Purchase back-up generators at critical facilities.	Utility/ Infrastructure Failure	Director	High	1,2	\$50,000	Local, State, HMGP	One year	New
Tri-County Drainage District-1	Purchase back-up generators at critical facilities.	Utility/ Infrastructure Failure	Director	High	1,2	\$50,000	Local, State, HMGP	One year	New





6.9 –Mitigation Actions No Longer Under Consideration

For this plan update, members of the MPC and participating jurisdictions were asked to consider if all previous mitigation actions were still viable. Due to the thorough nature of the review, and the comprehensive updating of mitigation actions to meet both the needs of the participating jurisdictions and FEMA planning requirements, many actions were modified to reflect current conditions. However, no mitigation actions were removed from consideration for this plan update. A full comparison of jurisdictional actions may be completed by comparing the actions detailed in this plan against the actions from the 2013 regional hazard mitigation plan.

6.10 – Action Implementation and Monitoring

44 CFR 201.6 (c)(3)(iii) An action plan describing how the actions identified in paragraph (c)(3)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

Kansas Region J and relevant participating jurisdictions are responsible for implementing their identified mitigation action(s). To foster accountability and increase the likelihood that actions will be implemented, every proposed action is assigned to an action champion. In general:

- The identified champion will be responsible for tracking and reporting on action status.
- The identified champion will provide input on whether the action as implemented is successful in reducing vulnerability.
- If the action is unsuccessful in reducing vulnerability, the identified champion will be tasked with identifying deficiencies and additional required actions.

Additionally, each action has been assigned a proposed completion timeframe to assist in tracking the continued viability of the action if not completed, and to assist participating jurisdictions in potentially programming Funding to complete the actions.

In general, each participating jurisdiction, along with the MPC, is responsible for monitoring the progress of mitigation activities and projects. To facilitate the tracking of mitigation actions the Kansas Region J MPC and KDEM, in conjunction with participating jurisdictions, will compile a list of projects funded and completed. Additionally, the MPC and participating jurisdictions will be solicited annually to provide information on any other mitigation projects that were not funded through hazard mitigation grants for tracking and update purposes.

To track mitigation projects from initiation to closeout, participating jurisdictions will use a project tracking methodology that includes, at a minimum, the following information:

- Applicant data
- Grant identifier





- Award date
- Awarded contractor
- Period of Performance
- Total project cost, including local share of project
- Quarterly Reports

Upon completion of a project the awarded participating jurisdiction will conduct a closeout site visit to:

- Review all project documents
- Review all procurement documents and contracts
- Photograph completed project

Project closeout packages will generally be submitted no more than 90 days after a project has been completed, and should include the following:

- All available documentation
- Photographs of completed project
- Materials, labor and equipment documentation
- Close-out certification

6.11 – Jurisdictional Compliance with NFIP

44 CFR 201.6 (c)(3)(ii) All plans approved by FEMA after October 1, 2008, must also address the jurisdiction's participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

Participating jurisdictions are committed to continued involvement and compliance with the NFIP. To help facilitate compliance, each participating jurisdiction:

- Adopts floodplain regulations through local ordinance
- Enforces floodplain ordinances through building restrictions as detailed in relevant ordinance
- Regulates new construction in Special Flood Hazard Areas as outlined in their floodplain ordinance
- Utilizes FEMA FIRMs
- Monitors floodplain activities

Currently, no participating jurisdiction has available funding to complete local requests for floodplain map updates. Additionally, as of this plan, there are no active community assistance or monitoring activities occurring in any participating jurisdiction. Key to achieving across the board reduction in flood damages is a robust community assistance, education and awareness program. As such, Kansas Region J and its participating jurisdictions will continue to develop both electronic (including social media) and in person outreach activities.





Specific mitigation actions supporting regional commitment to both the NFIP and potential CRS application and compliance were identified above with a bold type **NFIP** in the subsequent mitigation action sections.

6.12 –Primary Mitigation Action Funding Sources

It is generally recognized that mitigation actions help communities realize long term savings by preventing future losses due to hazard events. However, many mitigation actions are beyond the budgetary capabilities a jurisdiction and Funding assistance, often in the form of grants, may be required. This following table provides a general description of some of the primary avenues available to jurisdictions to defray the cost of implementing mitigation actions.

Table 6.11: Primary Hazard Mitigation Funding Mechanisms

Program	Funding Agency	Funding Match Requirement	Program Description
Community Development Block Grant Program	Department of Housing and Urban Development	N/A	Program is a competitive grant process through which about half of the Funding goes to support the development of community facilities and water and sewer projects. grants in four categories, community improvement, urgent need, Kansas Small Towns Environment Program and economic development.
Federal Public Assistance	FEMA	Varied	Provides Funding used to restore the parts of a structure that was damaged during a disaster. The restoration must provide protection from subsequent events.
Federal Individual Assistance	FEMA	Varied	Provides assistance for qualified homeowners/renters whose primary residence was damaged or destroyed in a declared designated area.
Flood Mitigation Assistance	FEMA	Varied	Program provides Funding to States, Territories, federally-recognized tribes and local communities for projects and planning that reduces or eliminates long-term risk of flood damage to structures insured under the NFIP. Funding is also available for management costs.
Hazard Mitigation Grant Program	FEMA	25%	Program is to ensure that the opportunity to take critical mitigation measures to reduce the risk of loss of life and property from future disasters is not lost during the reconstruction process following a disaster. Funding is available, when authorized under the Presidential Major Disaster Declaration, in the areas of the state requested by the governor. The amount of Funding available to the applicant is based upon the total federal assistance provided by FEMA for disaster recovery under the major disaster declaration.
Pre-Disaster Mitigation Program	FEMA	25%	Program is designed to assist states, territories, Indian tribal governments, and local communities to implement a sustained pre-disaster natural hazard mitigation program to reduce overall risk to the population and structures from future hazard events, while also reducing reliance on federal Funding from future major disaster declarations.





6.13 – Additional Hazard Mitigation Funding Mechanisms

A wide variety of federal and state agencies offer mechanisms for funding mitigation projects. A thorough, but by no means complete, list of potential mitigation funding sources are detailed in the following table along with a brief program description.

Table 6.12: Additional Potential Hazard Mitigation Funding Mechanisms

Department	Program	Program Description
FEMA	Fire Management Assistance Grant Program	Provides for the mitigation, management, and control of fires on publicly or privately-owned forests or grasslands. The process is initiated when the state requests federal assistance for an event where the threat of major disaster exists for either single fires or numerous small fires.
FEMA	Risk Mapping, Assessment, and Planning (Risk Map)	The Risk MAP strategy incorporates floodplain management with hazard mitigation by using tools such as DFIRMs, HAZUS reports, and risk assessment data to deliver quality data that increases public awareness and leads to action to reduce risk to life and property.
National Oceanic and Atmospheric Administration National Weather Service (NOAA NWS)	StormReady Program	StormReady is a voluntary program that was developed by NOAA NWS to help communities better prepare for and mitigate effects of all types of severe weather from tornadoes to flooding. The program encourages communities to take a new, proactive approach to improving local hazardous weather operations by providing emergency managers with clear-cut guidelines on how to improve their hazardous weather operations.
Mutual Aid	Kansas Water, Wastewater, Gas and Electric Utility Mutual Aid Program (KSMAP)	KSMAP has been developed to serve as the mutual aid program for Kansas utilities to help with provision of equipment, materials and personnel to assist in the restoration and continuation of utility service for those utilities needing assistance. The project is a joint effort of Kansas Municipal Utilities, Kansas Rural Water Association, the Kansas Section – American Water Works Association, the Kansas Water Environment Association, Kansas Corporation Commission, Kansas Department of Health & Environment and the Kansas Division of Emergency Management.
FEMA	Individual & Households, Other Needs Assistance (ONA) Program	The ONA program provides financial assistance to individuals or households who sustain damage or develop serious needs because of a natural or man-made disaster. The Funding share is 75% federal funds and 25% state funds. The program gives funds for disaster-related necessary expenses and serious needs, including personal property, transportation, medical and dental, funeral, essential tools, flood insurance, and moving and storage. The current maximum allowable amount for any one disaster to individuals or families is \$25,000.
Council of Western State Foresters	Wildland Urban Interface (WUI) Grants	The WUI Grant may be used to apply for financial assistance towards hazardous fuels and educational projects within the four goals of: improved prevention, reduction of hazardous fuels, restoration of fire-adapted ecosystems and promotion of community assistance.





Table 6.12: Additional Potential Hazard Mitigation Funding Mechanisms

Department	Program	Program Description
Small Business Administration	Disaster Loans	SBA disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.
Kansas Department of Agriculture – Division of Conservation (KDA-DoC)	Multipurpose Small Lakes Program	Provides state cost-share assistance to a government entity for the construction or renovation of a dam for flood control and water supply and/or recreational purposes. It requires a general plan of works and a local nonpoint source pollution control plan.
(KDA-DoC)	State Assistance to Watershed Dam Construction	Provides state cost-share assistance to a government entity for the construction or renovation of a dam for flood control and water supply and/or recreational purposes. It requires a general plan of works and a local nonpoint source pollution control plan.
(KDA-DoC)	State Assistance to Watershed Dam Construction	Provides cost-share assistance to organized watershed districts and other special purpose districts for the implementation of structural and nonstructural practices that reduce flood damage. Structural practices must be approved by the chief engineer of the Division of Water Resources.
(KDA-DoC)	Water Resources Cost Share Program	Provides state cost-share assistance to landowners for the establishment of enduring water conservation practices to protect and improve the quality and quantity of Kansas water resources.
(KDA-DoC)	Water Conservation Program	Provides financial incentives for voluntary retirements of private water rights in high priority areas.
(KDA-DoC)	Water Conservation Program	Provides financial incentives for voluntary retirements of private water rights in high priority areas.
Kansas Department of Agriculture – Division of Water Resources (KDA-DWR)	Community Assistance Program	This program enhances the State’s capability to provide floodplain management information and technical assistance to help local officials in NFIP and CRS participating communities. It also encourages nonparticipating communities to join the NFIP and CRS.
KDA-DWR	Floodplain Management Program	Program provides technical assistance for local, state and federal floodplain management, including managing the NFIP and floodplain ordinances and regulations adopted by city and county governments.
Kansas Department of Commerce (KDC)	Community Service Tax Credit	Program offers Kansas tax credits to for nonprofit organizations for contributions to approved projects. Projects eligible for tax credit awards include community service, crime prevention and health care
KDC	Kansas Partnership Fund	This fund provides low-interest state loans to cities and counties for infrastructure improvements that support Kansas basic enterprises.
Kansas Department of Health and Environment—Bureau of Environmental Remediation (KDHE-BER)	Abandoned Mine Land Program	Program provides for the remediation of sites that are an immediate threat to the health and safety of the public.
KDHE-BER	Kansas Brownfields Program	Programs to assist communities with the redevelopment of brownfields properties
KDHE-BER	State Water Plan Contamination Remediation Program	Program provides Funding for the evaluation, monitoring, and remediation of contaminated groundwater or surface water sites and provides Funding to supply alternate water sources as an emergency





Table 6.12: Additional Potential Hazard Mitigation Funding Mechanisms

Department	Program	Program Description
		response action to residences with contaminated drinking water sources.
Kansas Department of Transportation	Transportation Enhancement Program	This is an annual competitive Federal Transportation Enhancement funded program that can be used for transportation enhancement activities that include environmental mitigation to address water pollution due to highway runoff or reduce vehicle-caused wildlife mortality while maintaining habitat connectivity.
Kansas Forest Service (KFS)	Community Forestry Program	Program provides assistance, education, and support to communities and municipalities in organizing urban and community forestry programs, identifying resource needs, setting priorities of work, and training city employees.
KFS	Rural Forestry Program	Professional foresters provide on-site forest management and agroforestry analysis and recommendations through inventory of forests, woodlands and windbreaks.
KFS	Firewise Program	The Kansas Firewise program offers prevention materials for homeowners to reduce the threat of wildland fire in rural and high-risk areas.
KFS	Forest Health Program	Program monitors the impacts of insects, diseases, drought, flooding and other health issues in forests, woodlands, windbreaks and conservation tree plantings by providing diagnosis and control recommendations and mitigation and planning for Emerald Ash Borer, Asian Bush Honeysuckles and other invasive species.
KFS	Landowner Education	Provides information and education to farmers regarding the benefits of good forest management. This includes information about federal cost share practices including the Environmental Quality Incentives Program, Conservation Reserve Program, and the Riparian and Wetland Protection Program.
KFS	Rural Fire Protection	Program provides fire support services to rural fire departments, including wildfire training, Smokey Bear fire prevention materials, and the acquisition and distribution of excess military vehicles for conversion to firefighting units.
Kansas Highway Patrol	Federal Preparedness Grant Program	Through this program, the Department of Homeland Security/FEMA provides Funding to states to prevent, respond to, and recover from acts of terrorism by enhancing and sustaining capabilities.
Kansas State Fire Marshal's Office	Fire Prevention Program	Program focuses on structural inspection to ensure compliance with the Kansas Fire Prevention Code.
Kansas State Fire Marshal's Office	Hazardous Materials Program	Program provides training, planning, and analysis related to hazardous materials accidents/incidents and WMD events to help local facilities and local, state, and federal agencies before an event occurs.
Kansas Water Office (KWO)	Public Information and Education	This public education program provides information on water resource issues to the general public through publication of articles, pamphlets, news reports, etc. It also provides support for environmental education and local leadership development programs.
KWO	Stream Gauging Program	State financial assistance is provided for the operation of selected gauging stations operated by the U.S. Geological Survey.





Table 6.12: Additional Potential Hazard Mitigation Funding Mechanisms

Department	Program	Program Description
KWO	Technical Assistance to Water Users	Program provides technical assistance to municipalities, irrigators, and other groups to assist in the reduction of water use and improve water use efficiency.
KWO	Public Information and Education	Eligible jurisdiction can use loans for construction, replacement, acquisition and ownership of facilities, land and easement procurement, improvements for developing and utilization of water resources, projects to supply quality water to residents, provide water for navigation, provide recreational access to lakes and streams, reclaim, preserve and protect the state's land resources, and protect the wealth of the state from disastrous floods.



7.0 Plan Maintenance

7.1 – Hazard Mitigation Plan Monitoring and Evaluation

44 CFR 201.6 (c)(4) A plan maintenance process that includes: (i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

The Kansas Region J Hazard Mitigation Plan will be updated then approved by FEMA every five years. During the five-year cycle, the plan will undergo continuous monitoring and evaluation to ensure that the policies, procedures, priorities, and state environment established in the plan reflect current conditions.

To achieve this, the MPC will meet annually after plan approval. If needed, additional meetings will take place during this timeframe. The State of Kansas State Hazard Mitigation Officer will determine the meeting dates and location and is responsible for sending invitations.

During the five-year evaluation phase, the MPC is responsible for assessing the effectiveness of the plan by:

- Reviewing the hazards and determining if any of them have changed
- Determining if there are new hazards that pose a risk to the state
- Ensuring goals and objectives are still relevant
- Determining if any actions have been completed or are deemed irrelevant
- Determining if new actions should be added
- Determining if capabilities have changed

In addition to these meetings, the MPC will monitor and evaluate the progress of mitigation projects via regular reports, site visits, and correspondence. Progress and viability of identified mitigation actions will be measured based on the following variables:

- The number of projects successfully implemented
- The breadth of disbursement of mitigation grant funds
- The disaster losses avoided over time
- Public awareness
- Success of completed mitigation projects in helping address and achieve identified goals and objectives
- Have the completed mitigation actions resulted in a safer Kansas Region J

In order to monitor the implementation of plan actions and the overall progress of plan goals, MPC members will report on the following information:

- How the actions from the mitigation strategy are being pursued and completed
- Are actions being prioritized
- How the plan goals and objectives are being carried out
- How mitigation funding mechanisms are being utilized
- How participating jurisdictions are receiving technical assistance





7.2 – Jurisdictional Maintenance Requirements

Kansas Region J and all participating jurisdictions will be tasked with plan monitoring, evaluation, and maintenance. All participating jurisdictions, led by MPC, will:

- Regularly monitor and evaluate the implementation of the plan
- When applicable, after a disaster event, evaluate the effectiveness of the plan
- Act as a think tank for all issues related to hazard mitigation planning
- Act as a clearinghouse for hazard mitigation ideas and activities
- Assist with the implementation of all identified actions with available resources
- Monitor all available funding opportunities for mitigation actions
- Coordinate the cycle for the revision and update of the mitigation plan
- Report on plan progress and recommended changes to the relevant governing bodies
- Inform and solicit input from the public

Each participating jurisdiction will also be responsible for promoting the integration of the hazard mitigation plan into all relevant plans, policies, procedures and ordinances.

7.3 – Plan Maintenance and Update Process

44 CFR 201.6 (c)(4) A plan maintenance process that includes: (i) A section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle."

Kansas Region J, the State of Kansas, and the MPC will facilitate a yearly plan review and the subsequent hazard mitigation plan revision and re-adoption process within the required five-year period.

Information from the annual meetings will be incorporated in to the plan update. Starting in calendar year 2022, the formal update process will begin. A thorough review and revision of the plan will take place, following all requirements detailed in 44 CFR 201.4, FEMA guidance documents, and DMA 2000. The following represents a general timeline for the next required plan revision.

- **Three years before plan expiration, Spring:** The MPC will begin updating the plan risk assessment. Hazards will be analyzed for continued relevancy and a review will be conducted to determine and new potential hazards.
- **Three years before plan expiration, Fall:** The MPC will begin updating the vulnerability assessment. Data will be gathered on jurisdictional assets, critical facilities, building stock values, crop losses, jurisdictional damages, etc.
- **Two years before plan expiration, Spring:** The MPC will review all information from previous meetings and determine if hazard mitigation goals and objectives are still relevant. Actions will be reviewed for currency and applicability. Work will begin on HMP revision.
- **Two years before plan expiration, Fall:** The MPC will evaluate the policies, programs, capabilities, and funding sources from the previous plan and plan revision to determine if they are still accurate and determine if additions are required.





- **One year before plan expiration:** Work will begin on the revision of the 2019 HMP.
- **Six months before plan expiration:** The MPC will review the final draft copy of the mitigation plan and make comments and updates if necessary. All participating jurisdictions and the public will be given an opportunity to review and comment on draft HMP.
- **Two months before plan expiration:** Formal submittal to FEMA for re-approval.

As part of the plan maintenance process, and consistently during the five-year HMP approval period, the MPC will continually monitor all elements of the plan, including:

- The incorporation of the HMP into other planning mechanisms
- All revisions and updates to the HMP
- Continued public participation

This monitoring will be done through outreach efforts to include:

- Email communication
- Phone communication
- In person communication at meetings, relevant conferences, and local planning events

Through consistent monitoring the MPC will then be able to efficiently incorporate these elements into the next plan revision.

Upon each successive revision, the plan will need to be re-adopted by all participating jurisdictions. Circumstances, including a major disaster or a change in regulations or laws, may modify the required five-year planning cycle.

7.4 – Post-Disaster Declaration Procedures

Following a disaster, each participating jurisdiction and the MPC may review the plan to determine if any additional actions need to be identified, additional funding has become available, or any identified actions need to be re-prioritized.

7.5 – Incorporation of HMP into Other Planning Mechanisms

44 CFR 201.6 (c)(4)(ii) A process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

The hazard mitigation plan is an overarching document that is both comprised of, and contributes to, various county and local plans. Under the leadership of the MPC, it is hoped that when each of these other plans is updated, they will be measured against the contents of this HMP.

Below is a list of the various jurisdictional planning efforts, either solely or jointly administered, and relevant planning documents. While each plan can stand alone, each participating jurisdiction, under the





leadership of their MPC member, will actively work to incorporate relevant parts of this hazard mitigation plan into the following:

- All participating jurisdictions Codes and Ordinances
- All participating jurisdictions Comprehensive Plans
- All participating jurisdictions Critical Facilities Plans
- All participating jurisdictions Economic Development Strategic Plans
- All participating jurisdictions Emergency Operations Plans
- All participating jurisdictions Flood Mitigation Assistance Plan
- All participating jurisdiction Land-Use Plans
- Community Wildfire Protection Plans

Additionally, in cooperation with the MPC, each participating jurisdiction will be actively courted on incorporating elements of this hazard mitigation plan for any relevant plan, code or ordinance revision or creation.

Finally, each participating jurisdiction has committed to actively encourage all departments to implement actions that minimize loss of life and property damage. Whenever possible, each participating jurisdiction will use existing plans, policies, procedures and programs to aid in the implementation of identified hazard mitigation actions. Potential avenues for implementation may include:

- Budget revisions or adoptions
- Capital improvement plans
- General or master plans
- Hiring of staff
- Land use planning
- Operation plans
- Ordinances
- Stormwater planning

Participating jurisdictions are encouraged to utilize all available budget avenues for the completion of hazard mitigation items. Budgetary options may include:

- Annual budgets
- Application for grant funding
- Departmental budgets
- In-kind donations

Where appropriate, the MPC will take the lead in integrating this HMP into overarching, countywide plans, code, ordinances and any other relevant documents, policies or procedures.





7.6 – Continued Public Involvement

44 CFR 201.6 (c)(4)(iii) Discussion on how the community will continue public participation in the plan maintenance process.

Public participation is an important part of the continued mitigation planning process. Every effort will be made to keep the public informed on both relevant mitigation issues and the five-year plan revision cycle. Strategies for continued public involvement may include:

- Postings on electronic media, to include websites
- Notifications, when possible, in local media
- Making plans available for review in public locations
- A review of local mitigation strategies and goals
- A review completed and remaining hazard mitigation actions



Appendix A

Adoption Resolutions





Model Resolution

Resolution # _____: **Adopting the Kansas Homeland Security Region J Hazard Mitigation Plan**

Whereas, the (Name of Government/District/Organization) recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 (“Disaster Mitigation Act”) emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments; and

Whereas, an adopted Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs; and

Whereas, the (Name of Government/District/Organization) fully participated in the FEMA prescribed mitigation planning process to prepare this Multi-Hazard Mitigation Plan; and

Whereas, the Kansas Division of Emergency Management and FEMA Region VII officials have reviewed the Kansas Homeland Security Region J Hazard Mitigation Plan, and approved it contingent upon this official adoption of the participating governing body; and

Whereas, the (Name of Government/District/Organization) desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the Kansas Homeland Security Region J Hazard Mitigation Plan; and

Whereas, adoption by the governing body for the (Name of Government/District/Organization) demonstrates the jurisdictions’ commitment to fulfilling the mitigation goals and objectives outlined in this plan, and

Whereas, adoption of this legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan.

Now, therefore, be it resolved, that the (Name of Government/District/Organization) adopts the Kansas Homeland Security Region J Hazard Mitigation Plan as an official plan; and

Be it further resolved, the (Name of Government/District/Organization) will submit this Adoption Resolution to the Kansas Division of Emergency Management and FEMA Region VII officials to enable the plan’s final approval.

_____:Date _____: Approved by



Appendix B

FEMA Approval Documents



Appendix C

Meeting Minutes and Sign-In Sheets



To **Region “J” Hazard Mitigation Planning Committee**

Through **Jeanne Bunting, Mitigation Planner
Kansas Division of Emergency Management (KDEM)**

From **Matt Eyer**
Tel / E-mail **Blue Umbrella Co**

Date **February 11 and 12, 2019**

Subject **Minutes from the Region “J” Mitigation Planning Meeting held on 11 February in Miami County and 12 February 2019 in Osage County, and 27 February in Shawnee County.**

This document is a record of attendance and a summary of the issues discussed during the above Kickoff meeting. Topics covered during the meeting included: (1) an introduction to the purpose of hazard mitigation planning, (2) the benefits of a multi-jurisdictional approach, (3) the reasons for the regional mitigation planning process, (4) grant programs linked to an approved plan and (5) action items in the previous county hazard mitigation plans. The hazard mitigation planning process was reviewed to include requirements for public involvement and the use of data collection guides, and the new action criteria. The planning committee reviewed the list of hazards to be used as a part of the regional plan. The group discussed mitigation actions and the availability of grant programs during the meeting. The meeting concluded with a discussion of the next steps in the planning process. The formal presentation portion of the meeting began at 0930 CDT (11 Feb) and 1330 CDT (12 Feb) and concluded at 1100 CDT (11 Feb) and 1530 CDT (12 Feb). A third kickoff meeting was held on 27 February 2019 for the County and Jurisdictions of Shawnee County.

Attendees

See attached sign in sheets

Introductions

Jeanne Bunting with KDEM began the meeting by welcoming and thanking the attendees. Participants introduced themselves and identified what jurisdiction they represented.

Introduction to Hazard Mitigation Planning

Matt Eyer, the plan author contractor, presented information on the purpose and requirements of the Disaster Mitigation Act of 2000. The attendees were reminded that this is a regional planning effort which will update the current Region J mitigation plan. The plan includes: Shawnee, Osage, Franklin, Miami, Linn, Anderson, and Coffey counties. The presentation also addressed the benefits for jurisdictions participating in this mitigation plan update, including eligibility for federal hazard mitigation assistance funding programs.

Matt Eyer described the benefits of participating in a multi-jurisdictional plan as improving coordination and communication among local jurisdictions and that these hazards do not stop at

jurisdictional boundaries thus this multi-jurisdictional plan allows for a more comprehensive approach. The group also heard information regarding the significant cost savings being realized by the regional approach to planning. The regional approach now being used allows planning services to be provided to each county for the update at no cost to the county. Matt Eyer with Blue Umbrella will be completing the Region “J” mitigation plan for committee review.

Mr. Eyer also described the role of the Hazard Mitigation Planning Committee (HMPC). Each jurisdiction participating in development of the plan must meet the following minimum requirements:

- Designate a representative to serve on the Region “J” Hazard Mitigation Planning Committee, which will meet twice during the planning process, Emergency Managers will meet three times.
- Provide data for and assist in the development of the updated risk assessment that describes how various hazards impact your jurisdiction,
- Provide data to describe current capabilities,
- Develop/update mitigation actions (at least one) specific to your jurisdiction,
- Provide comments on plan drafts as requested,
- Inform the public, local officials, and other interested parties about the planning process and provide opportunities for them to comment on the plan, and
- Formally adopt the mitigation plan.

Planning for Public Involvement

The local/regional hazard mitigation plan requirements state that the public must have the opportunity to comment on the plan. The public will be given two opportunities to comment on the plan, once during the drafting stage and another when the plan is complete in the final draft stage. KDEM is planning to utilize a questionnaire on SurveyMonkey.com to ask the public’s opinion about hazards that affect them during the drafting stage. The HMPC members in the county are also requested to post the SurveyMonkey.com link, once available, on their websites and newsletters to the public and to distribute the survey as widely as possible.

Data Collection Process

The participating jurisdictions at the meeting were provided hard copies of Data Collection Guides. Local County Emergency Management Agencies will follow-up with jurisdictions that were not in attendance at this meeting to provide an overview of the process being used and copies of data collection guides for completion. Mr. Eyer briefed on the Data Collection Guides, and reminded the attendees that they are specific for local units of government and schools. There are two different guides, one for local governments, and one for schools and universities. The jurisdictions were requested to provide data regarding hazards that had occurred in their jurisdiction since the last plan update (2014) for the 22 hazards that are in the Regional Plan. The Data Collection Guides were requested to be returned to Jeanne Bunting 15 March 2019.

Plan Format/ Regional and Countywide Risk Assessment

The list of hazards in the State of Kansas plan is the list that is being used for the regional plans. All of the hazards included in the State Plan were included in the current plan for the

counties in Region J. Blue Umbrella staff will be updating the regional hazard ranking using the State Plan methodology for hazards in their current plan.

Hazard Mitigation Assistance Grants Available Linked to Approved Plan

The following four Hazard Mitigation Assistance grant programs were outlined, priority activities discussed, deadline of grants, and current funds available for:

- Hazard Mitigation Grant Program (HMGP)
- Pre-disaster Mitigation (PDM)
- Flood Mitigation Assistance (FMA)
- POST HMGP Fire

Other state and federal grant programs for mitigation projects were also mentioned.

Mitigation Actions

The planning committee was provided an introduction to update and development of mitigation actions. Jurisdictional representatives were requested to provide updates as to: (1) action status – in a measureable format, i.e. 100% complete. They were also advised of the FEMA SMART action criteria and the four categories for actions. The group was reminded that each participating jurisdiction must have at least one action and that all NFIP jurisdictions must have at least two NFIP-related actions. The date for the final planning meeting will be sent to each agency. At that final meeting, the mitigation actions for the plan will be prioritized.

Next Steps

The meeting concluded with a discussion of the remaining steps to complete the planning process as follows:

- **March 15, 2019— Data Collection Guides Due to KDEM**
- **April 2019, TBD – Meeting #2 for Emergency Management Officials**
- **TBD (Beginning of Jun 2019) – Meeting #3 All Committee Members – Action Priorities**
- **July 2019 (beginning of) — Submit Plan to FEMA**

Shawnee

Name (Legibly!)	County/Organization (Legibly!)	Title (Legibly!)
Jim Green	City of Topeka	EM Coordinator
Andy Lewis	Kaw River Drainage District	President
Doug McHATTON	AUBURN TOWNSHIP	TRUSTEE
Joyce Douglas	CRWD #3	Manager
Lisa Sturm	City of Rossville	City Clerk
Mike Weishaar	Consolidated RWD # Shawnee Co	Manager
Willie Smith	City of Silver Lake	CRS Coordinator
Grant Peters	SN RWD # 8 Tecumseh	General Mgr
Anna Ortega	County Planning Dept	Interim Planning Director
Gary Mutschelknaps	North Topeka Drainage	Engineer
Brian Thompson	"	Superintendent
Merrill Belfort	North Topeka Drainage	Attorney
Scott Garcia	SNCO EM	Dep Director
James Steele	SNCO EM	Logistics Chief

OSAGE Co.

Name (Legibly!)	County/Organization (Legibly!)	Title (Legibly!)
Jeanne Bunting	State - K&EM	Mitigation Planner
Steve Samuelson	KDA/DWA NFIP Coord.	NFIP Coordinator
Jackie Patterson	Osage Co. Health Dept	Director
Tim Patterson	OCFD #3	Safety Officer
Nes Colson	City of Burlingame	Superintendent
Bruce Romo	OSAGE 20 Em MBT	DIRECTOR
Julie Stutzman	City of Lyndon	City Clerk
Joey Lamond	City of Osage City	Director of Utilities
Terr, Fultz	" " " "	City Clerk
Rod Willis	" " " "	City Manager
Carol Setzer	OSRAD3	Secretary
Jim Koger	City of Overbrook	City Clerk
ERIN MANN	SHAWNEE COUNTY EM	PLANNER / TRAFFIC

Name (Legibly!)	County/Organization (Legibly!)	Title (Legibly!)
Steve Harsha	KDEM	Regional Coordinator
Terry Halliday	Overbrook P.D.	Chief of Police
Scott Garcia	Shawnee County EM	Dep Dir
Troy Hutton	USD 420	Superintendent
Joe Sample	USA 456	Superintendent
Frank Richmond	Frontier Extension District	District Director
Amber Presley	Coffey Co. Emerg. Mgmt.	Asst. Coord / Planner
Chesie Sauder	Coffey Co. + Woodson Co. Emerg Mgmt	Planner
Doug Jones	Burden PD	CHIEF

Miami Co.

Name (Legibly!)	County/Organization (Legibly!)	Title (Legibly!)
Danielle Martin	N.E.K.S Healthcare Coalition	Coordinator
Flavie Kelly	MICO EM/50	Director
MARK FENIMK	MICO EM/COOR.	COORDINATOR
Don Pore	Pavla PD	Chief of Police
Kevin Colwell	Pavla PD	Captain
ERIC JONKINS	PAOLA PD	CAPTAIN
SP Mersman	ARCO EMT	Director
Rita McKenon	Miami Co. Health Dept	RN Health Director
Ed Beaudry	city of oswatomire	Building Inspector / FIRE
Paul M Gamblyn	Miami County EMS	Paramedic Battalion Chief
Kirk Rees	City of Paola	Director of Public Works
Frank Burrow	Miami Co EMS	Deputy Chief
David M. Ediger	Miami Co. EMS	EMS Chief
ANDY MARTIN	PAOLA FIRE DEPARTMENT	CHIEF
Steve Towns	LOUISBURG FIRE DEPT	MEMBER
Shirley Slay	Miami County Medical	
David Sharp	MCMC med, ca	
Paul Luce	MCMC medical center	

To **Region “J” Hazard Mitigation Planning Committee**

Through **Jeanne Bunting, Mitigation Planner
Kansas Division of Emergency Management (KDEM)**

From **Jeanne Bunting, Mitigation Planner**
Tel / E-mail **Kansas Division of Emergency Management (KDEM)**

Date **May 2019**

Subject **Minutes from the Region “H” Mitigation Planning Meeting held through phone and email due to flooding.**

This document is a record of attendance and a summary of the issues discussed during the above meeting. Topics covered during the meeting included: (1) Strategy, (2) Goals, and (3) actions. The hazard mitigation planning process was reviewed to include requirements for public involvement and the use of data collection guides, and the new action criteria. The meeting concluded with a discussion of the next steps in the planning process with the final meeting being held in June 2019 with time, date and location TBD.

Attendees

Participant	Title	Organization
JD Mersman	Emergency Manager	Anderson County
Mick Brinkmeyer	Assistant Director	Anderson County
Russel Stukey	Emergency Manager	Coffey County
Amber Presley	Assistant Director	Coffey County
Alan Radcliffe	Emergency Manager	Franklin County
Thomas Winter	Assistant Director	Franklin County
Doug Barlet	Emergency Manager	Linn County
Frank Kelly	Emergency Manager	Miami County
Bryce Romine	Emergency Manager	Osage County
Bret Lewis	Assistant Director	Osage County
Dusty Nichols	Emergency Manager	Shawnee County
Nelson Casteel	Assistant Director	Shawnee County
Jeanne Bunting	Mitigation Planner	State of Kansas
Matt Eyer	Plan Author	Blue Umbrella Solutions

Agenda

Matt Eyer, the plan author, reviewed the strategy, goals, and went in depth on the necessary steps needed in order to bring the actions up to par and in accordance with SMART objectives via phone and email communication due to the cancellation of the meeting for flooding. Actions are due back to Jeanne Bunting by 10 June 2019 for inclusion in the 2019 plan update.

Next Steps

The meeting concluded with a discussion of the remaining steps to complete the planning process as follows:

- **June 10, 2019— Actions Due to KDEM**
- **June 25, 2019 — Final Meeting for Region J**
- **July 2019 — Submit Plan to FEMA**

//s//

Jeanne Bunting, Mitigation Planner, KDEM

To **Region “J” Hazard Mitigation Planning Committee**

Through **Jeanne Bunting, Mitigation Planner
Kansas Division of Emergency Management (KDEM)**

From **Jeanne Bunting, Mitigation Planner**
Tel / E-mail **Kansas Division of Emergency Management (KDEM)**

Date **25 June, 2019**

Subject **Minutes from the Region “J” Mitigation Planning Meeting held on 25 June 2019, at Coffey and Shawnee Counties for all the counties within the region.**

This document is a record of attendance and a summary of the issues discussed during the above meeting. Topics covered during the meeting included: (1) Strategy, (2) Goals, and (3) actions, 4) final steps, 5) draft plan. The meeting concluded with a discussion of the next steps in the planning process and the necessity to open the plan for public comment.

Attendees

Name	Organization	County
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See attached.

Agenda

The meeting was scheduled in order to finalize the draft plan of Region J. Matt Eyer, the plan author, reviewed the strategy, goals, and went in depth on the next steps, which include public comments.

Next Steps

The meeting concluded with a discussion of the remaining steps to complete the planning process as follows:

- **July 2019 – Submit Plan to FEMA**

//s//

Jeanne Bunting, Mitigation Planner, KDEM

Appendix D
Critical Facilities
(Restricted, Not for Release)

RESTRICTED



Introduction to Critical Facilities

A critical facility is essential in providing utility or direction either during the response to an emergency or during the recovery operation, with facilities determined from jurisdictional feedback. The following are examples of critical facilities and assets:

- Communications facilities
- Emergency operations centers
- Fire stations
- Government buildings
- HazMat Facilities
- Hospitals and other medical facilities
- Police stations
- As deemed necessary by the jurisdiction

The information below is the inventory of critical facilities for all participating jurisdictions who elected to provide this information for this plan. All information was gathered from the Kansas Division of Emergency Management, participating jurisdictions, and prior plans.

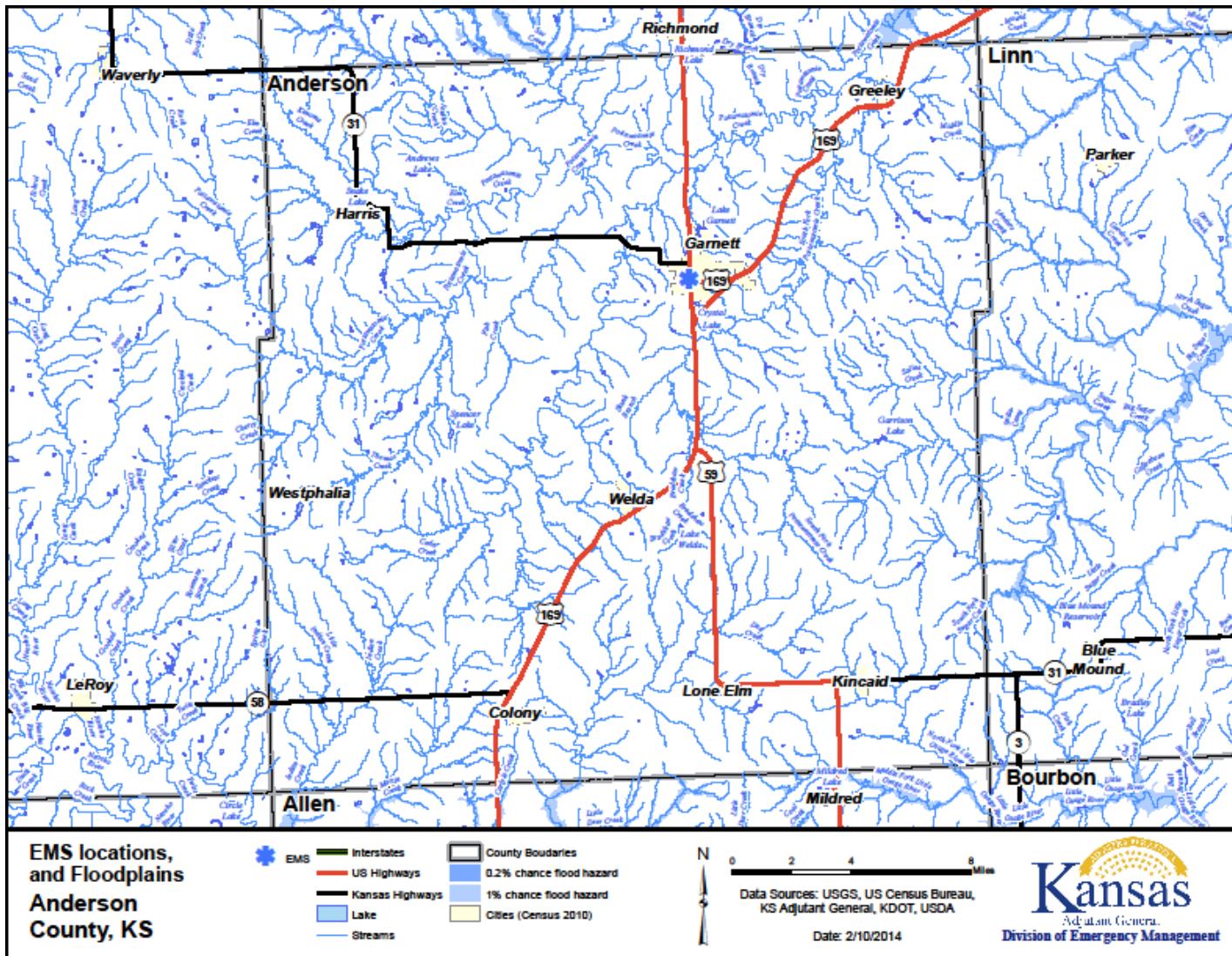
Details concerning critical facilities have been deemed as sensitive information, and as such their specific information is not for release to the general public.

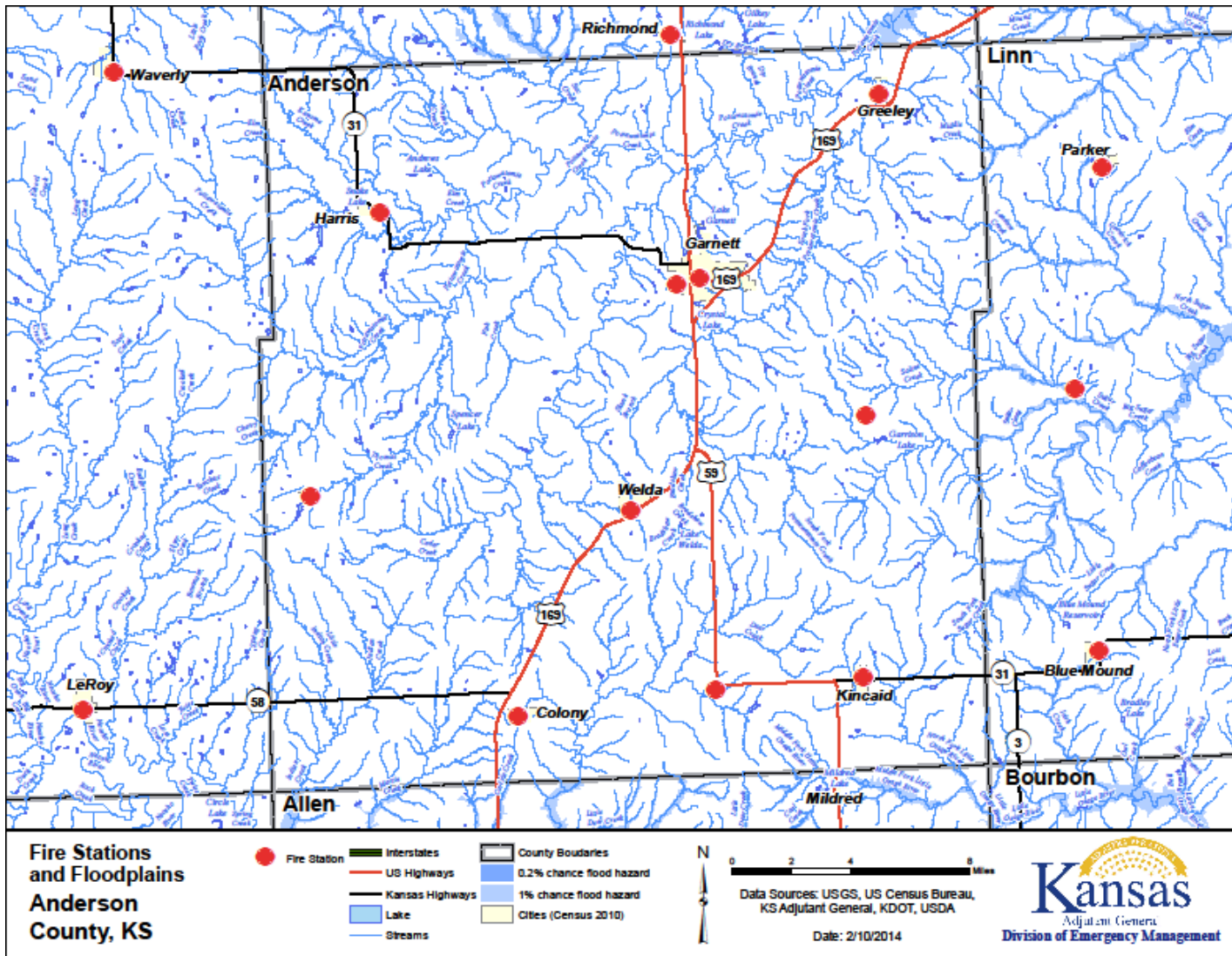


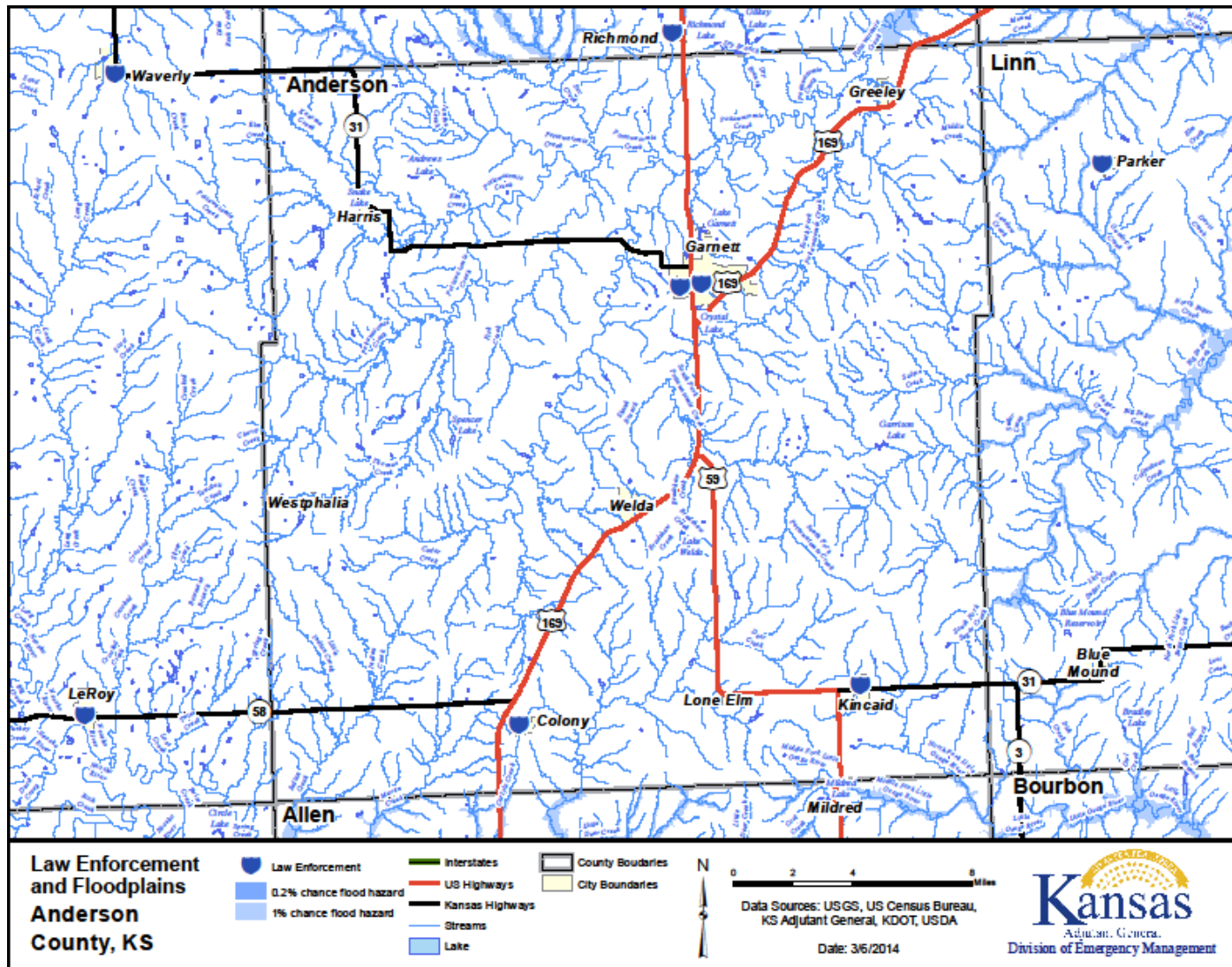
Anderson County Critical Facilities

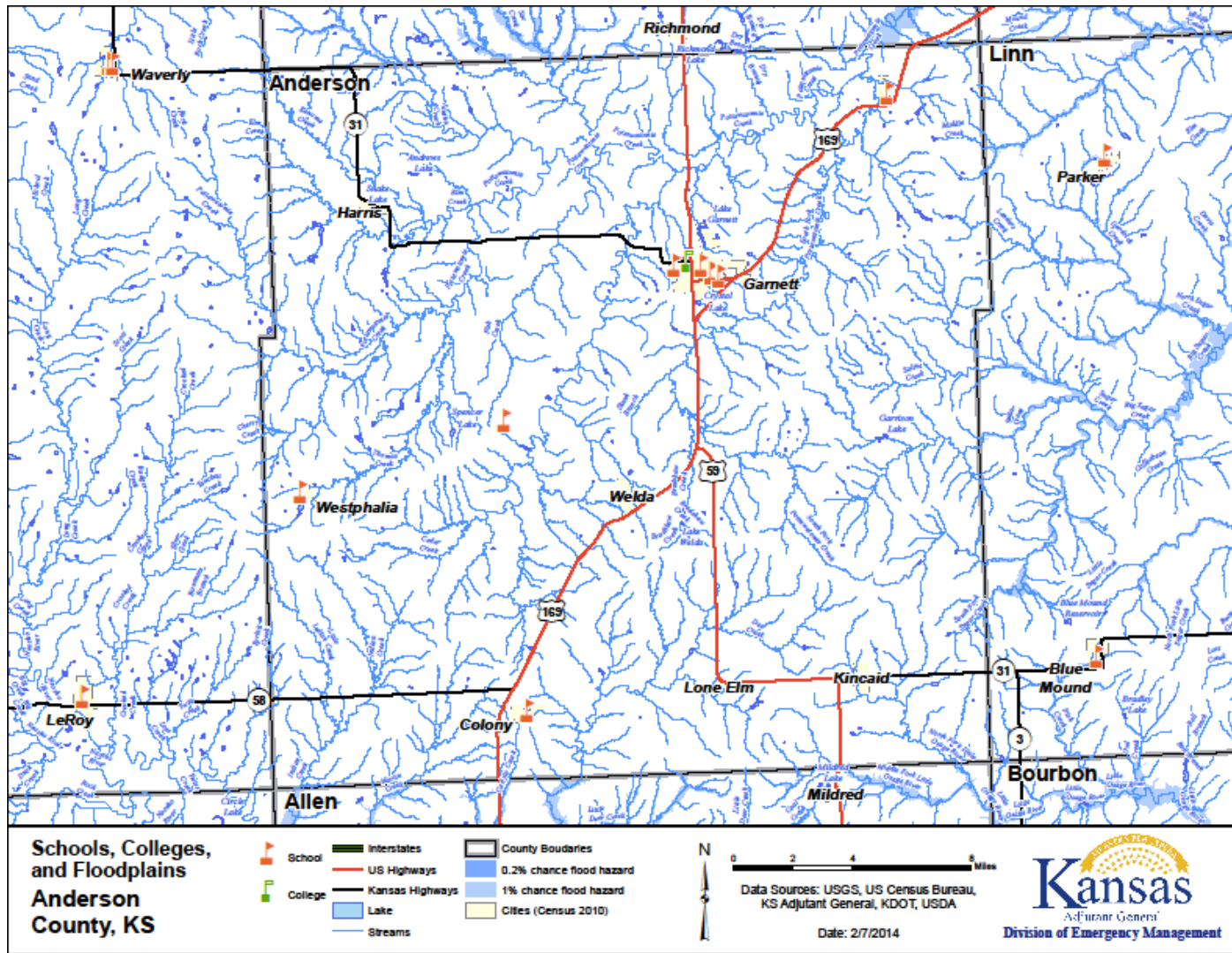
Anderson County				
Facility and/or Asset Name	Number of Facilities	Replacement or Estimated Value	Occupancy	Flooding Potential
Fire / EMS stations	8	\$697,636	75	Unknown
Law Enforcement	1	\$5,500,000	15	Unknown
Major government buildings	2	\$3,032,932	25	Unknown
Major roads (Mi)	148	\$604,166,752	0	Yes
Bridges (No.)	153	\$49,791,421	0	Yes
Electric / Gas utilities	2	\$105,535,500	0	Yes
Pumping stations	1	\$220,000	0	Yes
Sewage treatment plants	1	\$6,000,000	0	Yes
Water treatment plants	5	\$316,350,000	0	Yes
USD 365 - Garnett				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Garnett Elementary School	403. W. Homerun Garnett	\$14,200,000	625	Unknown
Anderson County J/S High	Highway 31 Garnett	\$24,300,000	650	Unknown
Westphalia Elementary	Westphaila, KS	\$3,500,000	250	Unknown
Mont Ida	Mont Ida Welda, KS	\$1,020,000	200	Unknown
Greeley	Greeley, KS	\$1,900,000	250	Unknown
Irving (Alternative School)	Garnett, KS	\$1,700,000	300	Unknown
Ray Meyer Gym	305 N. Oak Garnett, KS	\$1,450,000	500	Unknown
Vocational Building	304 Walnut Garnett, KS	\$1,450,000	150	Unknown
USD 479 - Crest				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Main school bldg.	603 Broad St, Colony	\$5,900,000	350	Unknown
Vo-Ag Bldg.	603 Broad St, Colony	\$1,000,000	30	Unknown
Bus Barn	603 Broad St, Colony	\$135,000	0	Unknown
Greenhouse	603 Broad St, Colony	\$55,000	30	Unknown











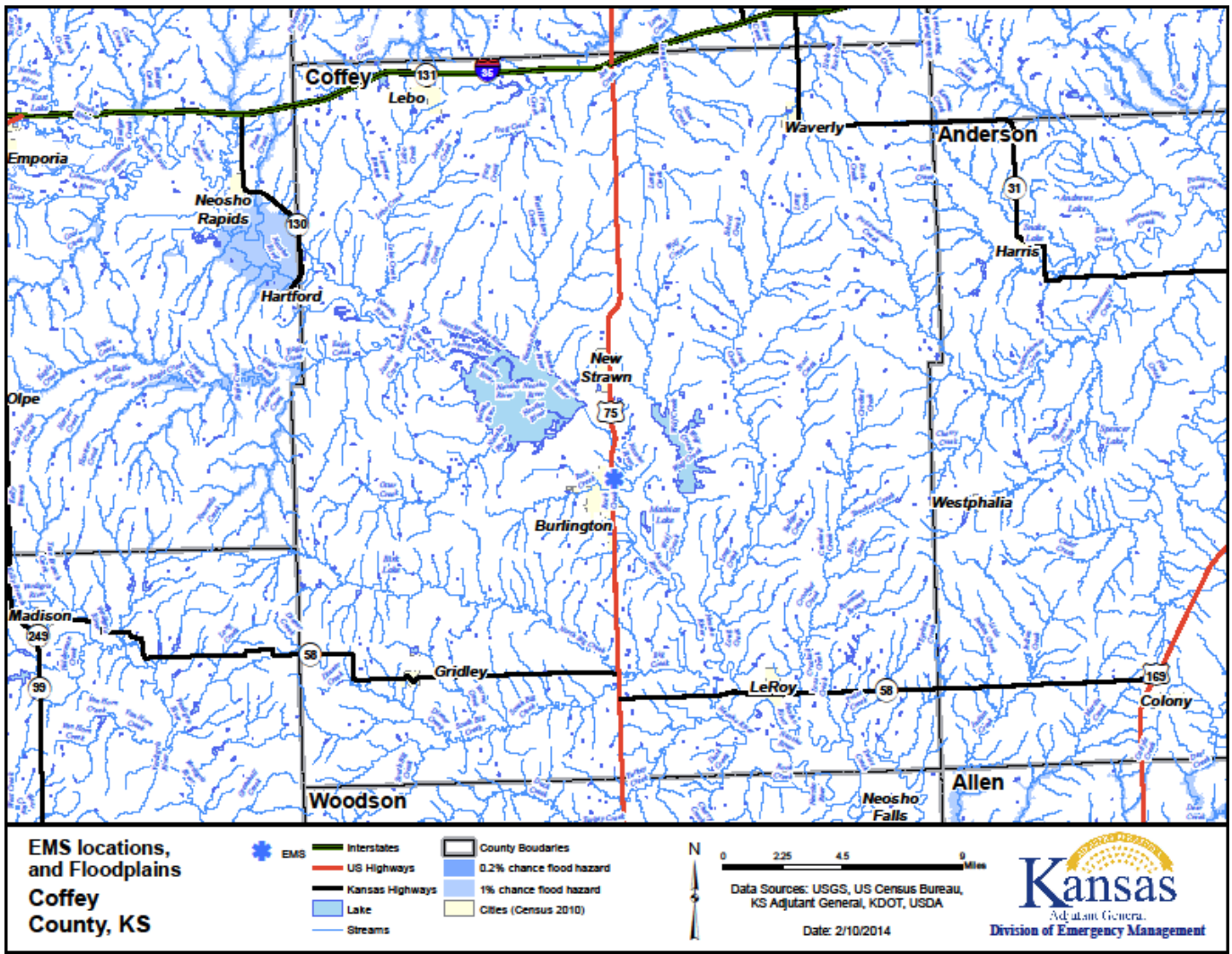
Coffey County Critical Facilities

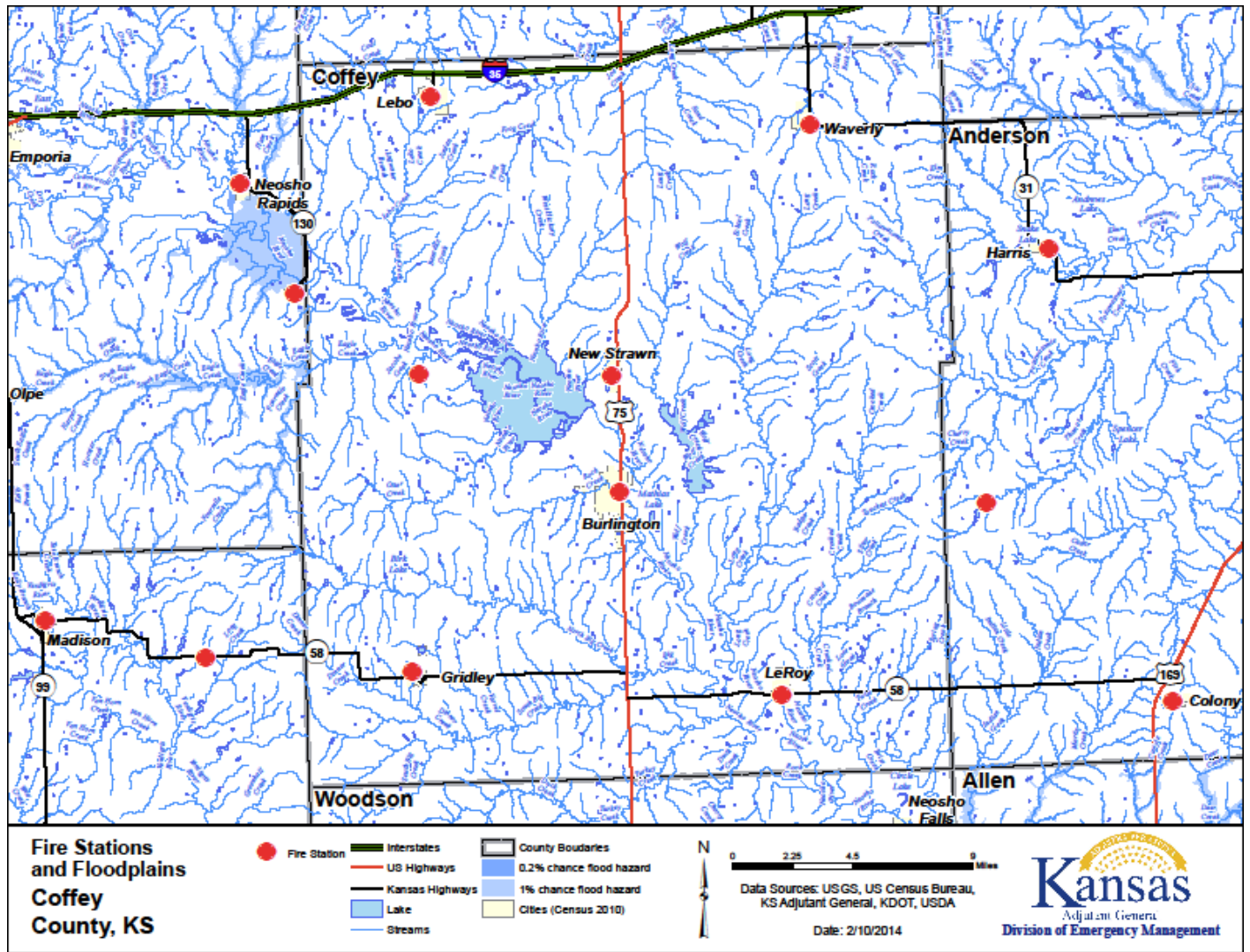
Coffey County				
Facility and/or Asset Name	Number of Facilities	Replacement or Estimated Value	Occupancy	Flooding Potential
Communications (radio, TV, similar)	1	\$9,500	0	Unknown
County Emergency Operations Center (EOC)	1	\$2,000,000	6	No
Fire / EMS stations	7	\$3,375,000	144	Yes
Hospital(s)	1	\$8,567,650	100	No
Law Enforcement (Sheriff/Police Bldgs)	5	\$7,980,000	30	Yes
Emergency shelters	15	\$75,000,000	500	Yes
Major government buildings	1	\$2,347,140	60	Yes
Major roads (Mi)	36	\$454,913,910	0	Yes
Bridges (No.)	266	\$10,491,425,000	0	Yes
Electric / Gas utilities	2	\$904,500,000	1,400	Unknown
Pumping stations	1	\$1,000,000	0	Unknown
Response staging areas	1	\$350,000	0	Unknown
Sewage treatment plants	8	\$506,160,000	8	Unknown
Transportation systems	5	\$167,340,834	0	Yes
Water treatment plants	1	\$1,211,320	5	Yes
Wells and storage tanks	25	\$8,750,000	0	Yes
USD #243 - Lebo / Waverly				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Lebo Schools	415 North Ogden, Lebo	\$12,500,000	-	Unknown
Lebo VoAg	418 North Ogden, Lebo	\$400,000	-	Unknown
Waverly Elementary	607 Dane, Waverly	\$4,000,000	-	Unknown
Waverly High School	607 Pearson, Waverly	\$6,000,000	-	Unknown
District Office	409 and 411 Pearson, Waverly	\$500,000	-	Unknown
USD #244 - Burlington				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
District Office	200 6th Street, Burlington	\$900,000	12	Unknown

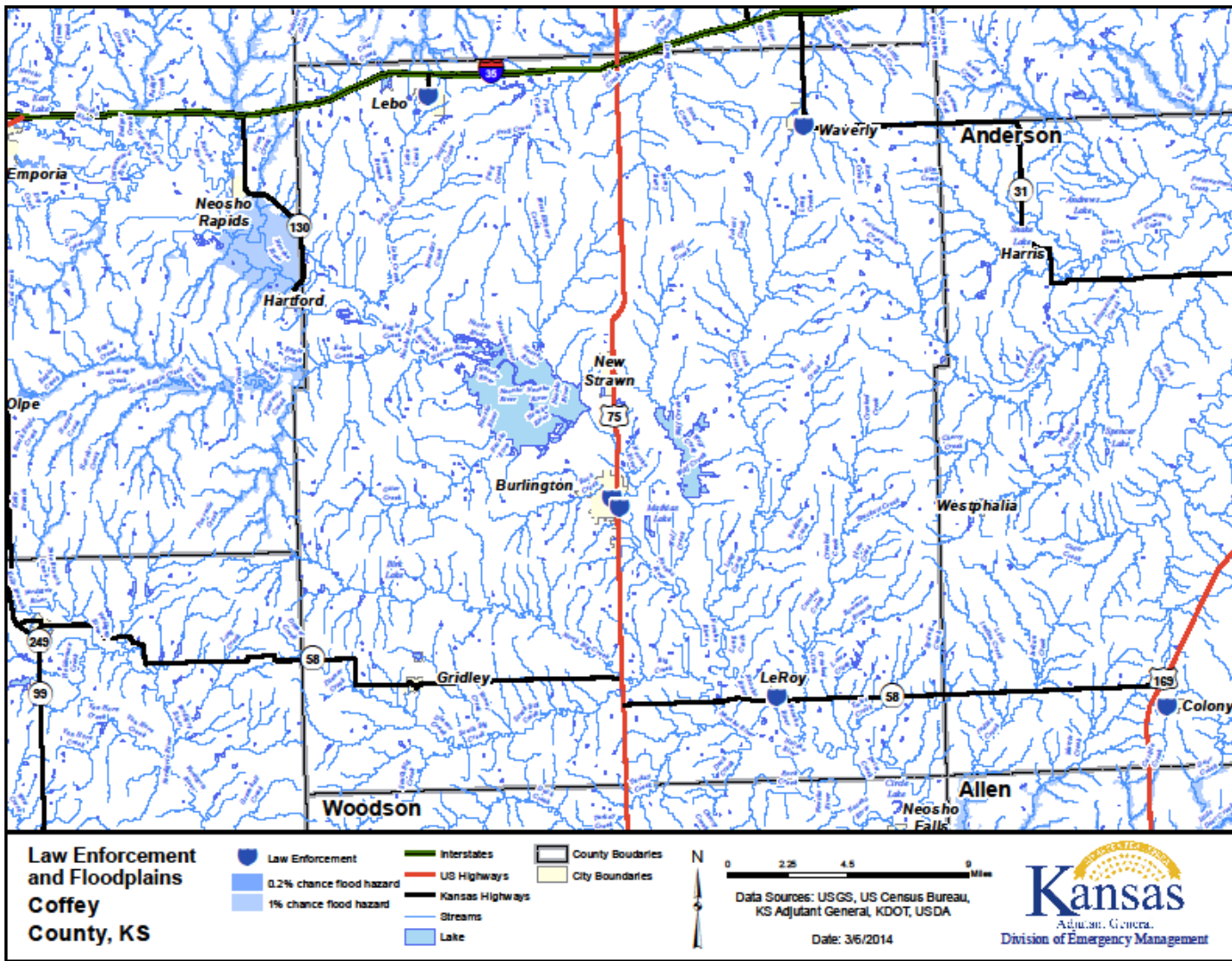


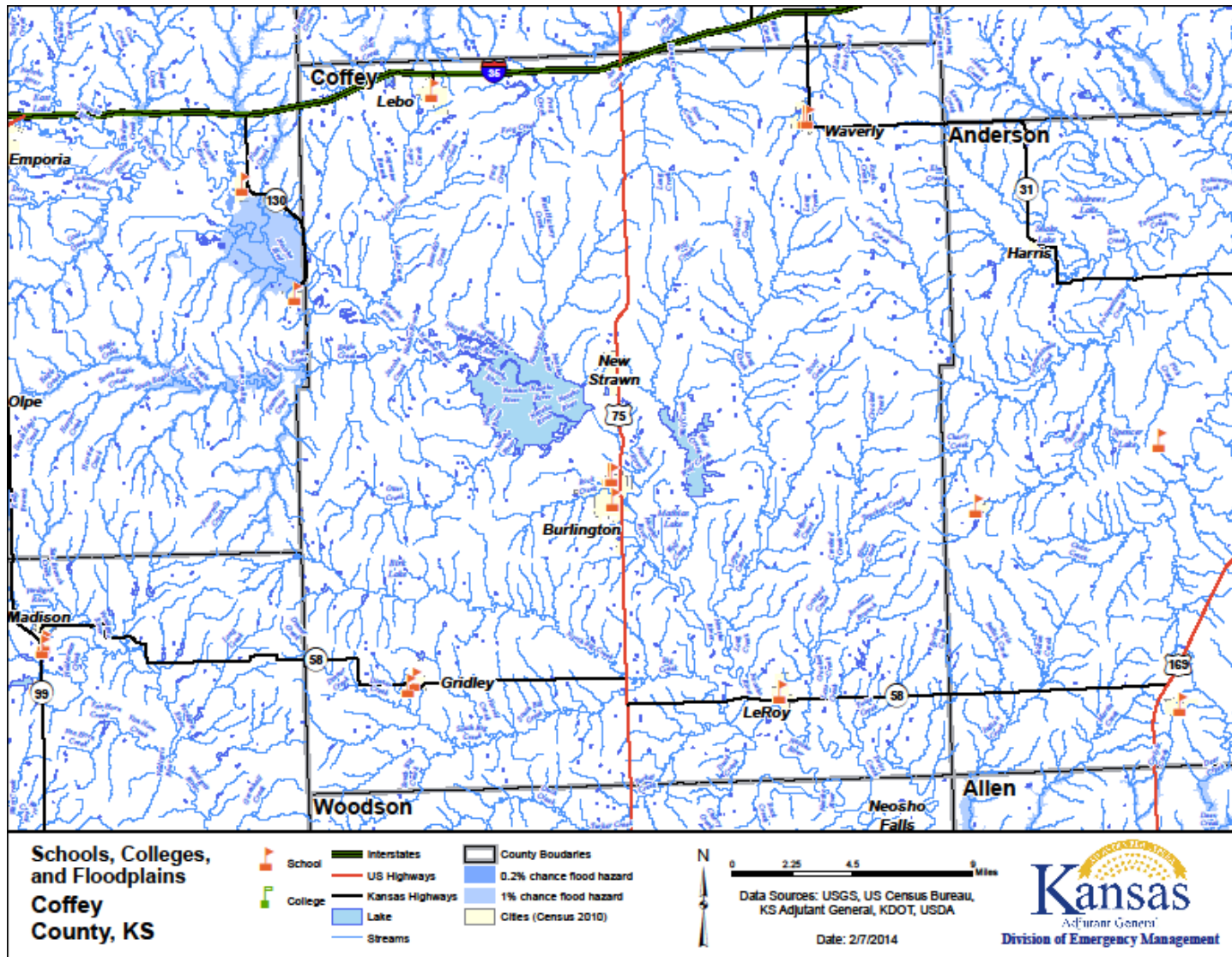
Burlington Elementary School	700 Niagara Street, Burlington	\$10,200,000	384	Unknown
Burlington Middle School	702 Cross Street, Burlington	\$12,400,000	333	Unknown
Burlington High School	830 Cross Street, Burlington	\$28,200,000	308	Unknown
Bus Barn	830 Cross Street, Burlington	-	12	Unknown
USD #245 - LeRoy / Gridley				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	
Gridley Elementary	300 3rd Street, Gridley	\$2,000,000	100	Unknown
LeRoy Elementary	1005 Main Street, LeRoy	\$1,800,000	100	Unknown
SCCMS	600 Stuckey, Gridley	\$3,800,000	100	Unknown
SCCHS	1010 Main Street, LeRoy	\$3,100,000	100	Unknown
District Office	605 Main Street, LeRoy	\$370,000	2	Unknown







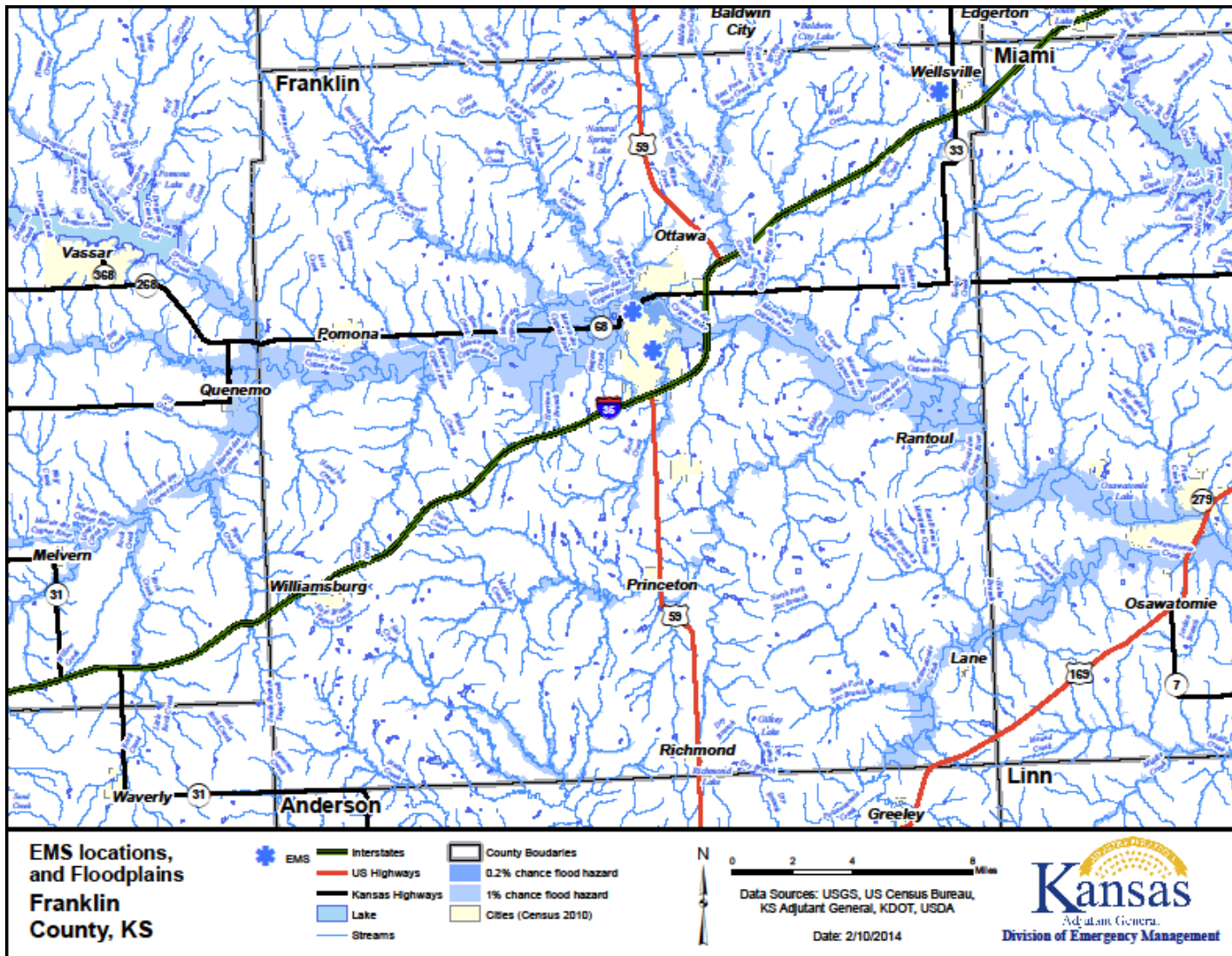


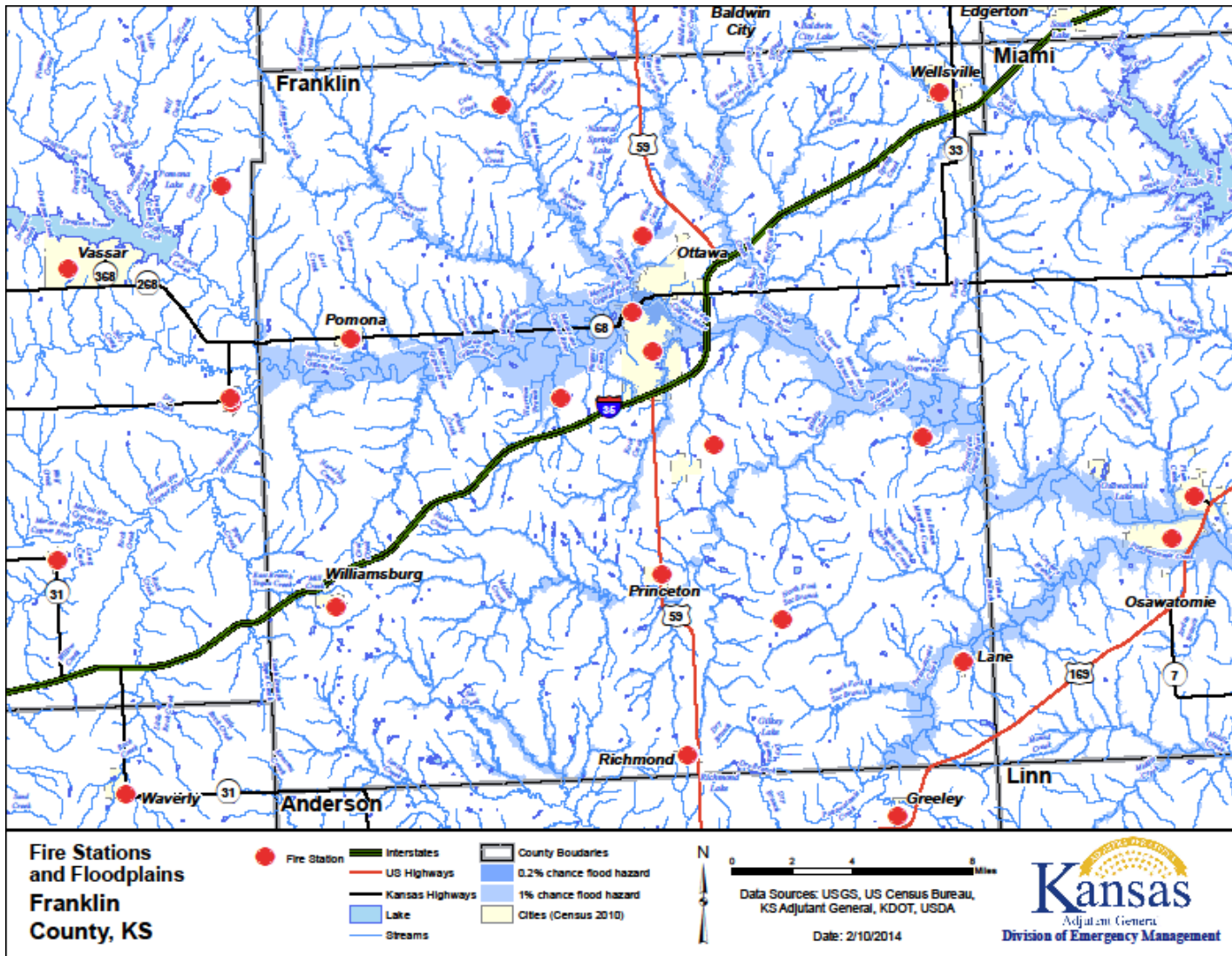


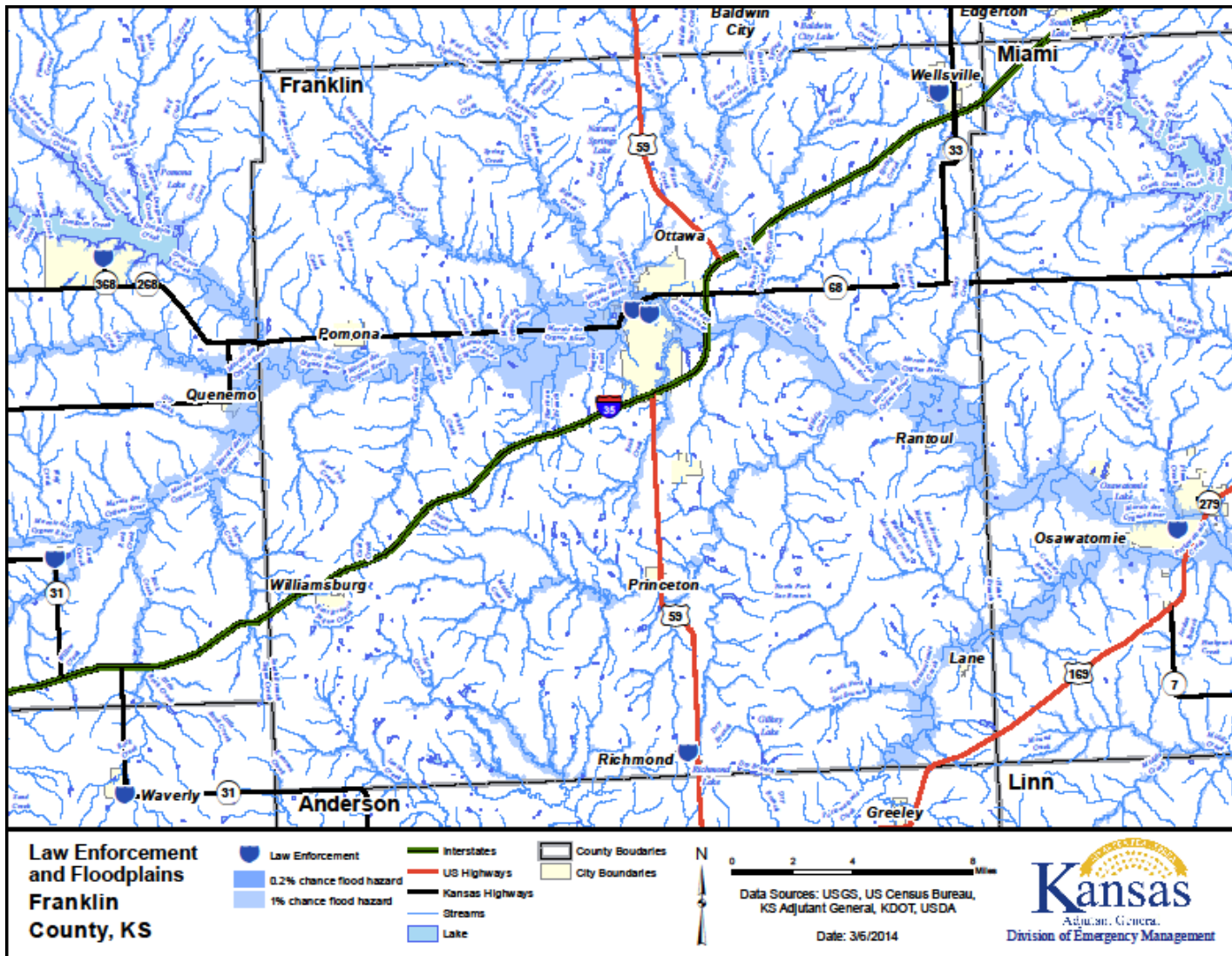
Franklin County Critical Facilities

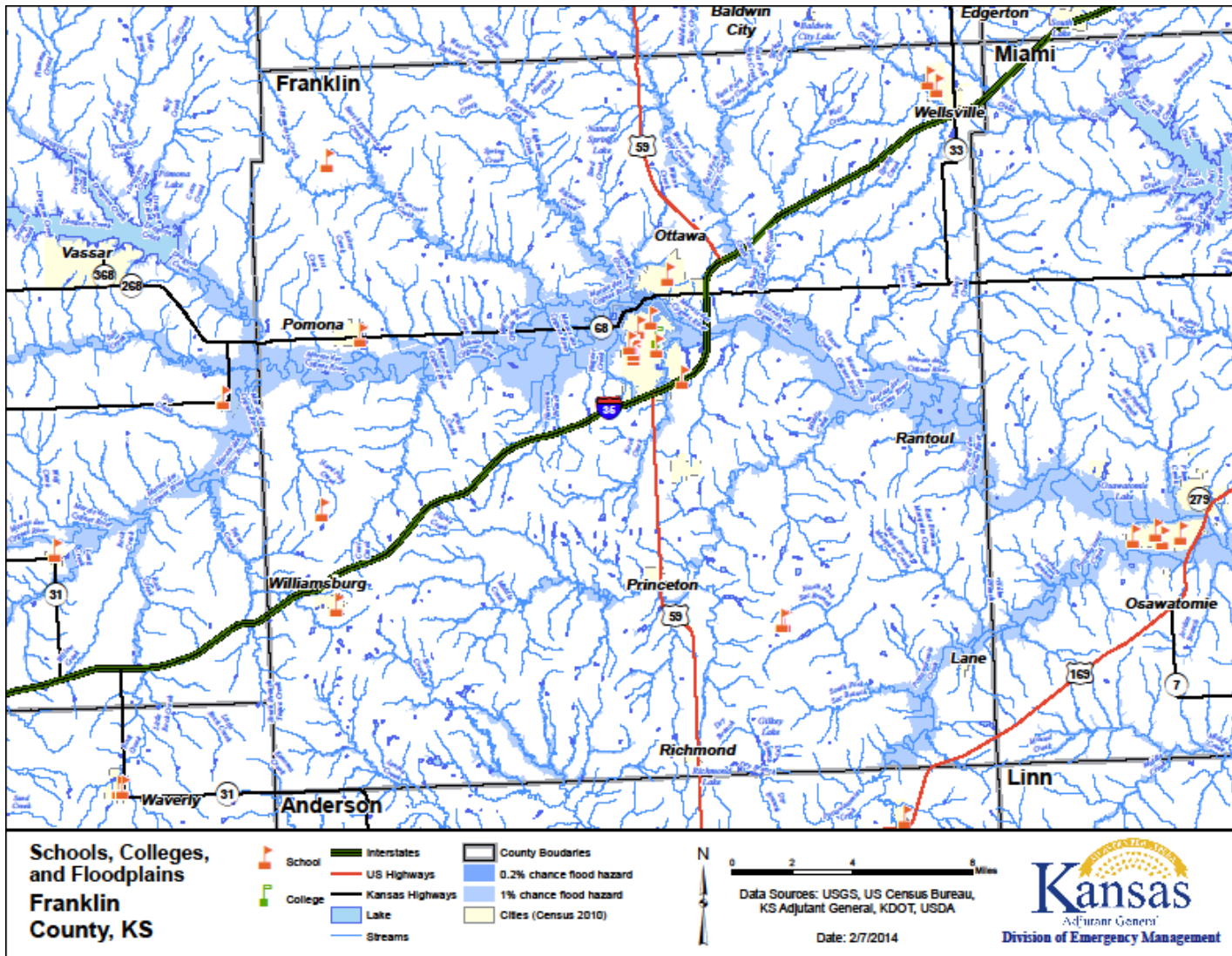
Franklin County				
Facility and/or Asset Name	Number of Facilities	Replacement or Estimated Value	Occupancy	Flooding Potential
Communications (radio, TV, similar)	4	\$410,000	4	Unknown
County Emergency Operations Center (EOC)	2	\$0	2	No
Fire / EMS Stations	3	\$1,710,000	7	Yes
Hospital(s)	1	\$3,325,000	140	No
Law Enforcement (Police/Sheriff Bldgs)	6	\$7,980,000	70	Yes
Emergency shelters (Schools)	17	\$8,075,000	0	Yes
Major government buildings	0	\$0	0	Yes
Major roads (Mi)	82	\$3,107,000	0	Yes
Bridges (No.)	317	\$167,375,000	0	Yes
Fuel Storage areas	0	\$0	0	Unknown
Electric / Gas utilities	1	\$104,000,000	0	Unknown
Pumping stations	0	\$0	0	Unknown
Response staging areas	0	\$0	0	Unknown
Sewage treatment plants	9	\$669,430,000	0	Yes
Transportation systems	12	\$64,202,000	0	Yes
Water treatment plants	0	\$0	0	Yes
Wells and storage tanks	0	\$0	0	Yes











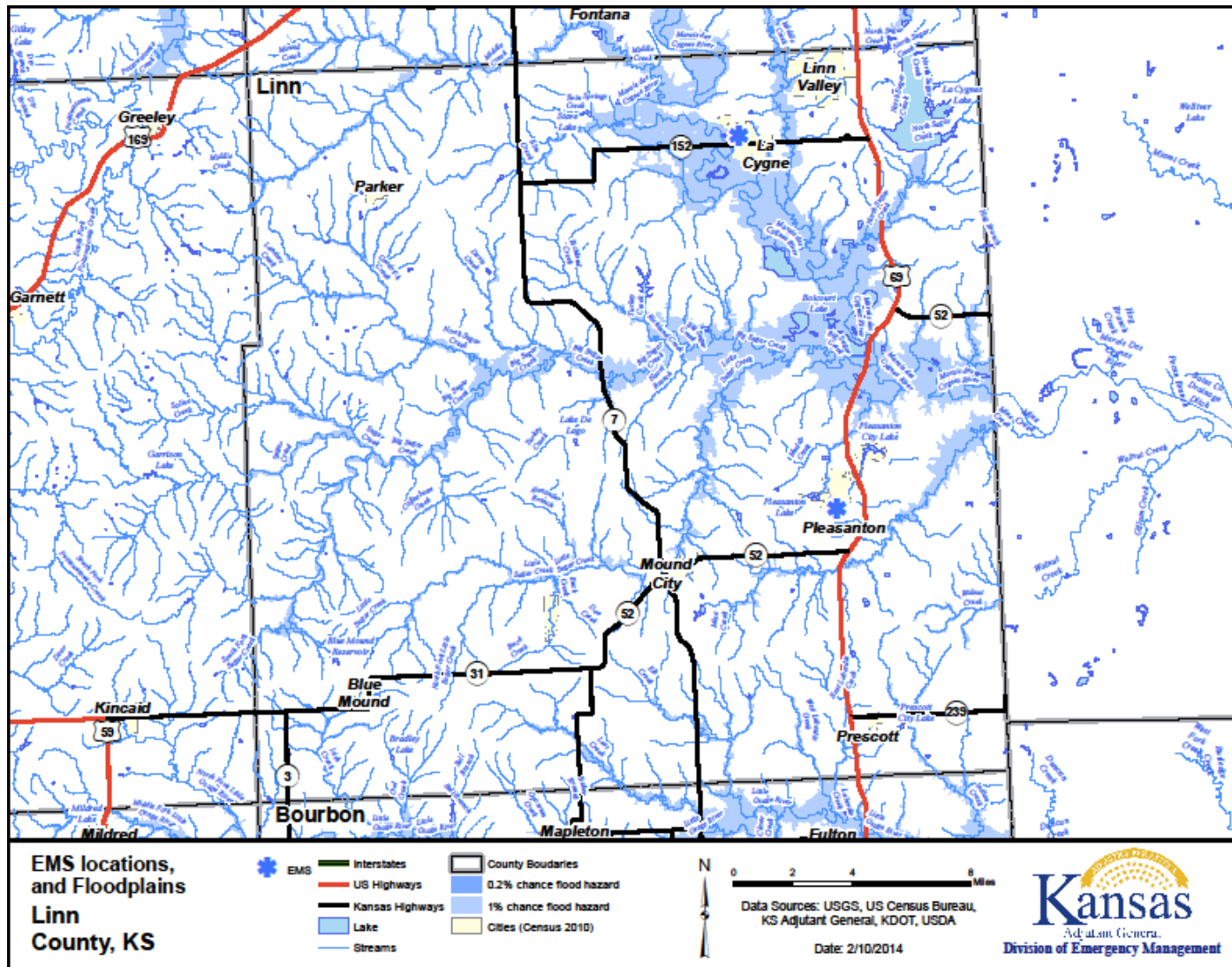
Linn County Critical Facilities

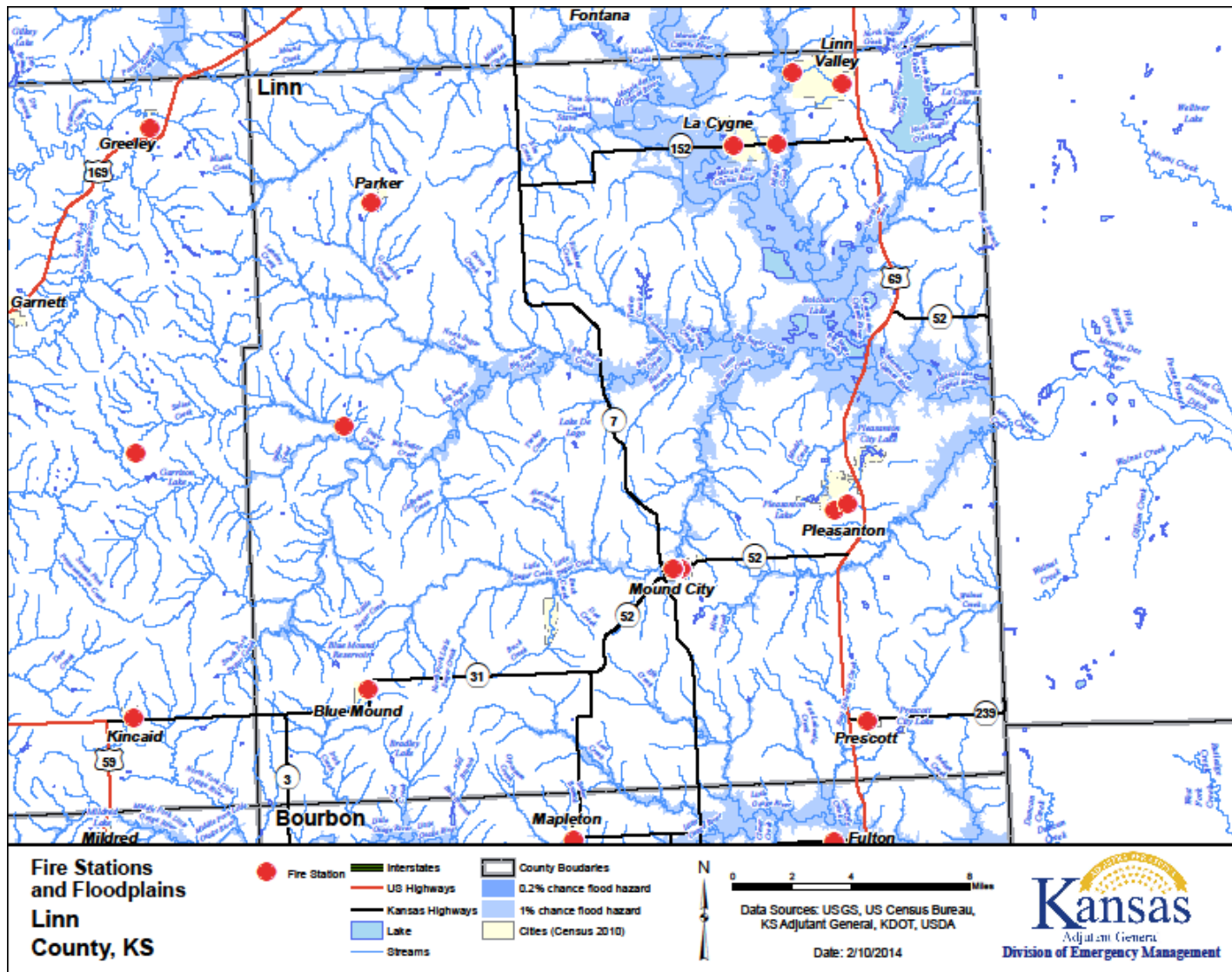
Linn County				
Facility and/or Asset Name	Number of Facilities	Replacement or Estimated Value	Occupancy	Flooding Potential
Communications (radio, TV, similar)	2	\$190,000	10	Unknown
County Emergency Operations Center (EOC)	1	\$100,000	3	No
Fire / EMS stations	14	\$3,420,000	42	Yes
Law Enforcement (Sheriff/Police Bldgs)	4	\$5,320,000	20	No
Hospitals	0	\$0	0	Yes
Health Facilities	4	\$4,000,000	40	Yes
Senior Care Facilities	2	\$6,000,000	120	Unknown
Senior Centers	7	\$6,000,000	20	Unknown
Emergency shelters	6	\$2,850,000	115	Unknown
Major government buildings	5	\$3,500,000	50	Unknown
Major roads (Mi)	154	\$506,181,000	0	Unknown
Bridges (No.)	220	\$74,807,000	0	Unknown
Fuel storage areas	2	\$40,000	0	Unknown
Electric / Gas utilities	1	\$104,500,000	20	Yes
Pumping stations	12	\$150,000	0	Yes
Response staging areas	0	\$0	0	Unknown
Sewage treatment plants	7	\$442,890,000	10	Yes
Transportation systems	5	\$202,834,000	10	Yes
Water treatment plants	3	\$94,985,000	6	Yes
Wells and storage tanks	17	\$3,500,000	0	Yes
USD #344 - Pleasanton				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Ernie Price Annex	309 W 13 th , Pleasanton	\$62,000,000	-	Unknown
Facility	1001 – 1300 Ash, Pleasanton	\$26,463,415	-	Unknown

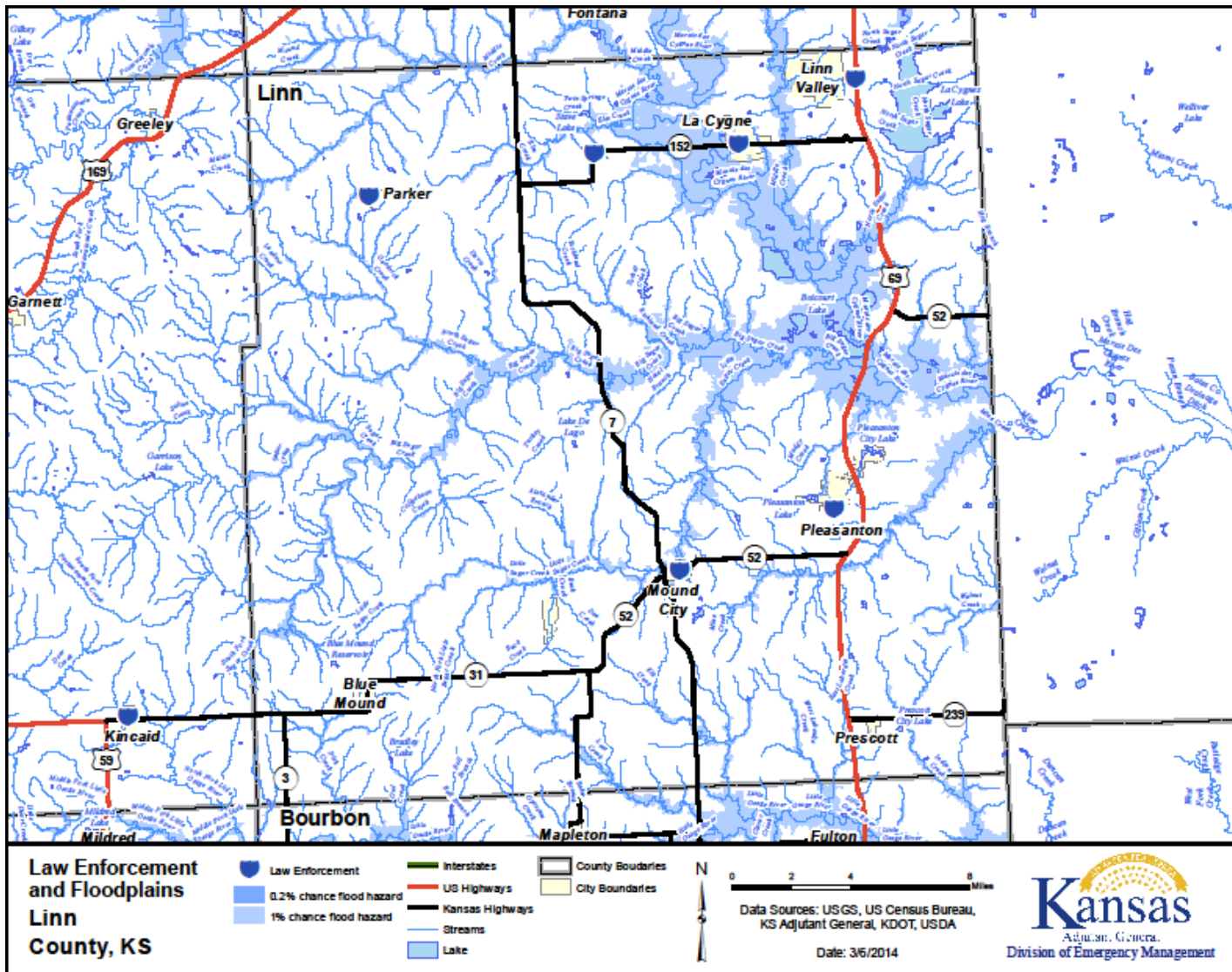


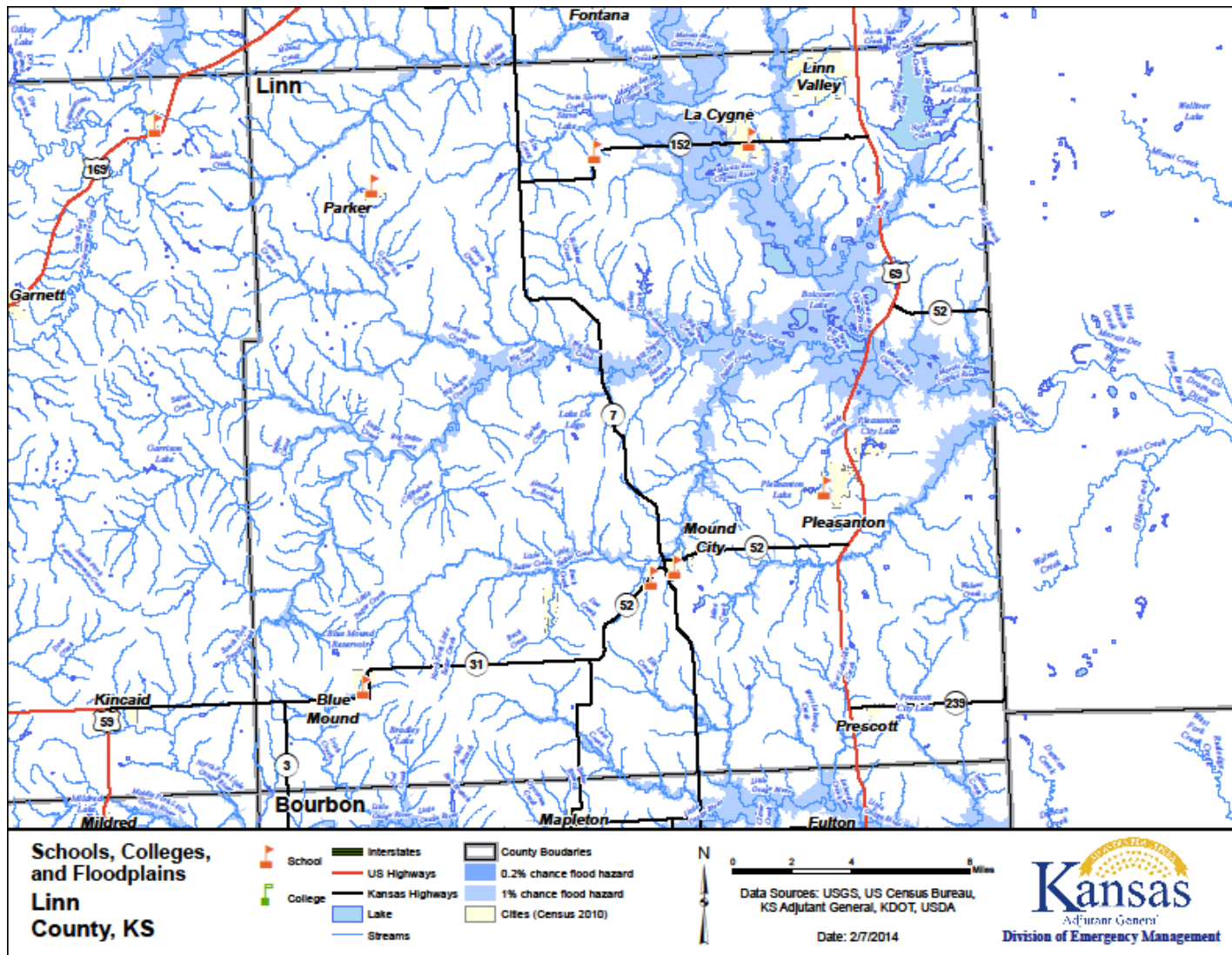
USD #346 - Mound City				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Jayhawk Elementary	414 S 5 th St, Mound City	\$16,000,000	350 to 450	Unknown
Jayhawk-Linn High School	14675 KS Highway 52, Mound City	\$15,500,000	300 to 400	Unknown
USD #362 - Prairie View				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Prairie View MS/HS	13667,13731 Ks Hwy 152	\$30,000,000	-	Unknown
Vocational Ag Shop	13731 KS Hwy 152, Lacygne	\$290,000	-	Unknown
Concession Stand (Baseball)	13667 KS Hwy 152, Lacygne	\$300,000	-	Unknown
Concession Stand (Football)	13731 KS Hwy 152, Lacygne	\$200,000	-	Unknown
Central Office	13799 KS Hwy 152, Lacygne	\$1,100,000	-	Unknown
5 car garage	13731 KS Hwy 152, Lacygne	\$105,352	-	Unknown
Stadium	13731 KS Hwy 152, Lacygne	\$1,053,520	-	Unknown
Greenhouse	13731 KS Hwy 152, Lacygne	\$37,239	-	Unknown
Fontana Elementary	208 E North Ave, Fontana	\$4,000,000	-	Unknown
Parker Elementary	421 N. Center, Parker	\$5,500,000	-	Unknown
Lacygne Elementary	710 Walnut St, Lacygne	\$6,700,000	-	Unknown
Bus Barn	401 S. 5 th St, Lacygne	\$300,000	-	Unknown











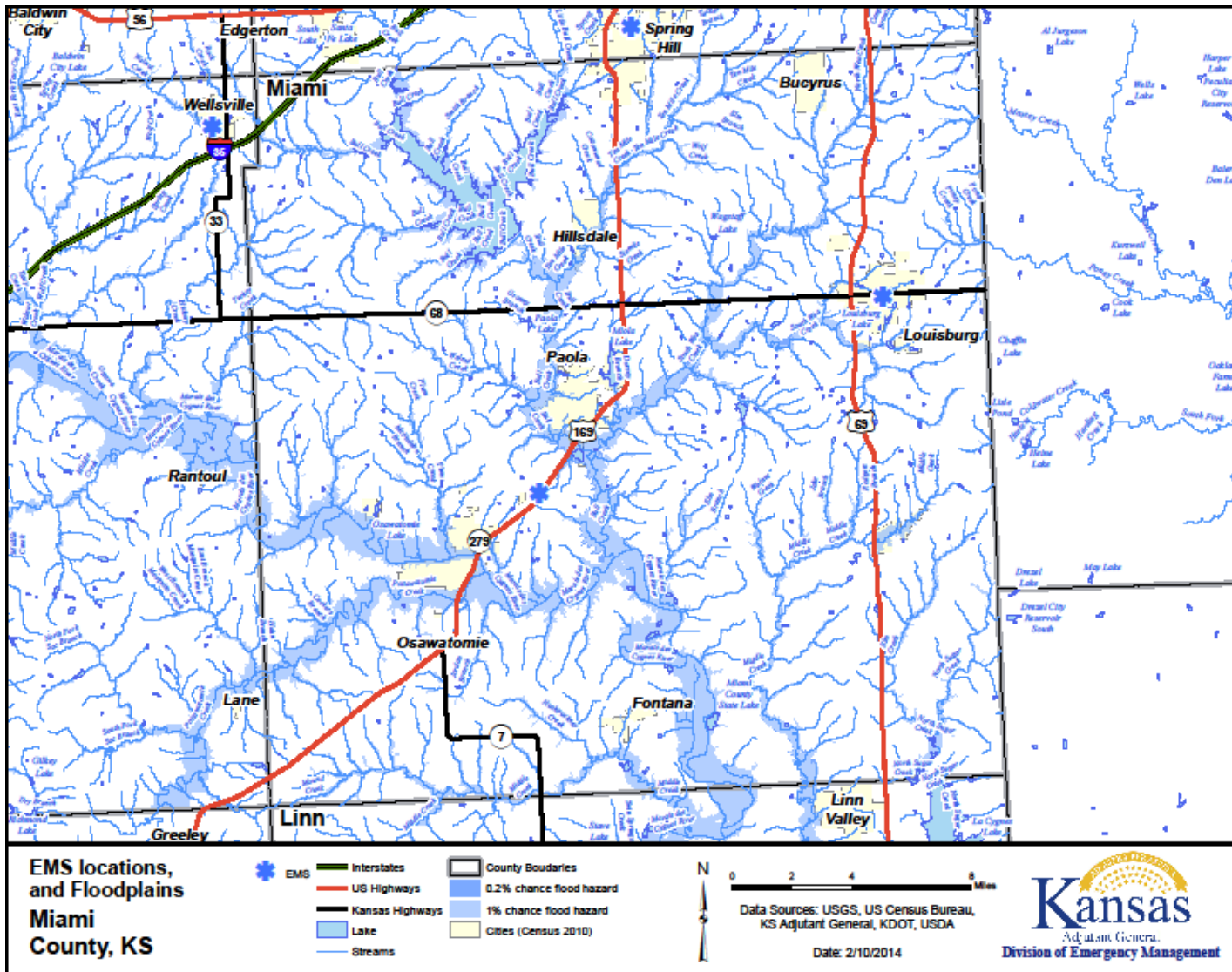
Miami County Critical Facilities

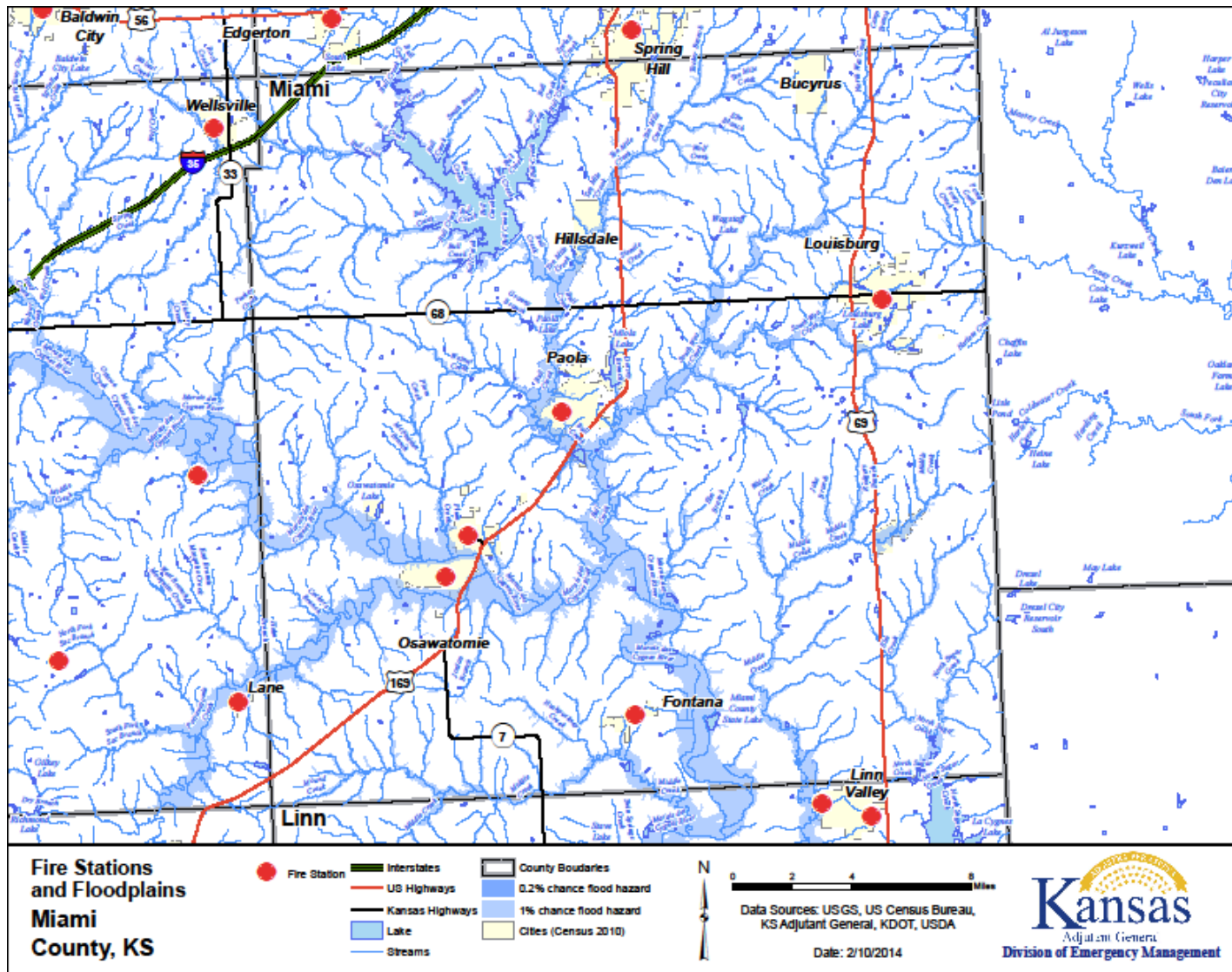
Miami County				
Facility and/or Asset Name	Number of Facilities	Replacement or Estimated Value	Occupancy	Flooding Potential
Communications (radio, TV, similar)	0	\$0	0	Unknown
County Emergency Operations Center (EOC)	1	\$950,000	3	No
Fire / EMS stations	3	\$1,710,000	99	Yes
Hospital(s)	2	\$16,625,000	212	No
Law Enforcement (Sheriff/Police Bldgs)	4	\$5,320,000	114	Yes
Emergency shelters	18	\$8,550,000	5,754	Yes
Major government buildings	0	\$0	0	Yes
Major roads (Mi)	144	\$607,455,000	0	Yes
Bridges (No.)	286	\$151,928,000	0	Yes
Fuel storage areas	0	\$0	0	Unknown
Electric / Gas utilities	3	\$210,036,000	20	Unknown
Pumping stations	0	\$0	0	Unknown
Response staging areas	0	\$0	0	Unknown
Sewage treatment plants	7	\$442,890,000	12	Yes
Transportation systems	12	\$62,130,000	5	Yes
Water treatment plants	0	\$0	0	Yes
Wells and storage tanks	0	\$0	0	Yes
USD #367 - Osawatomie				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Osawatomie High School	1200 Trojan Drive	\$47,000,000	700	Unknown
Osawatomie Middle School	428 Pacific	\$31,500,000	400	Unknown
Trojan Elementary	1901 Parker Ave	\$38,800,000	600	Unknown
Swenson Early Childhood Center	608 10th Street	\$15,500,000	300	Unknown
USD #368 - Paola				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
BOE	115 E. 303rd	\$1,546,500	18	Unknown
Paola Middle School	405 N Hospital Drive	\$16,839,300	498	Unknown
Paola High School	401 N Angela Drive	\$5,933,810	722	Unknown

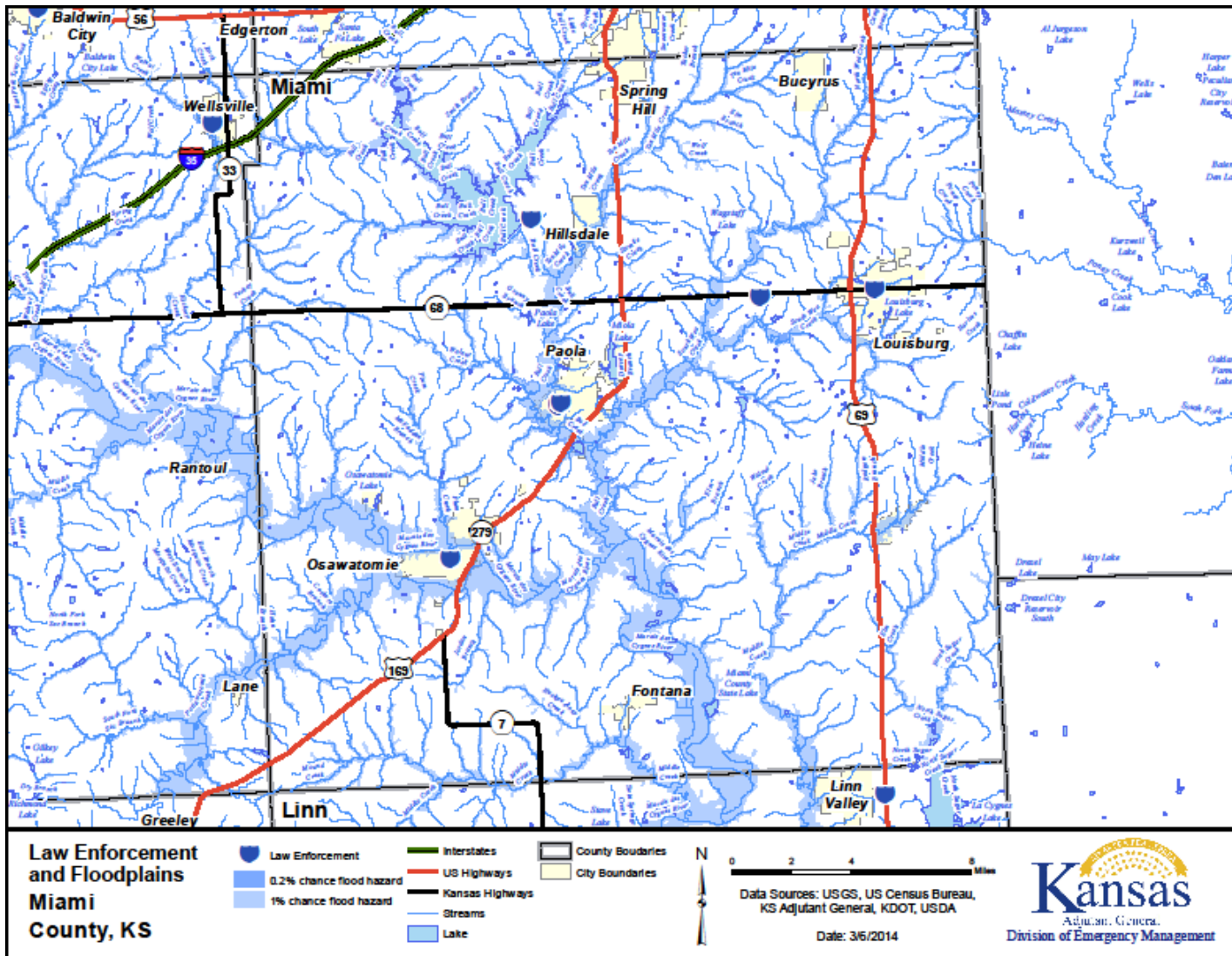


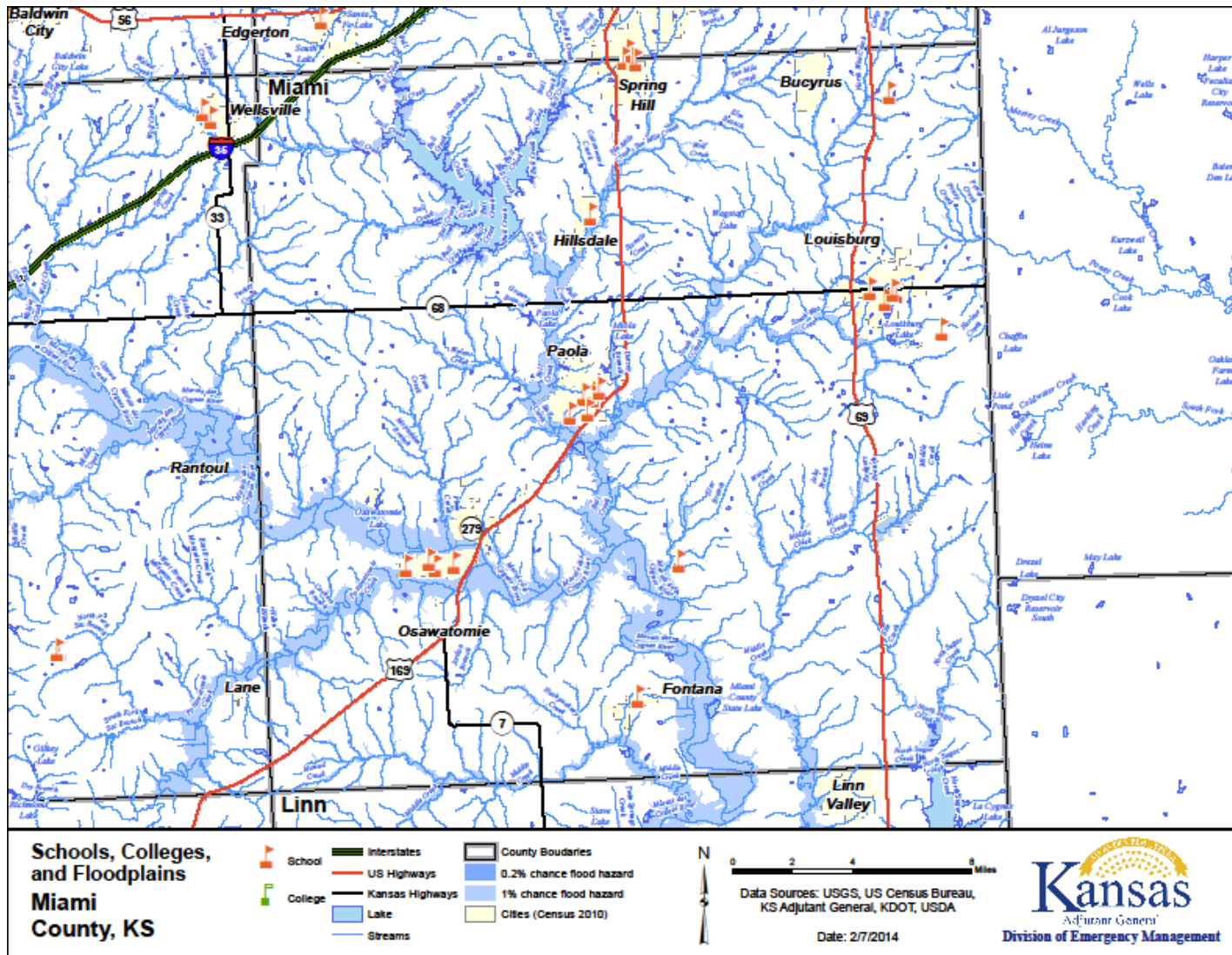
Sunflower	1401 E 303rd Street	\$10,581,500	513	Unknown
Cottonwood	709 N Hedge Ln	\$12,036,000	511	Unknown
Special Education	302 N Oak	\$2,796,700	43	Unknown
Adult Education	1710 E. Industrial Park Dr	\$1,072,500	13	Unknown
New Field House	405 N Hospital Dr	\$1,940,700	-	Unknown
Old Field House	405 N Hospital Dr	\$733,700	-	Unknown
Hillsdale	27785 W 255th	\$6,756,100	0	Unknown
USD #416 - Louisburg				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Circle Grove	29020 Mission Belleview Rd	\$4,639,500	100	Unknown
Rockville Elementary	977 N Rockville Rd	\$23,363,200	958	Unknown
Broadmoor Elementary	105 S 5th	\$18,300,700	968	Unknown
Louisburg Middle School	505 E Amity	\$21,535,800	620	Unknown
Louisburg High School	202 Aquatic Drive	\$46,132,300	992	Unknown
West Gym	5 S Peoria	\$3,016,500	500	Unknown
Maintenance Shop	105 S 5th	\$290,900	-	Unknown
Stadium	105 S 5th	\$2,266,400	3,000	Unknown











Osage County Critical Facilities

Osage County				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Osage County Fire District 3 – Olivet Station & EMS	-	-	-	Unknown
Osage County Fire District 4 & EMS	-	-	-	Unknown
Osage County Fire District 5 & EMS	-	-	-	Unknown
Rural Water #3	-	-	-	Unknown
City of Burlingame				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
City Hall & Police Station	-	\$600,720	-	Unknown
Osage County Fire District 6	-	\$354,651	-	Unknown
Power Plant	-	\$7,744,910	-	Unknown
Burlingame Junior/Senior High	-	\$14,111,053	49	Unknown
Burlingame Elementary	-	-	-	Unknown
Allen County College	-	-	27	Unknown
Casey's General Store	-	-	14	Unknown
City of Carbondale				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Police Department	-	\$80,000	-	Unknown
Osage County Fire District 1 & EMS	-	-	-	Unknown
Medical Office	-	-	-	Unknown
City Office	-	\$400,000	-	Unknown
Water Plant & Dam	-	\$2,000,000	-	Unknown
Carbondale Attendance Center	-	\$5,000,000	-	Unknown
Santa Fe Trail High School	-	-	500	Unknown
Wastewater Treatment Facility	-	-	-	Unknown
Water Plant	-	\$2,000,000	-	Unknown
Water Tower	-	\$500,000	-	Unknown
Sewer Lagoons	-	-	-	Unknown



City of Lyndon				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
City Hall, Police Station	-	\$275,000	20	Unknown
Osage County Fire District 5 & EMS	-	\$300,000	20	Unknown
Osage County Court House	-	\$1,000,000	100	Unknown
Osage County Sheriff's Dept	-	\$300,000	57	Unknown
Pomona Lake Airport	-	-	-	Unknown
Lyndon High School	-	\$750,000	350	Unknown
Lyndon Elementary School	-	\$750,000	300	Unknown
U.S. 75 Highway	-	-	4,000 vehicles per day	Unknown
Lyndon Water Plant	-	\$200,000	-	Unknown
Three Lakes Educational Cooperative Main Office	-	\$442,310	50	Unknown
Three Lakes Educational Cooperative Annex	-	\$66,079	50	Unknown
Wastewater Treatment Facility	-	-	-	Unknown
City of Melvern				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Osage County Fire District 3 & EMS	-	-	17	Unknown
City Hall	-	-	25	Unknown
U.S. Post Office	-	-	15	Unknown
Melvern Community Center	-	-	100	Unknown
Marais des Cygnes Valley High School	-	\$295,000	160	Unknown
Marias des Cygnes Valley Middle School	-	-	-	Unknown
Wastewater Treatment Facility	-	-	-	Unknown
Highway 31	-	-	-	Unknown
BNSF Railroad, Two tracks	-	-	-	Unknown



City of Osage				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
City Hall	201 South 5th Street, Osage	-	-	Unknown
Water Treatment Plant and Distribution System	1313 South 4th Street, Osage	-	-	Unknown
Water Tower	130 North 5th Street	-	-	Unknown
Electric Power Plant and Distribution System	209 South 5th Street,	-	-	Unknown
Natural gas Regulator and Distribution System	Southwest Corner of 4th and Stafford, Osage	-	-	Unknown
Osage City Lake Dam	1313 South 4th Street, Osage	-	-	Unknown
Police Department	911 Laing Street, Osage	-	-	Unknown
Osage County Fire District #2	911 Laing Street, Osage	-	-	Unknown
Osage City Utility Maintenance Facility	418 Lord Street, Osage	-	-	Unknown
Osage City Street Maintenance Facility	216 South 9th Street, Osage	-	-	Unknown
Osage Medical Clinic	131 West Market Street, Osage	-	-	Unknown
Newman's Medical Clinic	518 Market Street, Osage	-	-	Unknown
Osage Nursing and Rehab	1017 Main Street, Osage	-	-	Unknown
Peterson's Nursing Home	630 Holliday Street, Osage	-	-	Unknown
Orbis Corporation	515 South 4th Street, Osage	-	-	Unknown
Osage County EMS	509 North 9th Street, Osage	-	-	Unknown
USD #420	420 South 5th Street, Osage	-	-	Unknown
Vintage Park	1403 Laing Street, Osage	-	-	Unknown
City of Overbrook				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
City Hall	-	-	-	Unknown
Police Station	-	-	-	Unknown
Osage County Fire District 4 & EMS	-	-	-	Unknown
Overbrook Attendance Center	-	-	350	Unknown
Grace Community Church	-	-	-	Unknown
City Sewer & Lift Stations (2)	-	-	-	Unknown
City Lagoons	-	-	-	Unknown
Petroleum Facility	-	-	-	Unknown

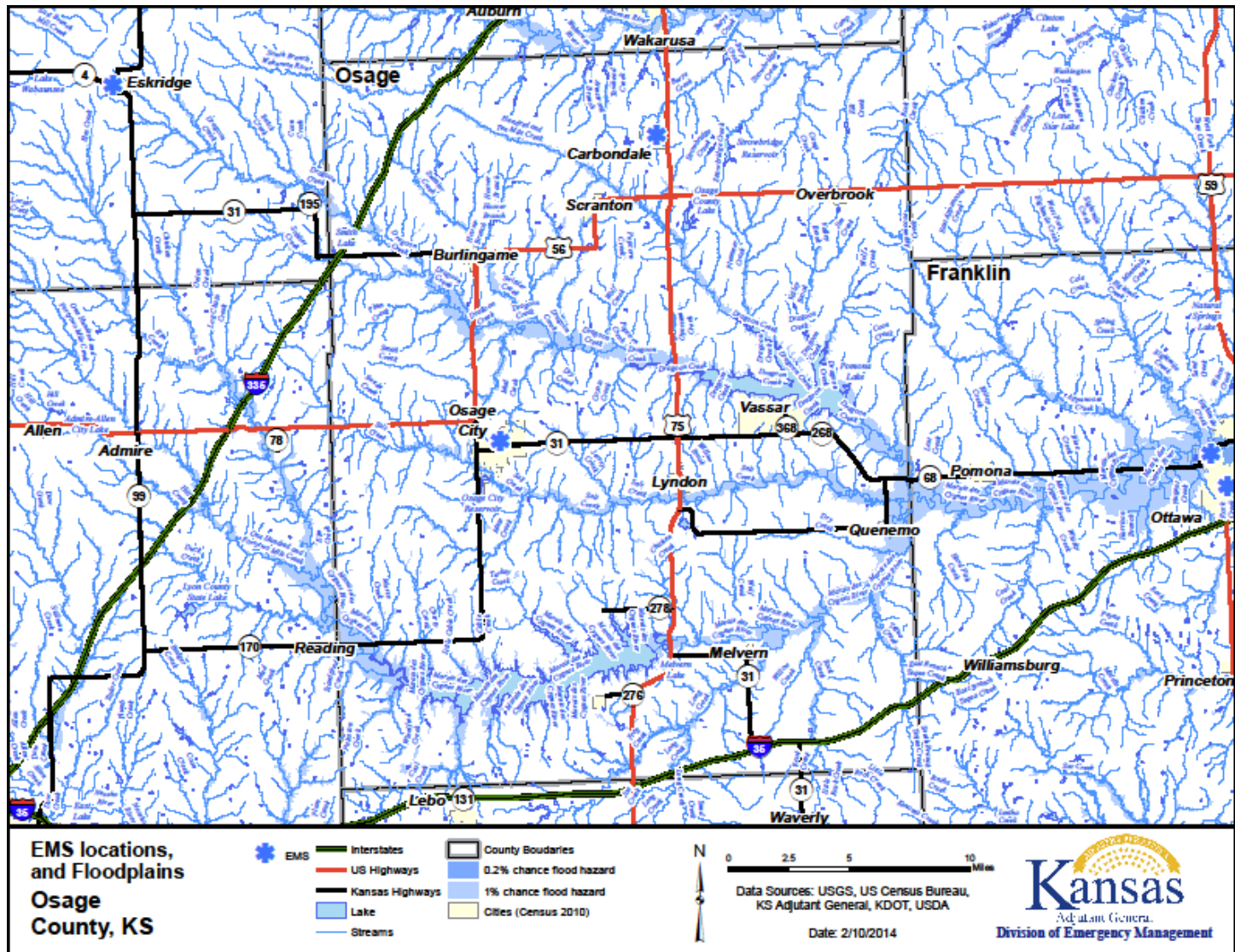


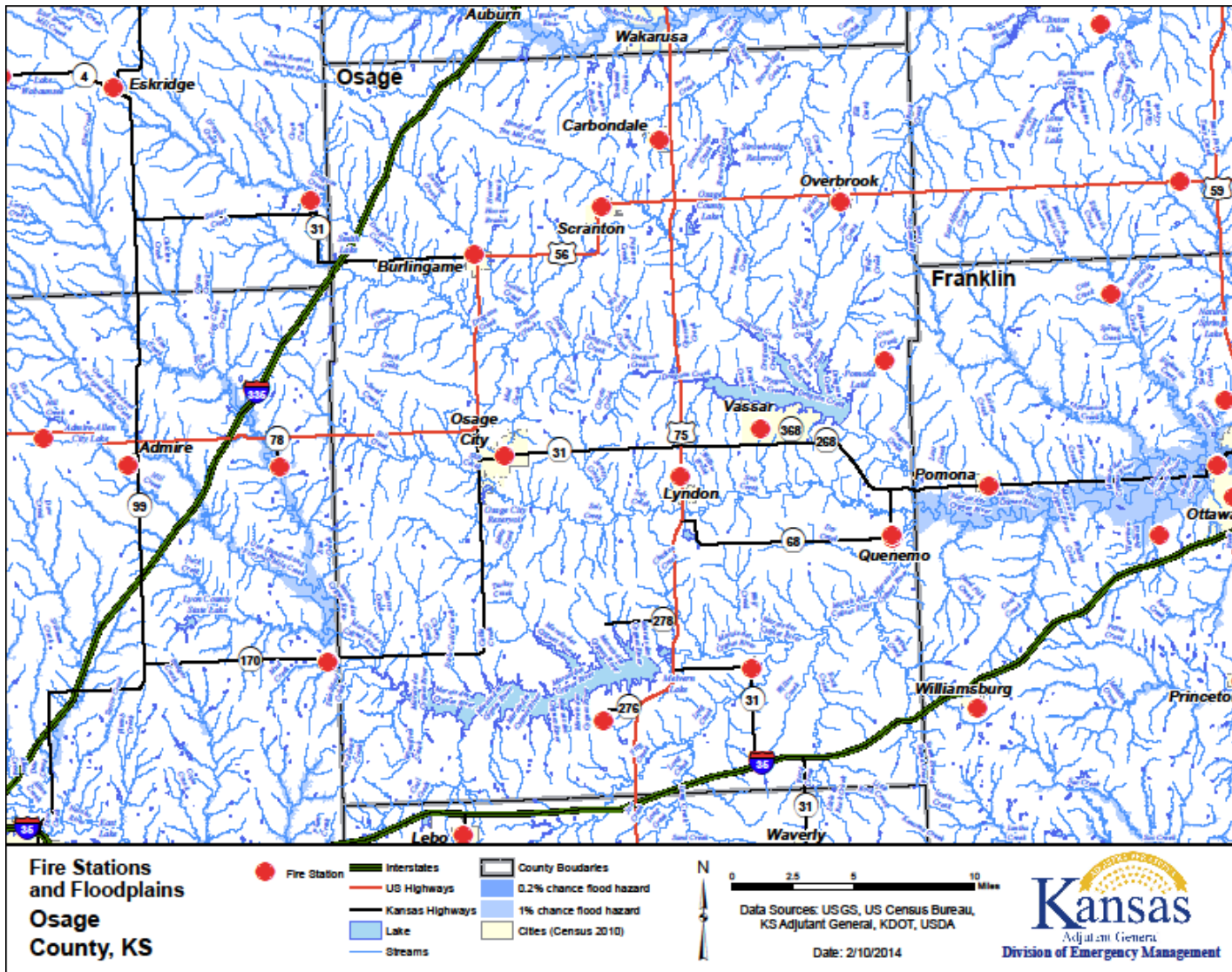
Wastewater Treatment Facility	-	-	-	Unknown
Water Towers (2)	-	-	-	Unknown
City of Quenemo				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Quenemo City Fire Department	-	\$150,000	-	Unknown
City Community Building	-	\$200,000	-	Unknown
City Hall	-	\$200,000	-	Unknown
Agency Township Fire Department	-	-	-	Unknown
Marais des Cygnes Valley Elementary School	-	-	-	Unknown
Wastewater Treatment Facility	-	-	-	Unknown
K-68 Hwy & Bridge (over Salt Creek)	-	-	-	Unknown
City of Scranton				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
City Hall/Police Station	-	\$150,000	70	Unknown
Scranton Fire Department	-	\$100,000	30	Unknown
Scranton Attendance Center	-	\$4,500,000	200	Unknown
Wastewater Treatment Facility	-	-	-	Unknown
U.S. Highway 56	-	-	-	Unknown
USD #421 - Lyndon				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Lyndon High School	421 East 6 th Street	\$9,475,000	200 / 2,500	Unknown
Track Storage	Jones Park	\$51,000	0 / 50	Unknown
Stadium bleachers etc	Jones Park	\$103,000	0 / 2500	Unknown
Football lighting	Jones Park	\$155,000	-	Unknown
Concession stand	Jones Park	\$82,000	0 / 50	Unknown
Elementary	420 East 6 th Street	\$7,947,000	325 / 500	Unknown
USD #434 - Santa Fe Trail				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Overbrook Attendance Center	202 West 7th Street, Overbrook 66524	\$15,000,000	1,500	Unknown

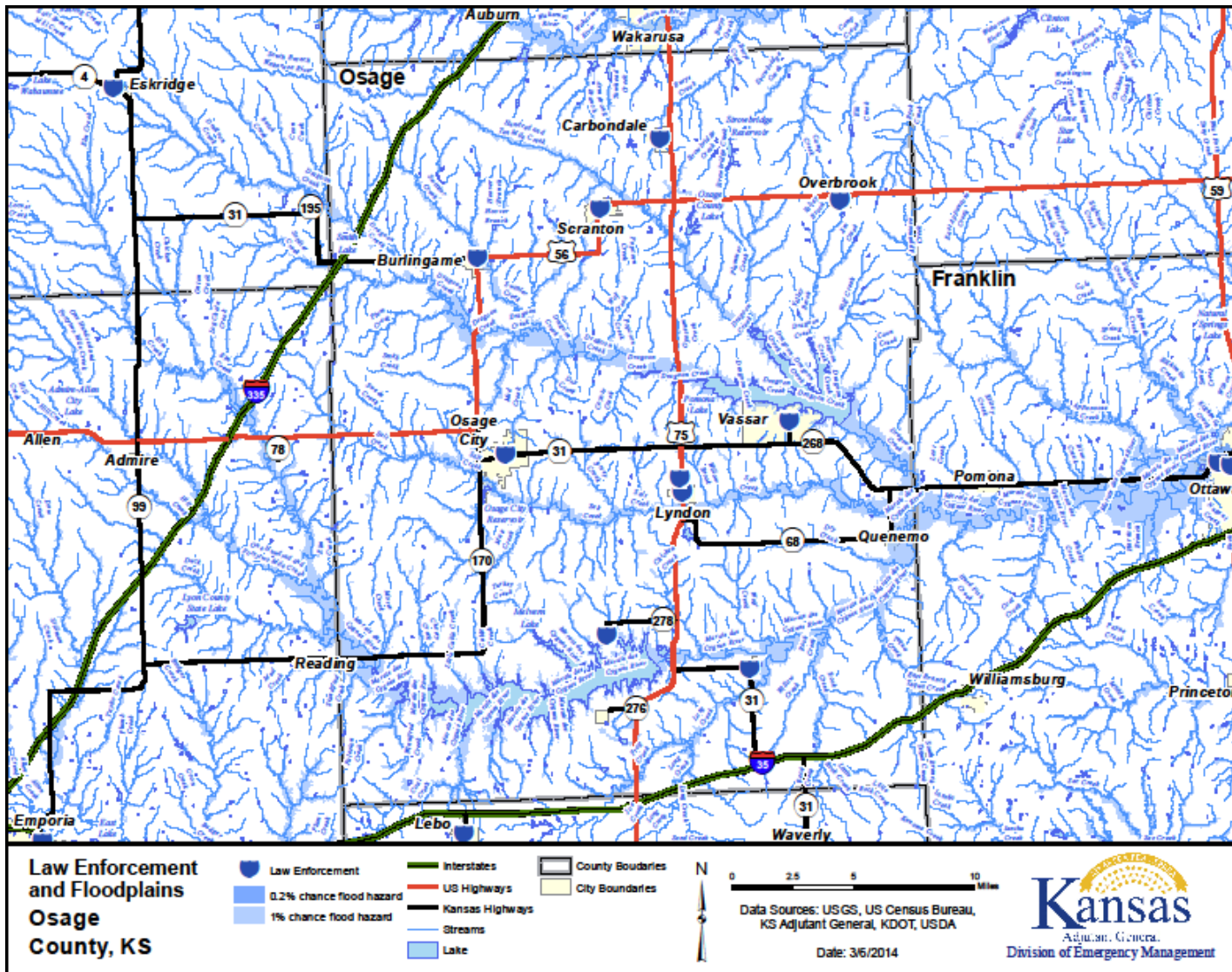


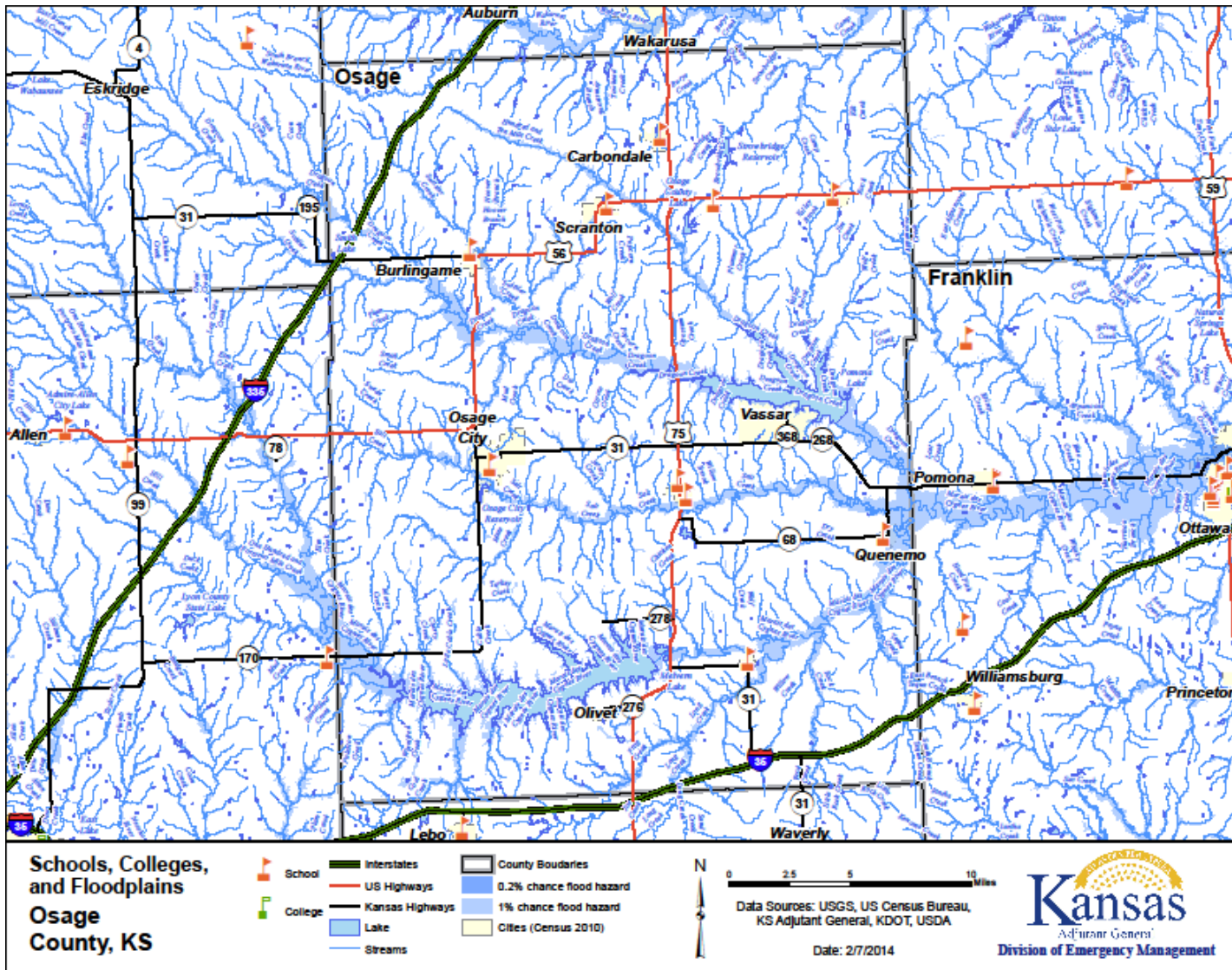
Scranton Attendance Center	104 Burlingame Avenue, Scranton, KS 66537	\$10,000,000	1,000	Unknown
Carbondale Attendance Center	315 North 4th Street, Carbondale, Kansas 66414	\$30,000,000	3,000	Unknown
Santa Fe Trail High School	15701 S. California Street, Carbondale, KS 66414	\$30,000,000	3,000	Unknown
USD #454 - Burlingame				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
K - 12 Attendance Center	232 and 417 North Dacotah, Burlingame	\$14,300,000	750	Unknown
Vocational Building	232 and 417 North Dacotah, Burlingame	\$1,100,000	250	Unknown
Allen Community College	100 Bloomquist, Burlingame	\$2,600,000	350	Unknown
Bus Garage	140 West Santa Fe, Burlingame	\$1,250,000	450	Unknown
USD #456 - Marais des Cygnes Valley				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
JH/HS Building	508 NE Main, Melvern	\$4,306,000	-	Unknown
Gymnasium/Commons	508 NE Main, Melvern	\$2,713,000	-	Unknown
Woodshop	508 NE Main, Melvern	\$374,600	-	Unknown
Elementary School	213 N. 8 th , Quenemo	\$3,385,000	-	Unknown
Modular classrooms	213 N. 8 th , Quenemo	\$81,100	-	Unknown
Preschool	213 N. 8 th , Quenemo	\$87,800	-	Unknown
Bus Garage	430 NE Main, Melvern	\$218,200	-	Unknown
BOE Office	105 SW Main, Melvern	\$79,600	-	Unknown
Three Lakes Educational Cooperative				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
TLEC West	107 Barclay, Osage City 66523	\$540,000	-	Unknown
TLEC Offices	1318 Topeka Avenue, Lyndon 66451	\$530,000	-	Unknown











Shawnee County Critical Facilities

Shawnee County				
Facility and/or Asset Name	Number of Facilities	Replacement or Estimated Value	Occupancy	Flooding Potential
Communications (radio, TV, similar)	13	\$1,235,000	10	Unknown
County Emergency Operations Center (EOC)	1	\$950,000	12	No
Fire / EMS Stations	7	\$3,990,000	665	Yes
Hospital(s)	7	\$69,825,000	450	No
Law Enforcement (Police/Sheriff Bldgs)	17	\$384,370,000	525	Yes
Emergency Shelters (Schools)	83	\$39,425,000	175	Yes
Major government buildings	22	\$1,124,463,000	5,000	Yes
Major roads (Mi)	205	\$942,547,000	0	Yes
Bridges (No.)	417	\$488,064,000	0	Yes
Fuel Storage areas	0	\$0	0	Unknown
Electric / Gas utilities	2	\$105,536,000	30	Unknown
Pumping stations	0	\$0	0	Unknown
Response staging areas	0	\$0	0	Unknown
Sewage treatment plants	9	\$669,430,000	18	Yes
*Transportation systems	8	\$265,203,000	12	Yes
Water treatment plants	1	\$31,635,000	4	Yes
Wells and storage tanks	0	\$0	0	Yes
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Jr/Sr High School	200 East Lake Street	\$19,000,000	850	Unknown
Industrial Arts Building	200 East Lake Street	\$1,350,000	100	Unknown
Grade School	200 Rice Road	\$12,000,000	600	Unknown
West Grade School Building	400 Pottawatomie	\$1,730,000	250	Unknown
Bus/Maintenance Building	200 East Lake Street	\$550,000	25	Unknown
USD #345 - Seaman				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Elmont Elementary	6432 NW Elmont Road, Topeka	\$7,000,000	-	Unknown
Indian Creek Elementary	4303 NE Indian Creed Road, Topeka	\$5,600,000	-	Unknown



Logan Elementary	1124 NW Lyman Road, Topeka	\$17,000,000	-	Unknown
Lyman Learning Center	2032 North Kansas Avenue, Topeka	\$5,200,000	-	Unknown
North Fairview Elementary	1941 NE 39th Street, Topeka	\$6,000,000	-	Unknown
Pleasant Hill Elementary	5830 NW Topeka Boulevard, Topeka	\$7,000,000	-	Unknown
Rochester Elementary	3421 NW Rochester Road, Topeka	\$7,000,000	-	Unknown
West Indianola Elementary	4201 NW Brickyard Road, Topeka	\$7,000,000	-	Unknown
Seaman Middle School	5620 NW Topeka Boulevard, Topeka	\$16,200,000	-	Unknown
Seaman High	4850 NW Rochester Road, Topeka	\$44,000,000	-	Unknown
Seaman Education Center	901 NW Lyman Road, Topeka	\$3,800,000	-	Unknown
Bus Barn and Maintenance Shop	5620 NW Topeka Boulevard, Topeka	\$400,000	-	Unknown
USD #427 - Auburn / Washington				
Facility and/or Asset Name	Address	Replacement or Estimated Value	Occupancy	Flooding Potential
Shuler Education Center	5928 SW 53rd St, Topeka 66619	\$7,300,000	-	Unknown
Auburn Elementary	810 N Commercial, Auburn, KS 66402	\$9,600,000	-	Unknown
Farley Elementary	6701 SW 33rd St, Topeka 66614	-	-	Unknown
Indian Hills Elementary	7445 SW 29th St, Topeka 66614	\$9,300,000	-	Unknown
Jay Shidler Elementary	4948 SW Wanamaker, Topeka 66610	\$10,400,000	-	Unknown
Pauline Central Primary	6225 SW Westview Rd, Topeka 66619	\$8,000,000	-	Unknown
Pauline South Intermediate	7035 SW Morril Rd, Wakarusa 66546	\$9,700,000	-	Unknown
Wanamaker Elementary	6630 SW 10th St, Topeka 66615	\$9,300,000	-	Unknown
Washburn Rural Middle School	5620 SW 61st St, Topeka 66619	\$2,900,000	-	Unknown
Washburn Rural High School	5900 SW 61st, Topeka 66619	\$79,000,000	-	Unknown



