



Curry County Multi-Jurisdictional Natural Hazard Mitigation Plan Update

April 2022

Encompassing the Jurisdictions of:

Curry County, the Cities of Clovis and Texico, and the Villages of Grady and Melrose, New Mexico



Prepared and Submitted by:

James Woulfe, CBCP, PCP
Manager, Global Solutions

Matt Eyer, PMP, PCP, CBCP
Mitigation Project Lead

BOLDplanning Inc.
4515 Harding Pike #325
Nashville, Tennessee 37205



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List of Commonly Used Acronyms

Acronym	Meaning
BRIC	Building Resilient Infrastructure and Communities
CCOEM	Clovis/Curry County (New Mexico) Office of Emergency Management
CFR	Code of Federal Regulations
CRS	Community Rating System
CWPP	Community Wildfire Protection Plans
DFRIM	Digital Flood Insurance Rate Map
DMA	Disaster Mitigation Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
HAZUS	FEMA Loss Estimation Software
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Planning
LEPC	Local Emergency Planning Committee
MPC	Mitigation Planning Committee
NID	National Inventory of Dams
NCEI	National Centers for Environmental Information
NMDHSEM	New Mexico Department of Homeland Security and Emergency Management
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NWS	National Weather Service
PDI	Palmer Drought Index
SFHA	Special Flood Hazard Area
SPI	Standardized Precipitation Index
WUI	Wildland Urban Interface



Section 1 – Planning Process

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 Multi-Jurisdictional Natural 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 Curry County 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 2015 Curry County 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

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, Building Resilient Infrastructure and Communities, Repetitive Flood Claims, and a variety of other state and federal program.

In an effort to reduce natural disaster losses, the United States Congress passed the Disaster Mitigation Act of 2000 (DMA 2000) in order to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act). DMA 2000 amended the Stafford Act by repealing the previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). Section 322 of the DMA makes the development of a hazard mitigation plan a specific eligibility requirement for any local government applying for Federal mitigation grant funds. This HMP was prepared to meet the requirements of the DMA 2000, as defined in regulations set forth by the Interim Final Rule (44 Code of Federal Regulations (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 Curry County's citizens.

1.2 Participating Jurisdictions

All eligible jurisdictions were invited to participate in the organization, drafting, completion, and adoption of this plan. The following Curry County jurisdictions elected to participate in this plan.

- Curry County
- City of Clovis
- City of Texico
- Village of Grady



- Village of Melrose

1.3 Assurances

Curry County 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 2022 Plan Update

In 2021 Curry County and its participating jurisdictions began the process to update the Curry County HMP. It was determined that the Clovis/Curry County Office of Emergency Management (CCOEM)'s Director would serve as the project manager, directing this plan update and acting as the primary point-of-contact throughout the project. The Director's primary roles included:

- Coordinating meetings and interviews
- Collecting data for the consultants to utilize
- Reviewing deliverables
- Monitoring the overall development of the plan

Curry County contracted with BOLDplanning to assist in updating the 2015 Curry County HMP. BOLDplanning'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

The Curry County HMP has undergone significant revision and upgrading since its last edition. Not only has the county made significant efforts to improve the functionality and effectiveness of the plan itself but is has significantly improved its hazard mitigation program. Additionally, the level of analysis and detail included in this risk assessment is greater than the previous edition of the plan. This grants the county'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

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.

While the Curry County hazard mitigation program has matured over the years, and unfortunate lack of funding and grant opportunities has prevented the completion of any major hazard mitigation projects. As such, this revised plan reflects the static state of proposed mitigation actions.

1.5 Planning Process

Curry County and its participating jurisdictions (undertook the following steps to update and create a robust HMP:

- Review of the 2015 Hazard Mitigation Plan
- 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 the Curry County, the State of New Mexico, FEMA, and other federal and state agency resources. Analyses were conducted at the county and jurisdictional level.
- 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 for review and approval and the petition all participating jurisdictional governments for a letter of formal plan adoption.

1.6 Mitigation Planning Committee

Project initiation began with a selection and meeting of the primary stakeholders to establish the Mitigation Planning Committee (MPC). The core members of the MPC then established and wrote the projects operating procedures, established expectations, solidified the plan development timeline, and created project milestones. Additionally, the team reviewed and discussed how the plan would incorporate FEMA requirement and other emergency management planning efforts. The following participants were selected for the MPC.

Table 1: Mitigation Planning Committee

Participant	Title	Organization
Dan Heerding	CCOEM Emergency Manager	Curry County
Dan Heerding	CCOEM Emergency Manager	City of Clovis
Doug Scioli	Texico Fire Chief	City of Texico
Leona Powell	Village Clerk/Treasurer	Village of Grady
Kenny Jacobs	Melrose Fire Chief	Village of Melrose

Each MPC member was thoroughly interviewed regarding their 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.

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

- 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 agency 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.

1.7 Plan Development

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 New Mexico 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 2: Participating Jurisdictions

Jurisdiction	Meeting Attendance or Communication with MPC Representative	Data Submission	Mitigation Action
Curry County	x	x	x
City of Clovis	x	x	x
City of Texico	x	x	x
Village of Grady	x	x	x
Village of Melrose	x	x	x

The Curry County MPC provided the opportunity for additional HMP stakeholders, including neighboring communities, agencies, businesses, academia, non-profits, and other interested parties to be involved in the mitigation planning process. Additionally, emergency managers from neighboring New Mexico counties were personally invited to attend the public draft review meeting. Of all invited, the following stakeholders participated in the planning process:

Table 3: HMP Stakeholders

Name	Title	Representing
Claire Burroughes	Assistant City Manager	City of Clovis
Bryan Ellis	President/CEO	High Plains Sleep Disorders Center
David Kube	Fire & Safety Director	Curry County Fire
Doyle Harris	Administrator	Retirement Ranch
Freddie Salazar	Security Director	Clovis Community College
Ken De Los Santos	Support Services Manager (Safety/Security/Emergency Preparedness)	Plains Regional Medical Center / Presbyterian Healthcare Services
Kim Pavlik	Executive Director.	Kindred Hospice
Lawrence Nelson	Member	Curry Co. LEPC
Megan Palla	City Commissioner	City of Clovis
Paul Nelson	IT Director	City of Clovis, NM
Riley Loomis	Patrol Lieutenant	Curry County Sheriffs Office
Ruthann Kelly	EM Specialist	Clovis/Curry County OEM
Teresa Broeker	Nurse manager	Clovis Public Health Office
Christine Amicone	Emergency Preparedness Specialist	Dept. Of Health/Public Health Southeast Region
Michelle Dischert	Administrator	La Casa
Michael Brockett	Undersheriff	CCSO
Doyle Harris	Maintenance Director	Retirement Ranch
Michael Lopez	Director	Clovis IT
Larry Nelson	Director, EMS Management	Eastern New Mexico University
Sara Williford	Adult Services Librarian	Clovis Carver Library
Kendra Trollinger	Manager	Interim Healthcare
Jocelyn Padilla	Mitigation Specialist	NMDHSEM
Sara Gerlitz	Mitigation Specialist	NMDHSEM

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



1.8 Planning Meetings

The Curry County MPC held various public meetings to discuss the mitigation planning process as well as gain public support and input for the plan update. The following is a brief synopsis of those meetings.

- **HMP Update Kick-Off and Public Information Meeting – May 19, 2021:** BOLDplanning virtually hosted a kick-off meeting for the Curry County HMP. Prior to the meeting, a public announcement was published in the Eastern New Mexico News newspaper. At the meeting, the public was invited to voice any concerns, ask questions, and provide input on the mitigation plan update. The Curry County MPC was formed during this meeting, and they reviewed the planning process, asked questions, and were assigned roles. BOLDplanning worked with the MPC to collect contact information, hazard history, facility information, and other pertinent jurisdictional information.
- **HMP Update Final Review Meeting – April 19, 2022:** BOLDplanning hosted a public final plan review meeting for the Curry County HMP. Prior to the meeting, a public announcement was published in the Eastern New Mexico News newspaper. At the meeting, the public was invited to voice any concerns, ask questions, and provide input on the mitigation plan update. Additionally, members of the public were invited to review a draft copy of the Curry County HMP update posted to CCOEM's website for two weeks after the final meeting, and prior to its submission to New Mexico Department of Homeland Security and Emergency Management (NMDHSEM).
- **HMP Update Adoption Signing – July 2022:** The Curry County HMP update adoption letters will be disseminated and signed by the participating jurisdictions. The signing of these resolutions codifies the adoption of the plan update by the participating jurisdictions.

Other planning events included conference phone calls with municipal and agency officials who could not attend scheduled meetings. Additionally, there were monthly situation report calls with Curry County and its participating jurisdictions to provide updates along the phases of plan development. These situation report calls were held at the beginning of each month and were facilitated by BOLDplanning via Zoom® web conferencing.

1.9 Community Involvement

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

- Advertised meeting invitations
- Comment period upon completion of draft plan
- Online surveys

The public was notified of open meetings via Curry County's website and print media. Further, two online HMP surveys were created for Curry County. The first survey, the Curry County, NM Multi-Jurisdictional Hazard Mitigation Plan Survey (<https://publicinput.com/L0781>) allowed for MPC members, plan stakeholders, and the general public to provide input to hazards and potential hazard mitigation projects that are ongoing for the County. The second survey, the Curry County, NM Hazard Mitigation Plan – Open Comment Survey (<https://publicinput.com/X357>), allowed all MPC members, plan stakeholders, and the public to provide feedback and input on the HMP update prior to its submission to the NMDHSEM and FEMA.

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.



Meeting information, including sign-in sheets and public notification documentation can be found in Appendix A.

1.10 – Adoption Resolutions

Upon review and approved pending adoption status by FEMA Region VI adoption resolutions will be signed by the participating jurisdictions. FEMA approval documentation may be found in Appendix B. Jurisdictional adoption resolutions may be found in Appendix C.



Section 2 – Plan Documentation, Development, and Maintenance

2.1 Planning Document Resources

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 Curry County's resilience to disasters.

- **Curry County Basin Community Wildfire Protection Plan (CWPP)**
Curry County's latest CWPP (2016) provided the local perspective basis for this plan's wildfire hazard profile and direction for the wildfire portion of its mitigation strategy.
- **Curry County Critical Facilities List**
The MPC compiled a list of critical facilities and pertinent information on those facilities. This list is used throughout the plan and is the basis for the vulnerability assessments and loss estimates. The complete list is posted in Appendix D.
- **Curry County Emergency Operations Plan**
CCOEM developed a countywide Emergency Operations Plan. Using a commercial template to follow best practice methodology, this plan is a living document that is continually being developed, tested, and updated.
- **Curry County Multi-Jurisdictional Natural Hazard Mitigation Plan**
Curry County is currently covered by a FEMA-approved HMP (2015). The previous HMP has been reviewed and is incorporated throughout this plan per FEMA requirements.
- **Curry County, New Mexico Land & Resource Management Plan & Policies – 2016**
This plan is applied to federal regulatory frameworks that govern the management of public land in regards to the rangeland, soil, water, wildlife, air, energy, and other resources. Federal law requires federal agencies to give meaningful consideration to policies asserted in plans developed by local governments, including counties and conservation districts.
- **State of New Mexico Hazard Mitigation Plan**
The purpose of the State of New Mexico Hazard Mitigation Plan (Update 2018) is intended to provide the framework for hazard mitigation. The first pertains to the recovery and reconstruction phase after a given disaster. The Plan Update will be used to increase awareness and initiate development of long-range, interagency, multi- objective mitigation activities to be administered by NMDHSEM and the State Hazard Mitigation Planning Team for the State of New Mexico.
- **Northeast New Mexico Regional Water Plan – 2016**
The Northeast New Mexico Water Planning Region, which includes Union, Harding, Quay, Curry, and Roosevelt counties is one of 16 water planning regions in the State of New Mexico. The purpose of this document is to provide new and changed information related to water planning in the Northeast New Mexico region and to evaluate projections of future water supply and demand for the region using a common technical approach applied to all 16 planning regions statewide
- **New Mexico Drought Plan – 2018**
The New Mexico Drought Plan (2018) provides the state with an updated approach to address drought in order to protect its people and resources. It develops a drought response system that is adaptive to changing needs and conditions and capable of being continually upgraded through the incorporation of new information. The plan specifies that subsequent updates should be made every five years.



- **A Summary of the New Mexico Water Planning Drought Discussion – 2019**

Prepared by the New Mexico Water Resources Institute, the summary is a report detailing the discussions (based on notes and transcripts) from the series of meetings, called the Water Planning Discussions, held in March 2019. The purpose of the discussions was to inform New Mexico communities about water planning activities of the New Mexico Interstate Stream Commission, gather their input on drought impacts and needed drought resources, and present content on available drought resources.

- **Curry County and Participating Jurisdiction Planning Documents**

Curry County and its participating jurisdictions provided a host of planning, zoning, and development related documents. These documents were reviewed, assessed, and cataloged to compile each participating jurisdiction’s capabilities.

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.

2.2 Technical Resources

The Curry County MPC employed a variety of technical resources in its plan development. These technical resources were instrumental in completing an accurate vulnerability and risk assessment.

- BOLDplanning Inc.
With over 16 years of experience in hazard mitigation planning, BOLDplanning was the principal plan writer.
- ESRI ArcGIS v10
Each map developed for this plan, along with the HAZUS® models, were developed using ESRI’s ArcGIS v10.
- FEMA Flood Insurance Rate Maps (FIRMs) – Map Data Center
FEMA’s National Flood Hazard Layer (NFHL) data was instrumental in mapping floodplain locations and estimating potential flood impacts and loss estimates.
- National Oceanic and Atmospheric Administration/National Centers for Environmental Information (NCEI)
Weather data and historical events were primarily provided by NCEI.

In addition, relevant federal, regional, state, local, and any private and non-profit entities were also invited to provide input and utilized for information and technical expertise. The following table indicates these entities.

Table 4: Technical Input Agencies

Agency	Entities	Data Input
Federal Agencies	National Parks, National Oceanic and Atmospheric Administration (NOAA), U.S. Army Corps of Engineers (USACE), U.S. Department of Agriculture (USDA) National Resources Conservation Service (NRCS), U.S. Geological Survey (USGS), National Weather Service (NWS)	Provided weather data, dam data, land use data, and geological data
State Agencies	NMDHSEM, State Courts	Provided oversight and technical assistance; provided hazard records
Local Governments	Curry County Emergency Management, Participating Municipalities	Provided input as MPC members / principal subjects
Private Organizations	BOLDplanning	Directed planning effort as principal planners; provided input from various interests; Provided input – HAZUS® report



Table 4: Technical Input Agencies

Agency	Entities	Data Input
Academia	Eastern New Mexico University, Clovis Community College	Provided input from various interests

2.3 Continued Public Involvement

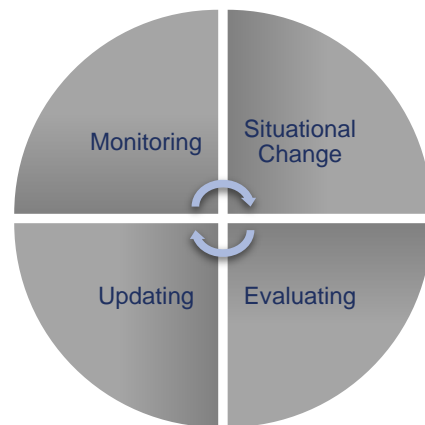
Curry County is dedicated to involving the public in the continual shaping of its mitigation plan and the development of its mitigation projects and activities.

The Curry County MPC will continue to keep the public informed about its hazard mitigation projects and activities through CCOEM’s website. The public will also be invited to participate in annual MPC meetings to review and discuss the mitigation-related events of the past year.

Copies of the Curry County HMP will be available online at CCOEM’s website and distributed to all the participating jurisdictions.

2.4 Plan Maintenance Process

The Curry County MPC has developed a method to ensure monitoring, evaluation, and updating of its mitigation plan. Upon adoption of the Curry County HMP update, CCOEM will utilize its Local Emergency Planning Committee (LEPC) to provide plan updates, revisions, and data collection for future HMP planning purposes. The LEPC chair will form a subcommittee for proposed mitigation projects comprised of CCOEM’s director and jurisdictional representatives from the MPC. The chair of the subcommittee will be determined by a vote in the subcommittee. Additional members may be added based on necessity. The sub-committee will submit a quarterly report to the LEPC, which in turn, will submit an annual report to CCOEM. The Curry County HMP Update Quarterly Report is as follows:





**Local Emergency Planning Committee
Multi-Jurisdictional Natural Hazard Mitigation Plan
Evaluation Report**

Pre-Disaster Mitigation Plan Sub-Committee Chair: _____

Meeting Date: _____

Plan Approval Date: _____

Plan Expiration Date: _____

Have there been any disasters or training event since the last report? If so, list them below:

Disaster Number/ Training Event	Hazard Type(s)	Was the hazard expected or unforeseen?	Is a plan update required?
<i>Example: DR-1000</i>	<i>Volcanic Eruption</i>	<i>Unforeseen</i>	<i>Yes</i>
<i>Example: Annual Training</i>	<i>Flash Flooding</i>	<i>Expected</i>	<i>No</i>

Mitigation Projects:

Mitigation Project	Participating Jurisdictions	Proposed/Scheduled /In Progress/ Completed	Behind/Ahead/ On-Schedule	Estimated Completion Date
<i>Example: Tornado Safe Room</i>	<i>Cash</i>	<i>In Progress</i>	<i>On-Schedule</i>	<i>1/1/2021</i>

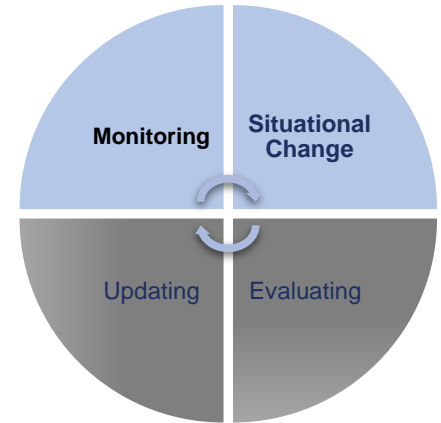
Miscellaneous Notes:

CCOEM may request a non-scheduled report on the monitoring, evaluation, or updating of any portion of the MHMP plan due to irregular progress on mitigation actions and or projects, in the aftermath of a hazard event, or for any reason deemed appropriate.

Plan Monitoring and Situational Change

Plan monitoring can be defined as the ongoing process by which stakeholders obtain regular feedback on the progress being made towards achieving their goals and objectives. In the more limited approach, monitoring may focus on tracking projects and the use of the agency’s resources. In the broader approach, monitoring also involves tracking strategies and actions being taken by partners and non-partners, and figuring out what new strategies and actions need to be taken to ensure progress towards the most important results.

A monitoring report will be written and submitted for review to the LEPC and after the annual MPC meeting or when triggered by situational change. The monitoring report answers the following questions:



- Is the mitigation project under, over, or on budget?
- Is the mitigation project behind, ahead of, or on schedule?
- Are there any changes in Curry County’s capabilities which impact the PDM plan?
- Are there any changes in Curry County’s hazard risk?
- Has the mitigation action been initiated, or its initiation planned?
- Is the current process of prioritizing mitigation actions and projects appropriate and accurate?
- Has the current method of incorporating mitigation actions and projects yielded a comprehensive action and project strategy to address seen and unforeseen hazards?
- If applicable, has participation in a mitigation action’s collaboration been regular?
- Was a negative result caused directly or indirectly by insufficient levels of public outreach?
- If any, what plan updates occurred, why they occurred, and what is their impact?

The plan maintenance process is cyclical and maintenance items can operate simultaneously within the process.

Plan Evaluating

A plan evaluation is a rigorous and independent assessment of either completed or ongoing activities to determine the extent to which they are achieving stated objectives and contributing to decision making.

An evaluation report (see example in Section 2.3.4) will be written and submitted to Curry County’s LEPC when the situation dictates.

The following situations are typical examples of when an evaluation will be necessary.



- Post hazard event
- Post training exercise
- Post tabletop or drill exercise
- Significant change or completion of a mitigation project
- Significant change or completion of a mitigation action

An evaluation report will ask the following questions in response to the previously listed events.

- Do the mitigation objectives and goals continue to address the current hazards?
- Are there new or previously unforeseen hazards?

- Does a change in hazard vulnerability demand a change of or addition of mitigation actions or projects?
- Does a change in the mitigation strategy demand a change of or addition of mitigation actions or projects?
- Are current resources appropriate for implementing a mitigation project?
- Was the outcome of a mitigation action/project expected?
- Are there implementation problems?
- Was the public engaged to the point where they were satisfied with current engagement strategies?
- Did the public participate in a number that produced a positive yield on the plan, action, or project?
- Are there coordination problems?

Plan Updating

Typically, the updating of a HMP is initiated upon the completion of a plan evaluation and even then, only when the evaluation determines an update is appropriate. A plan update also occurs every five years per FEMA guidelines. Additionally, when new hazard data becomes available, it will be added to the HMP. New data will be confirmed or denied at annual MPC meetings. Additionally, a HMP update can be written any time it is deemed necessary by CCOEM.

According to FEMA DMA 2000 guidelines for mitigation planning, Curry County will begin the update process three years from this plan’s adoption. It will do so under the direction of the County’s Emergency Management Director. CCOEM will coordinate and facilitate a bi-annual meeting within the five-year cycle with stakeholders from participating jurisdictions and stakeholders from neighboring counties.



These meetings will allow CCOEM, the MPC Chair, MPC members, and stakeholders to gather relevant information needed for the next plan update. These meetings will ensure the appropriate status of certain goals (mitigation activities and projects) identified in mitigation strategy are up to date to include in the next FEMA-required, five-year plan update.

2.5 HMP Incorporation

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 Hazard Mitigation Plan.

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:

- Operations Plans
- Codes and Ordinances
- Emergency Operations Plans
- Comprehensive Plans
- Land and Resource Management Plans and Policies
- Critical Facility Plans
- 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 from hazards. 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:

- Operation plans
- General or master plans
- Ordinances
- Capital improvement plans
- Budget revisions or adoptions
- Hiring of staff
- Stormwater planning
- Land use planning

Where appropriate, Curry County will take the lead in integrating this HMP into overarching, countywide plans, code, ordinances and any other relevant documents, policies or procedures.



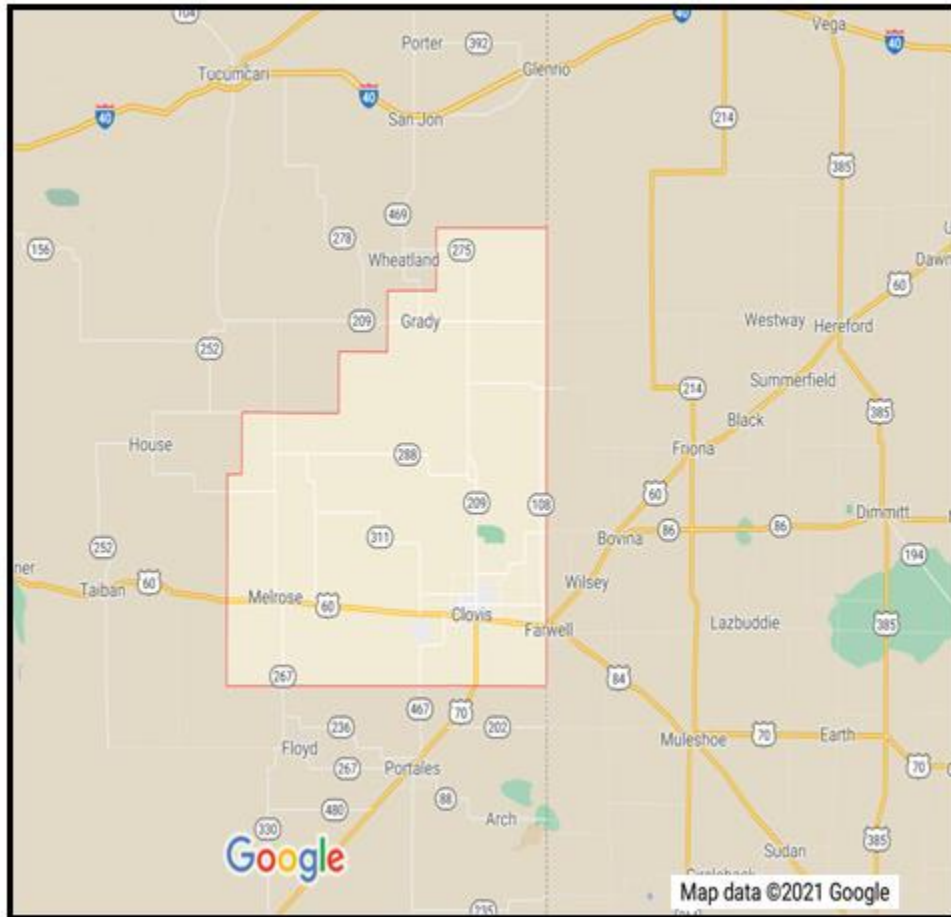
Section 3 – Planning Area

3.1 Introduction to the Planning Area

Curry County is located in the State of New Mexico. As of the 2020 census, its population was 48,430 with the County Seat being in Clovis. Curry County has a total area of 1,408 square miles, of which 1,405 square miles are land and 3.2 square miles (0.2%) are covered by water. It is the fourth-smallest county in New Mexico by area. Curry County is made up of two primary cities Clovis and Texico.

The following map details the broad location of the Curry County planning area.

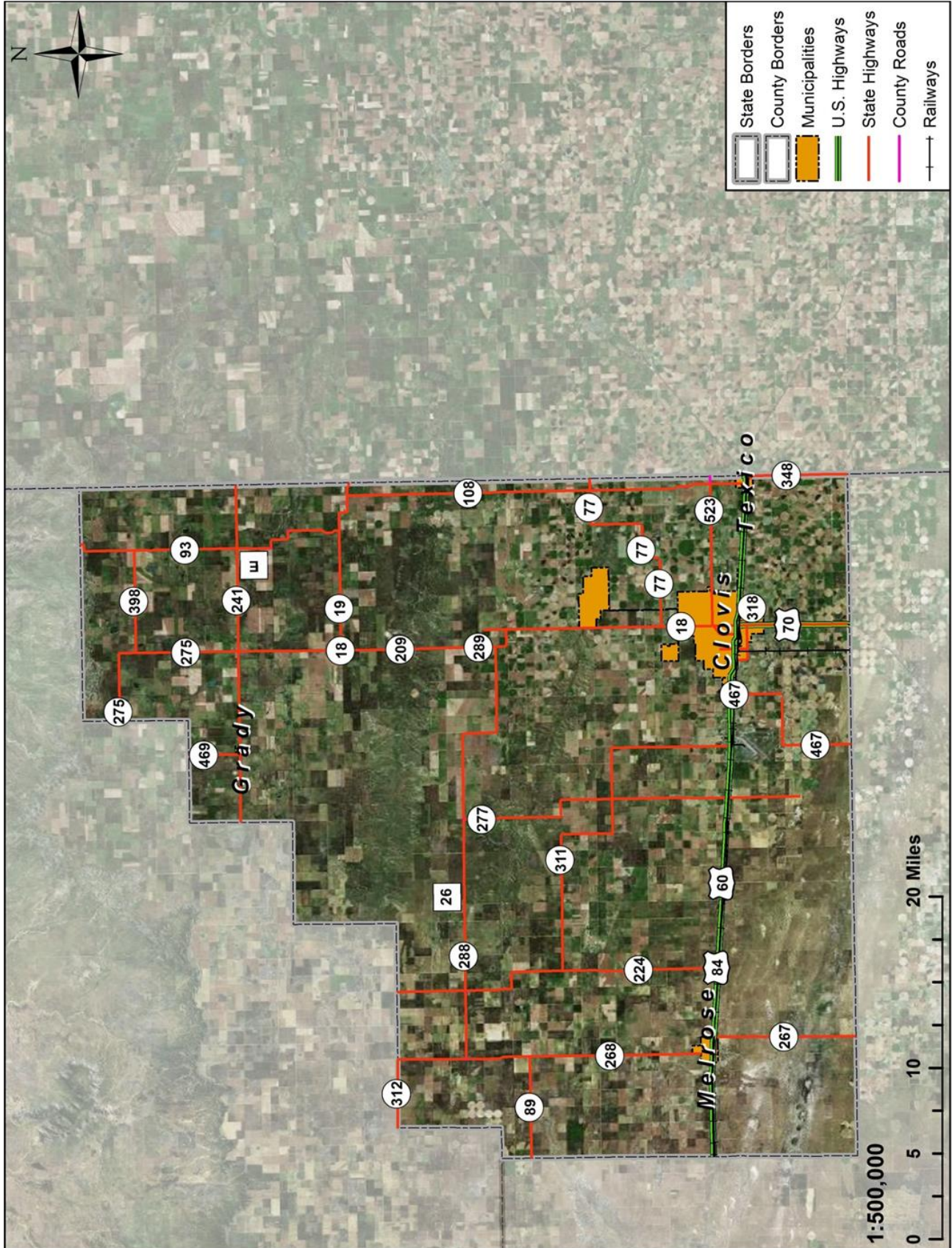
Map 1: Curry County, New Mexico



The following maps, provided by the Curry County, NM GIS Department, detail participating jurisdictions.

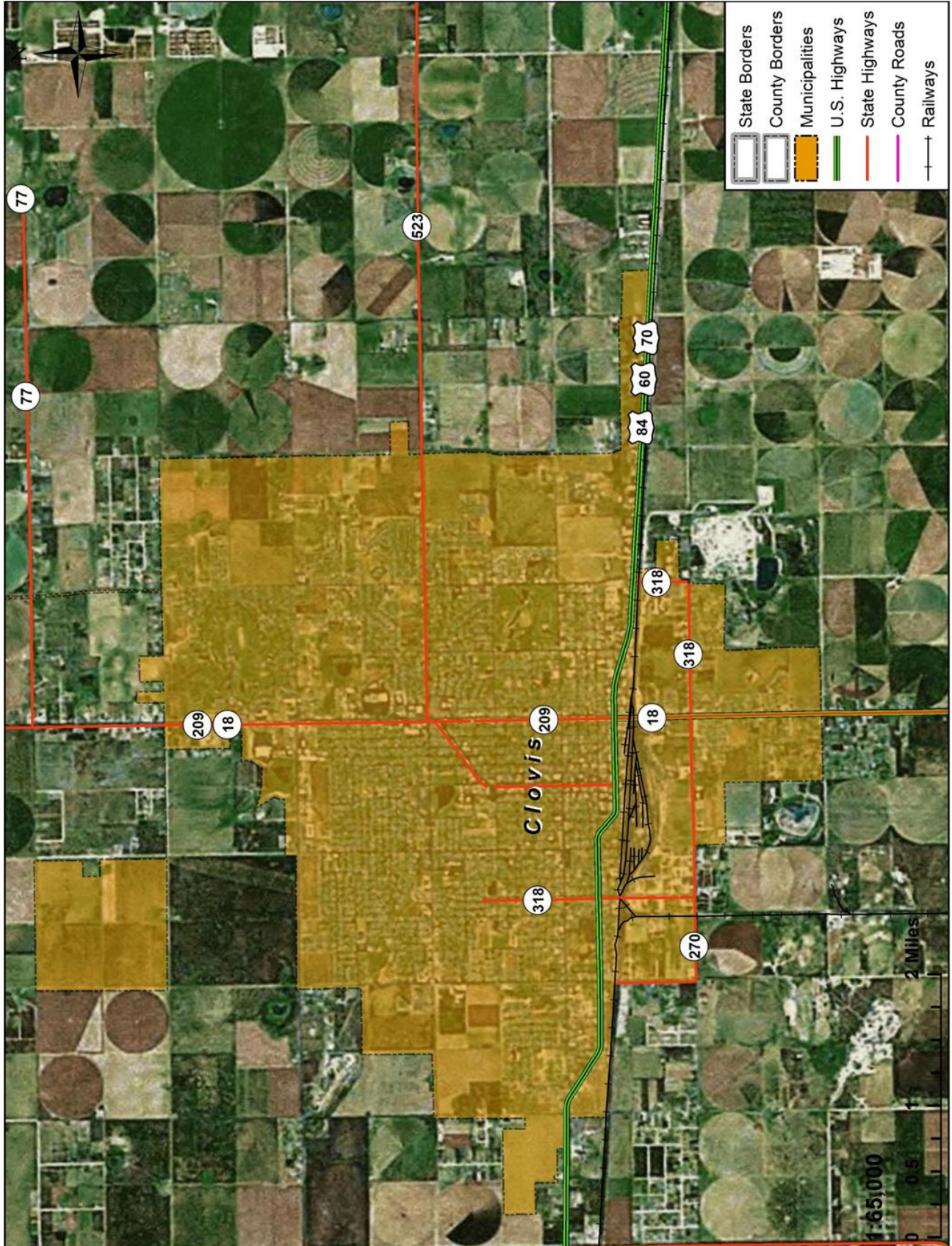


Map 2: Curry County, New Mexico



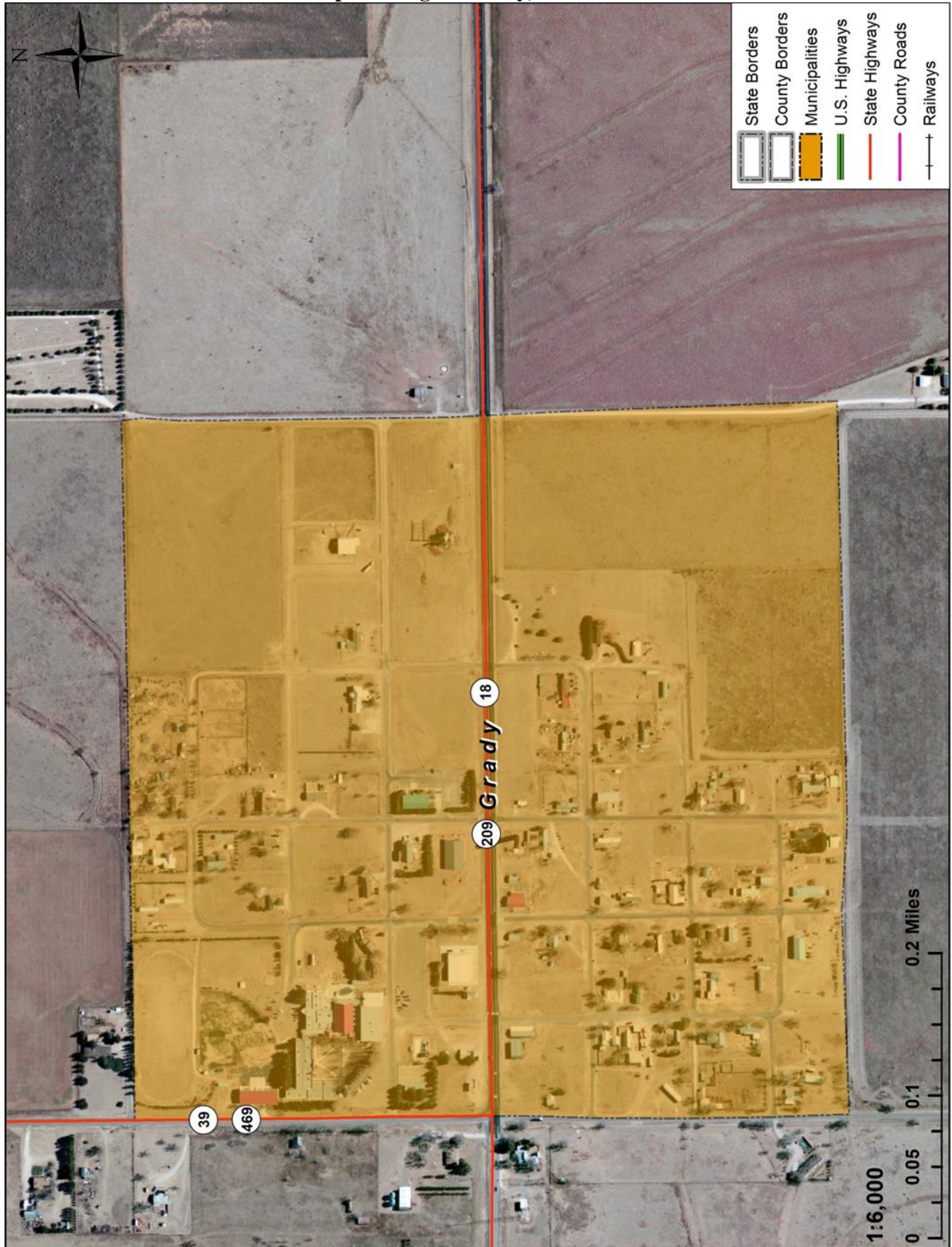


Map 3: City of Clovis, New Mexico



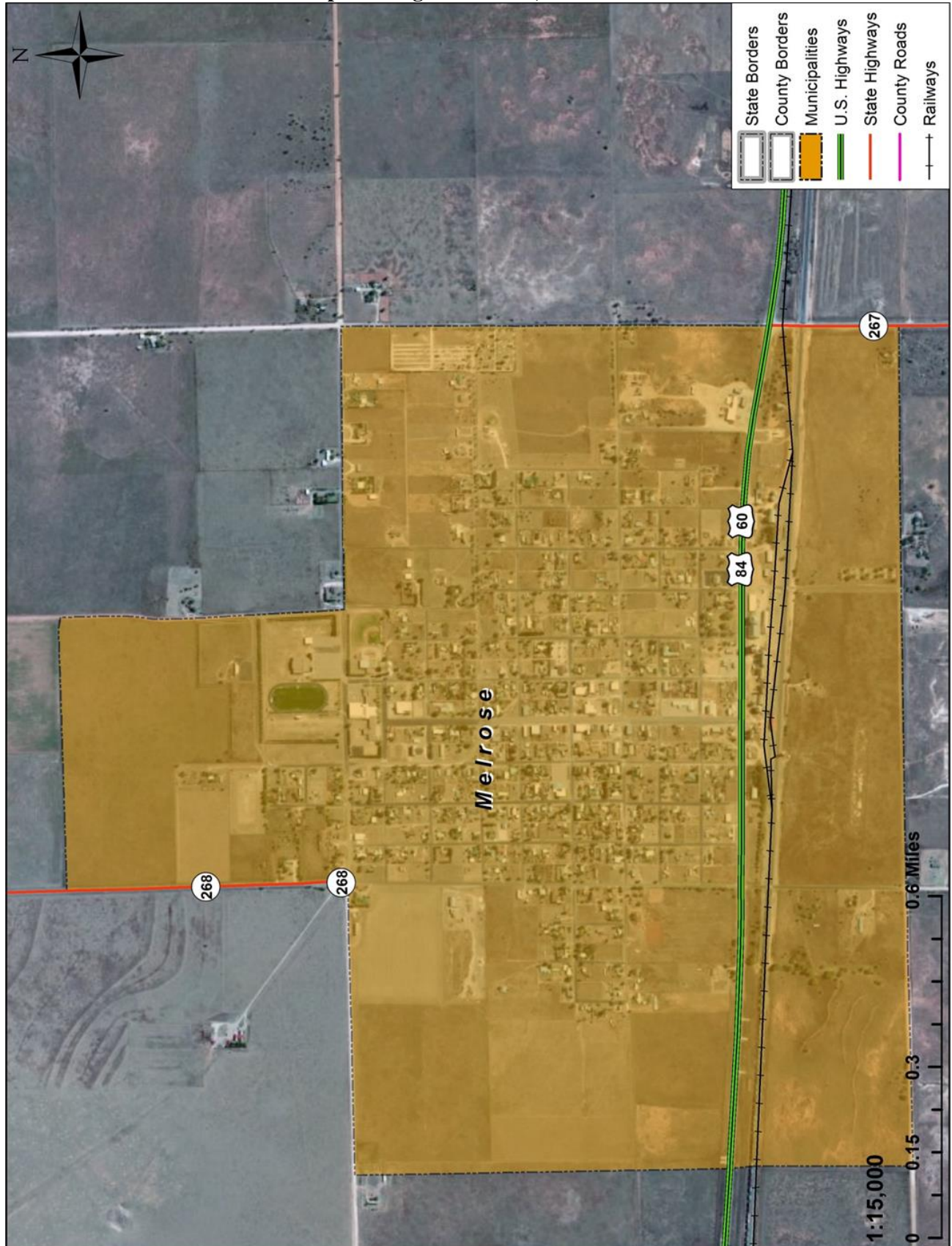


Map 4: Village of Grady, New Mexico



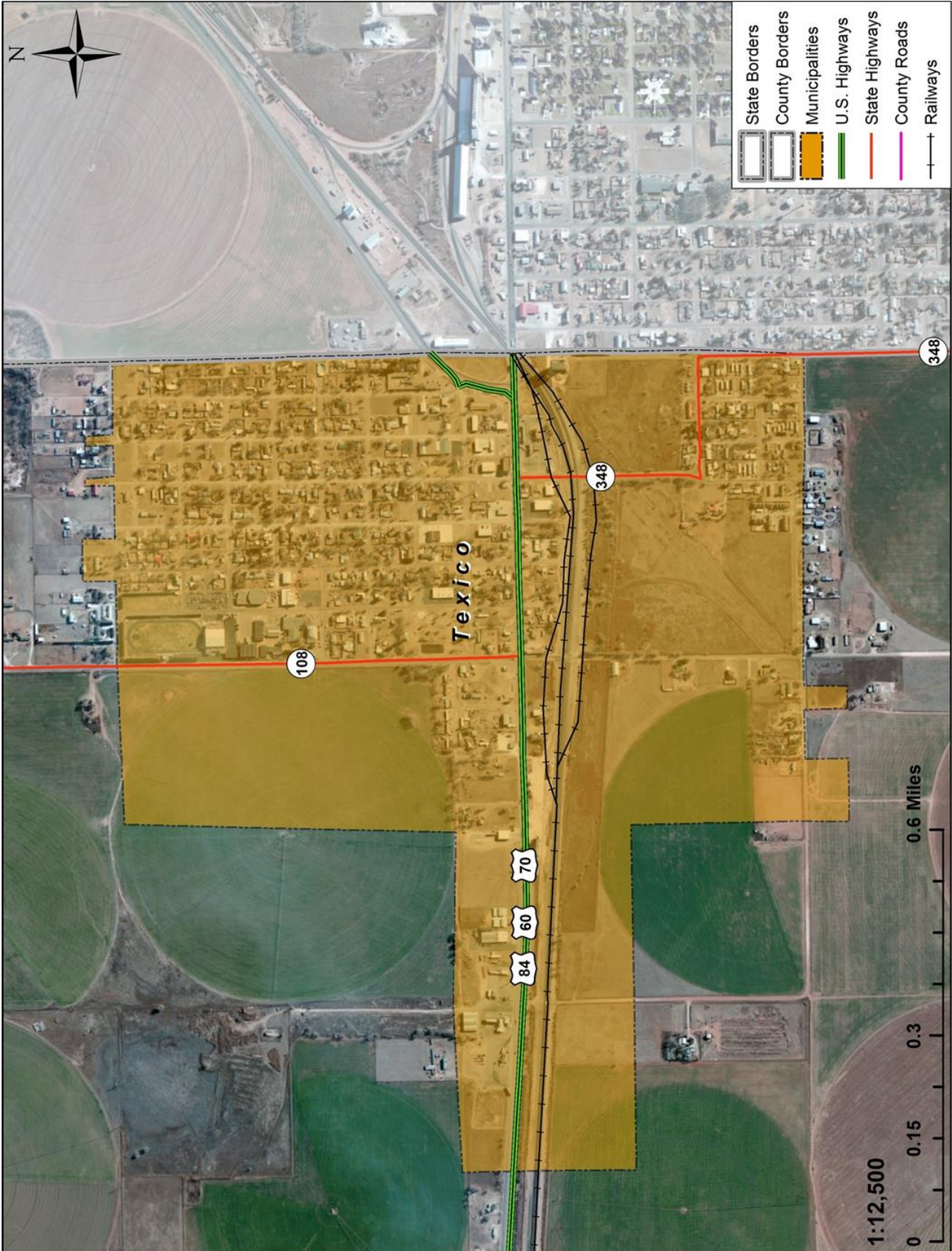


Map 5: Village of Melrose, New Mexico





Map 6: City of Texico, New Mexico





3.2 Demographics

In general, Curry County is a rural area with smaller sized urban centers. Of the 33 counties in the State of New Mexico, Curry County is ranked as number 30 in land area with 1,404.80 square miles and 12th in population size. According to the U.S. Census Bureau, the population of Curry County in 2022 is estimated to be 48,430. The table below details the participating jurisdictions’ demographic information.

Table 5: Population Data

Jurisdiction	Land Area (Sq. Mi.)	Population			Percentage Population Change	
		2000	2010	2020	2000-2010	2010-2020
Curry County	1,404.80	45,044	48,376	48,430	7.13%	0.1%
Clovis	22.7	32,667	37,775	38,567	14.50%	2.1%
Grady	0.68	110	107	86	(-2.7%)	(-19.6%)
Melrose	1.69	736	651	622	(-11.5%)	(-4.5%)
Texico	0.83	1,065	1,130	956	6.1%	(-15.4%)

Source: U.S. Census Bureau

Curry County and its jurisdictions have experienced slight population changes since 2000. Of note:

- Curry County has seen a 0.1% population increase for the period 2010-2020
- Clovis has seen a 2.1% population increase for the period 2010-2020
- Grady has seen a (-19.6%) population decrease for the period 2010-2020
- Melrose has seen a (-4.5%) population decrease for the period 2010-2020
- Texico has seen a (-15.4%) population decrease for the period 2010-2020

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 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." The following tables present information on potential at risk populations within Curry County.

Table 6: Potential at Risk Population Data

Jurisdiction	Population 5 and Under (2021)	Population Over 65 (2021)	Speak a Language Other Than English (2021)	Estimated People in Poverty (2021)
Curry County (Inclusive)	3,874	6,005	13,318	9,153
Clovis	3,047	4,474	11,262	7,945
Grady	7	30	9	6
Melrose	50	137	109	85
Texico	49	151	459	122

Source: United States Census Bureau 2021

The Social Vulnerability Index 2010 - 2014 compiled by the Hazards and Vulnerability Research Institute in the Department of Geography at the University of South Carolina measures the social vulnerability of counties to environmental hazards. The index synthesizes 30 socioeconomic variables, including social, economic, demographic,

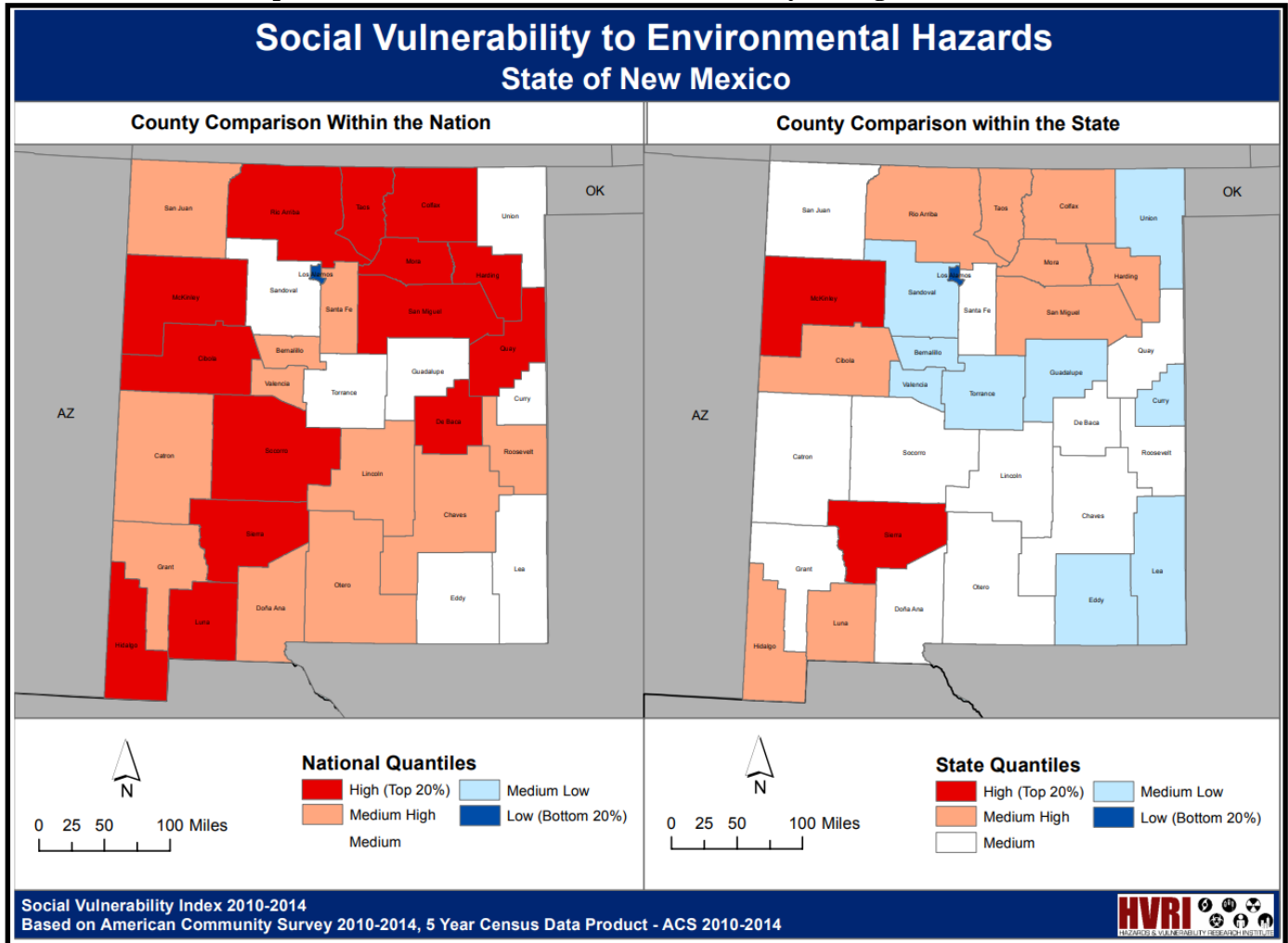


and housing characteristics, which may contribute to reduction in a community’s ability to prepare, respond and recover from a hazard. The major data source for this index is primarily the United States Census Bureau.

After obtaining the relevant data, a principal components analysis is used to reduce the data into set of components. All components are added together to determine a numerical value that represents the social vulnerability for each county. Scores in the top 20% of the United States are more vulnerable counties (red) and scores in the bottom 20% of the United States indicate the least vulnerable counties (blue).

The following map illustrates social vulnerability rating for the Curry County.

Map 7: State of New Mexico Social Vulnerability Ratings (20010-2014)



Source: Hazards and Vulnerability Research Institute, University of South Carolina

3.3 – Assessor Data

This section quantifies the buildings exposed to potential hazards in Curry County. In general, the higher a jurisdiction’s housing stock, the higher their vulnerability to specific hazards.

According to the Curry County Assessor’s Office, Curry County has approximately 29,718 parcels. The parcels include 17,017 residential, 558 non-residential, 638 agricultural improvements, 1,631 commercial, 1,480 personal property, 1,996 manufactured homes. The remaining parcels are vacant or agricultural land. As of April 1, 2021, there have been 93 new Residential housing permits issued through the City of Clovis compared with 73 starts as of May 1st of 2020. Additionally, 11 new commercial permits were issued in 2021, compared to 10 issued in 2020.



Data from the Curry County Assessor’s Office indicates the following assessed property value:

- State Assessed Properties
 - 2020: \$138,057,913
 - 2021: Not Yet Reported
- Residential Properties
 - 2020: \$606,426,374
 - 2021: \$627,382,308
 - Difference, 2020 to 2021: \$20,955,934
- Non-Residential Properties
 - 2020: \$377,483,106
 - 2021: \$367,743,677
 - Difference, 2020 to 2021: (-\$9,736,429)

Additionally, the following data from HAZUS indicates the total value of property within Curry County.

Table 7: Curry County HAZUS Valuations

Ag.	Comm.	Gov.	Indust.	Res.	Ed.	Religious
\$54,021,000	\$578,062,000	\$33,363,000	\$85,631,000	\$3,140,041,000	\$103,202,000	\$74,544,000

Source: FEMA HAZUS

Note: The values below are the unincorporated structures based on replacement cost. They do not deduct any exemptions as in personal or structure type (e.g., churches, schools, county buildings, etc.).

The total HAZUS estimated value for real property in Curry County is estimated at \$4,068,864,000.

3.4 – Community Risk Mapping

Using available census, economic, and development data, FEMA developed the following maps to indicate community risk, community resilience, and community vulnerability to a hazard event.



Map 8: FEMA Natural Risk Index Map – Curry County



Map/Data Source: FEMA National Risk Index Map, map produced by BOLDplanning



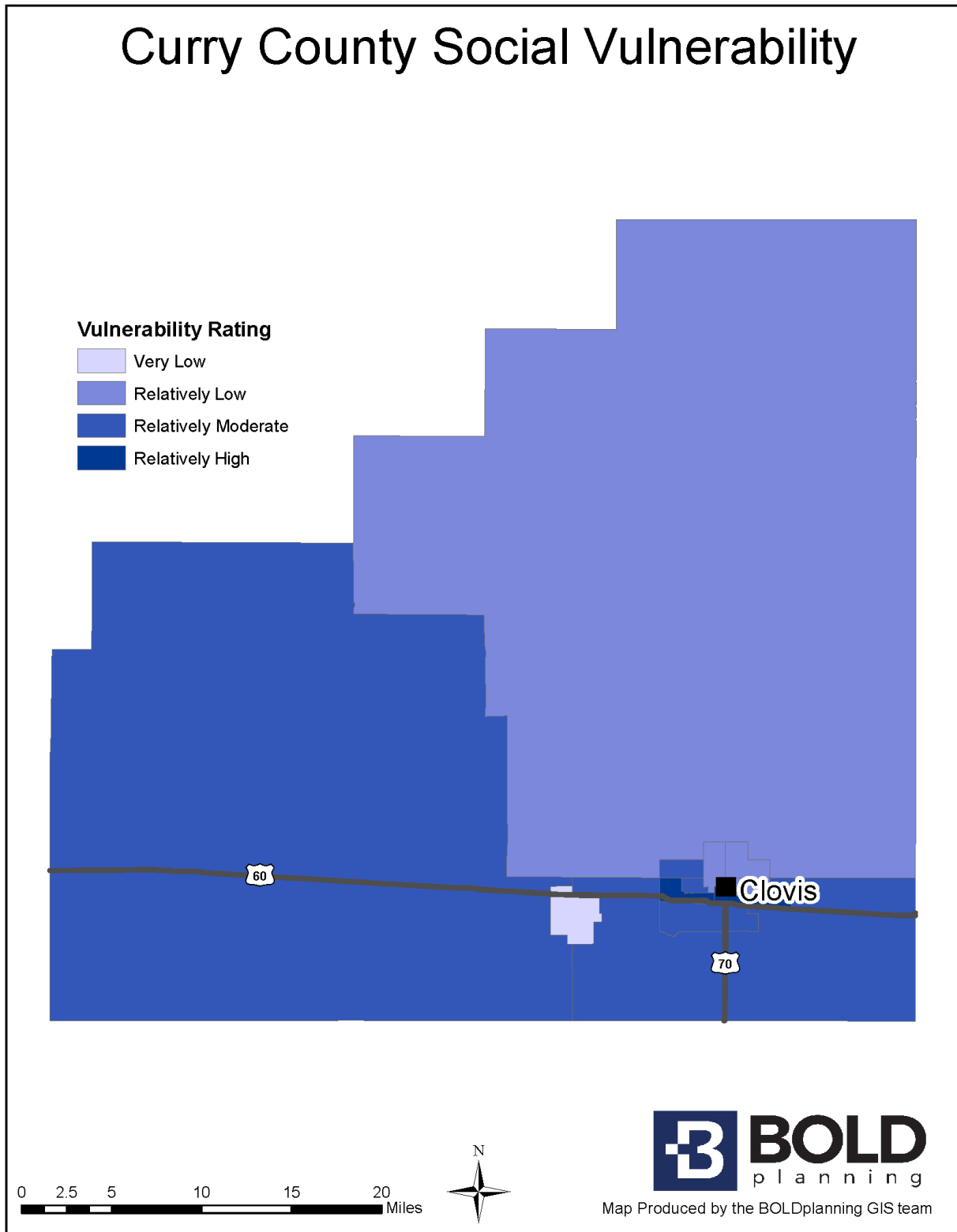
Map 9: FEMA Community Resilience, Curry County



Map/Data Source: FEMA National Risk Index Map, map produced by BOLDplanning



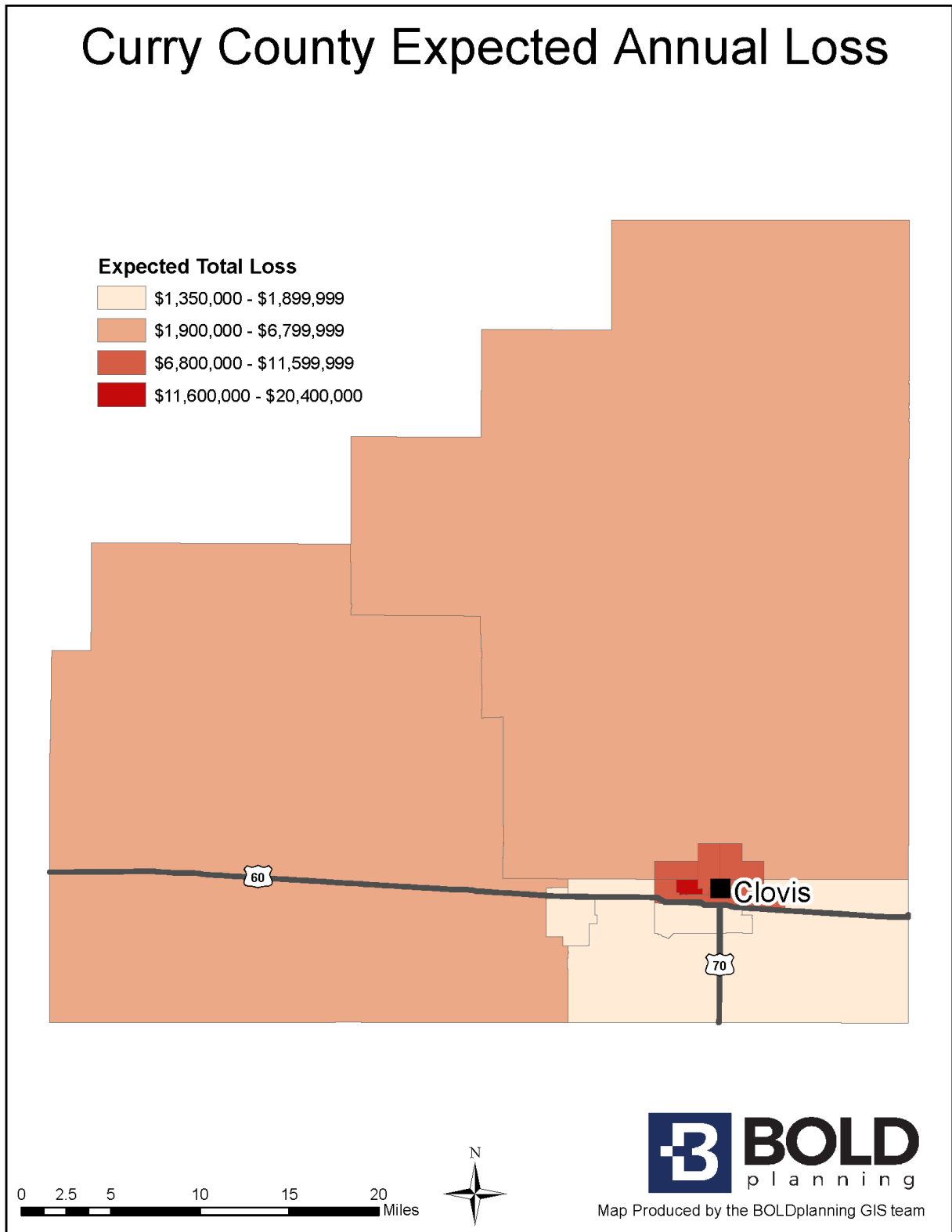
Map 10: FEMA Social Vulnerability, Curry County



Map/Data Source: FEMA National Risk Index Map, map produced by BOLDplanning



Map 11: FEMA Expected Annual Loss, Curry County



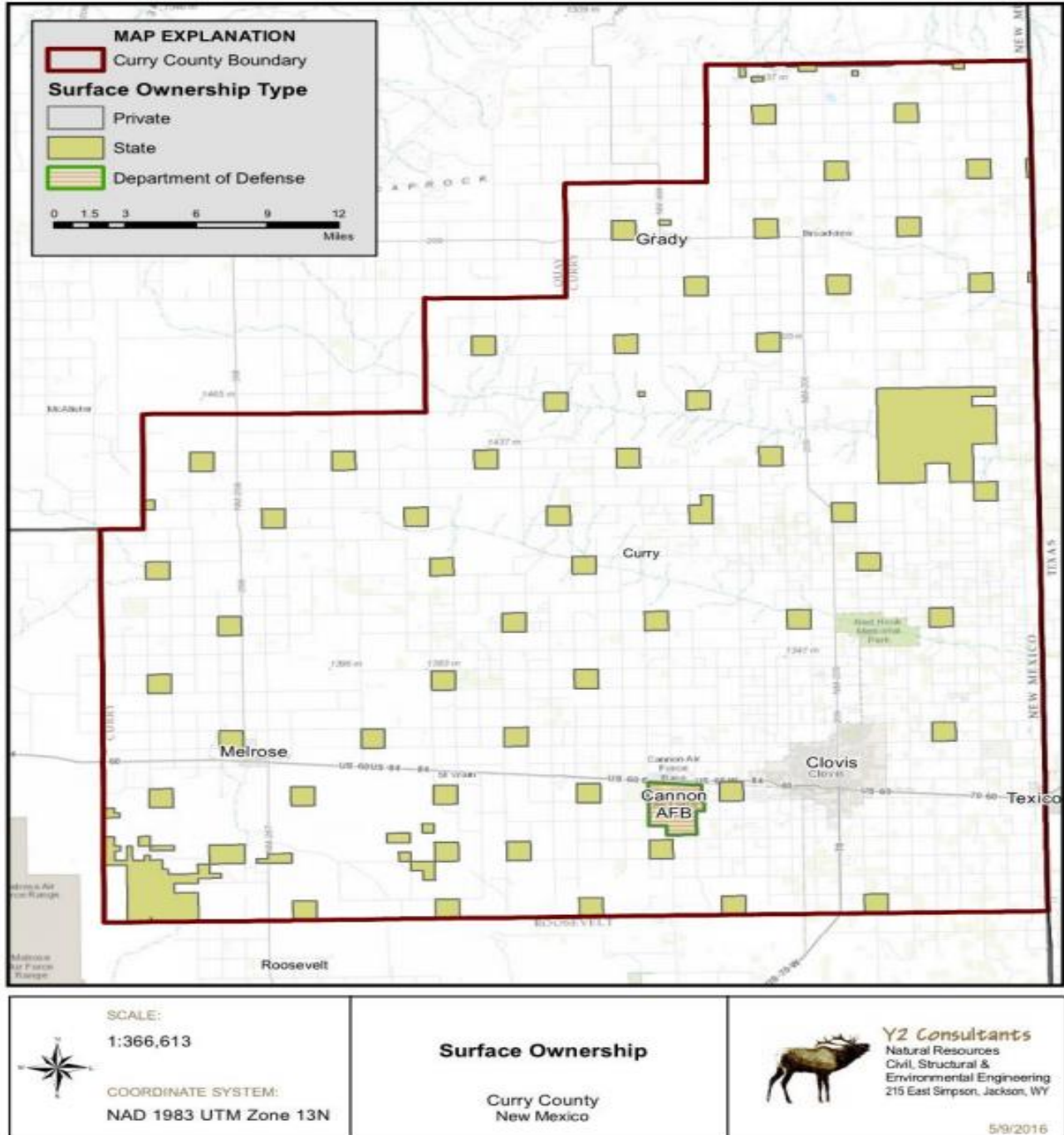
Map/Data Source: FEMA National Risk Index Map, map produced by BOLDplanning



3.5 Land Use and Development Trends

In Curry County, approximately 93% of land is held privately, with the State of New Mexico holding 7% and the Department of Defense holding the relatively small acreage of Cannon Air Force Base. All State of New Mexico lands are currently in active agricultural leases.

Map 12: Curry County Surface Ownership

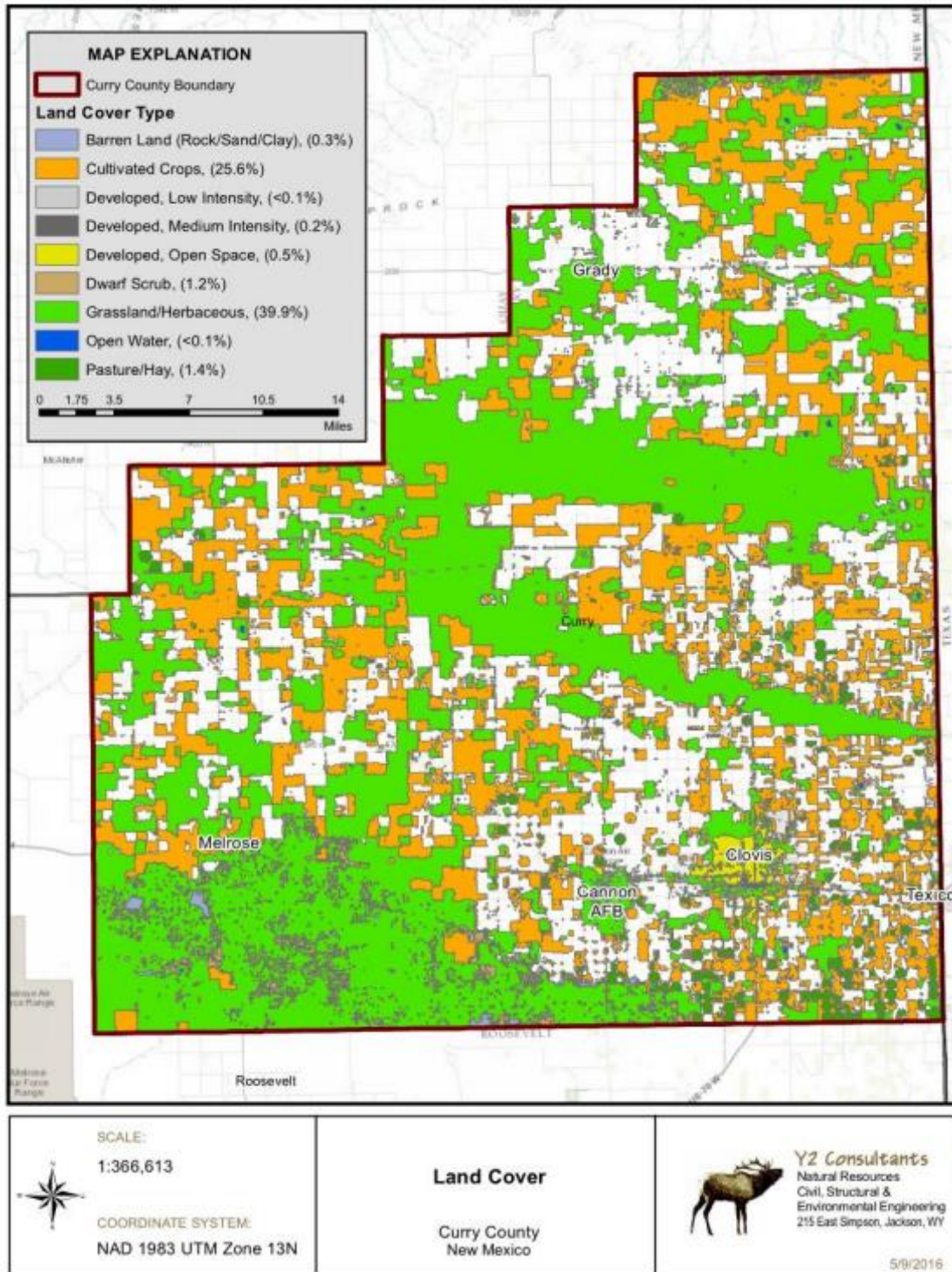


Map Source: Curry County

The agriculture industry provides both economic growth and stability for Curry County, with the dairy industry having the greatest impact on the economy followed by livestock and farming. The following map shows land cover types for the county.



Map 13: Curry County Land Cover



Map Source: Curry County

According to the USDA 2017 Census of Agriculture, agricultural land in Curry County is almost evenly split between cropland (47%) and pastureland (51%). The top crop items by acres farmed are wheat for grain, forage, corn for silage, and sorghum for silage. Farming and ranching are on the holding steady in the county, likely due to economics, the aging of farmers and ranchers, and diminishing water due to drought and mining of the aquifer. The amount of land in



farms held steady for the 10-year period of 2007 to 2017, from 887,491 acres in 2007 to 902,165 acres in 2017 (a slight 1.6% increase), the last year for which data were available.

Economic diversification has been a focus of Curry County. A strategic plan was created that led to the development and implementation of the Local Economic Development Act. The combined governments of Clovis and Curry County were one of the first local governments to implement the Local Economic Development Act in a joint regional effort to recruit industry. The Economic Development Act allows the city and county to develop incentive packages of land, buildings, or infrastructure for recruitment. The governments of Clovis and Curry County created a non-profit organization, The Clovis Industrial Development Corporation, to work with qualified businesses on an individual basis to foster industrial business development. Local business owners have formed a collaborative corporation to foster economic development. Additionally, Curry County is a member of the United States Department of Agriculture and Rural Development and Regional Rural Development Centers Stronger Economies Together Program. The purpose of SET is to strengthen the capacity of communities in rural America to work together in developing and implementing an economic development blueprint that strategically builds on the current and emerging economic strengths of their region. SET builds collaboration between communities in a region, provides economic analyses that is tailored to help capture the region's current or emerging clusters and comparative economic advantages, and furnishes technical support. This Regional Economic Development Plan serves as the roadmap for the future economic development efforts. The Regional Planning Team collaborated and identified five industry clusters important to the region:

- Agribusiness
- Food Processing and Technology
- Arts, Entertainment, Recreation & Visitor (Tourism)
- Defense
- Energy Transportation & Logistics

A summary assessment for land use, development trends, and growth as they apply to changes in a jurisdiction's vulnerability and risk, can be broken down into two categories, Area -wide hazards and point hazards.. Area-wide hazards indiscriminately impact the entire planning. Since it is beyond scientific measurement where an area-wide hazard, such as winter storms, will impact, and likely it will impact everywhere, it is reasonable to assume any significant growth and development will increase vulnerability and risk. Additionally, if a jurisdiction develops or populates a known hazard area (point hazard) that jurisdiction's vulnerability and risk increase by an amount equal to the development or growth that now exists in that identified hazard area.

Based on the available data, Curry County will retain its mostly rural and agricultural character during the life of this plan. Additionally, as indicated by demographic data, Curry County and all participating jurisdictions will remain static, or slightly decrease their potential risk due to hazard events.

3.6 Critical Facilities

Certain facilities have a net positive value on the community, that is, they contribute to the public good by facilitating the basic functions of society. These facilities maintain order, public health, education, and help the economy function. Additionally, there are infrastructure and facilities integral to disaster response and recovery operations. Conversely, some infrastructure and facilities are of extreme importance due to the negative externalities created when they are impacted by a disaster. What fits these definitions will vary slightly from community to community, but the definitions remain as a guideline for identifying critical facilities and infrastructure. For Curry County and its participating jurisdictions, the table below lists the identified critical facilities and infrastructure. A complete list can be found in Appendix D.



Table 8: Curry County Critical Facilities

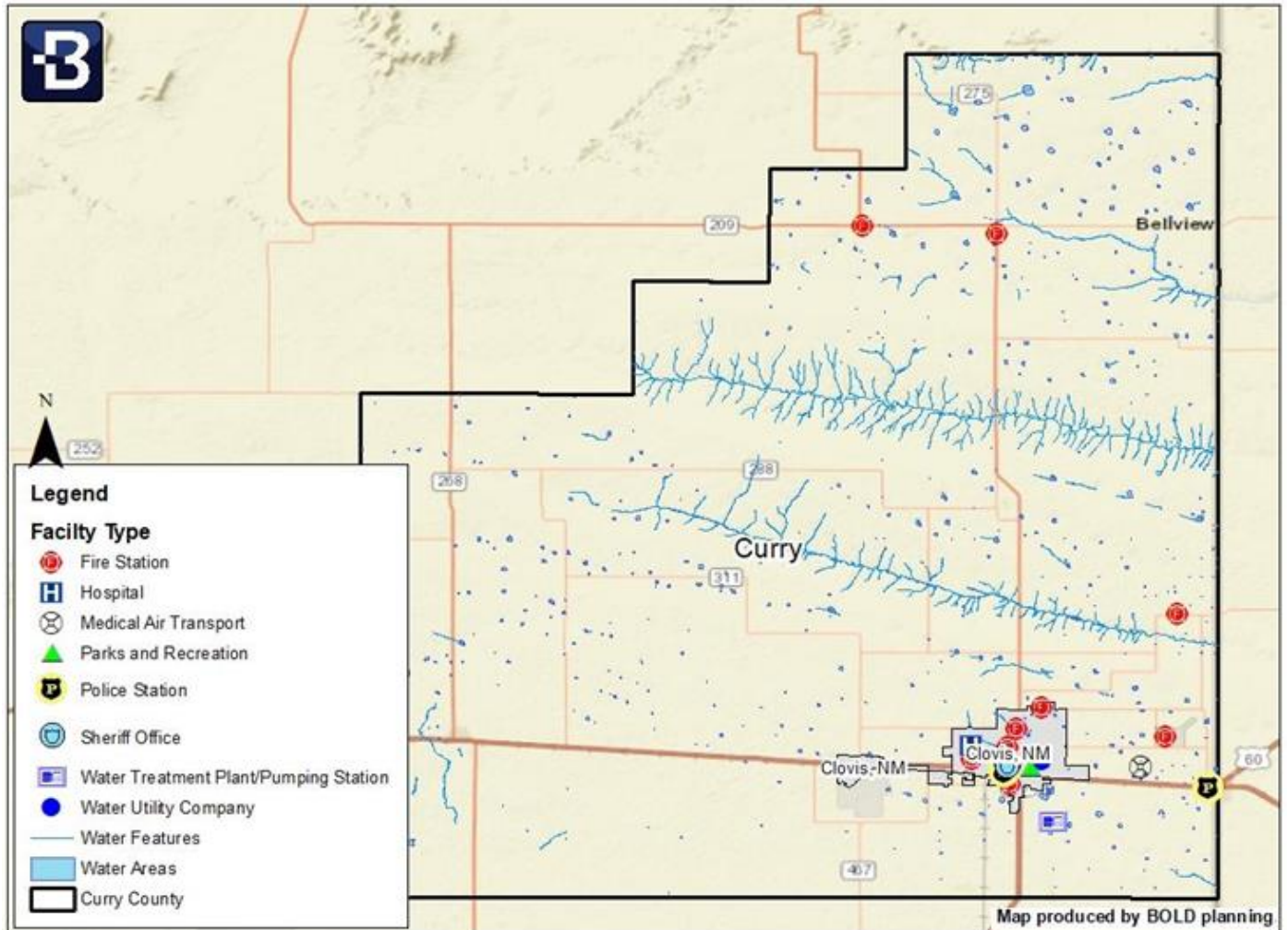
	City of Clovis	City of Texico	Village of Grady	Village of Melrose	Broadview CDP	Total
Fire Station	6	3	1	2	1	13
Gas Company	1	0	0	0	0	1
Hospital	1	0	0	0	0	1
Major Government Building	4	0	1	1	0	6
Medical-Assisted Living Facility	1	0	0	0	0	1
Medical-Dialysis Center	3	0	0	0	0	3
Medical-Health Clinic	2	0	0	0	0	2
Medical-Health Department	1	0	0	0	0	1
Medical-Air Transportation	0	1	0	0	0	1
Parks and Recreation	1	0	0	0	0	1
Public Works	1	0	0	0	0	1
Police Station/Sheriff Office	2	1	0	0	0	3
Transportation	1	0	0	0	0	1
Water Treatment Plant/Pumping Station	1	0	0	0	0	1
Water Utility Company	1	0	0	0	0	1

Source: Curry County and Participating Jurisdictions

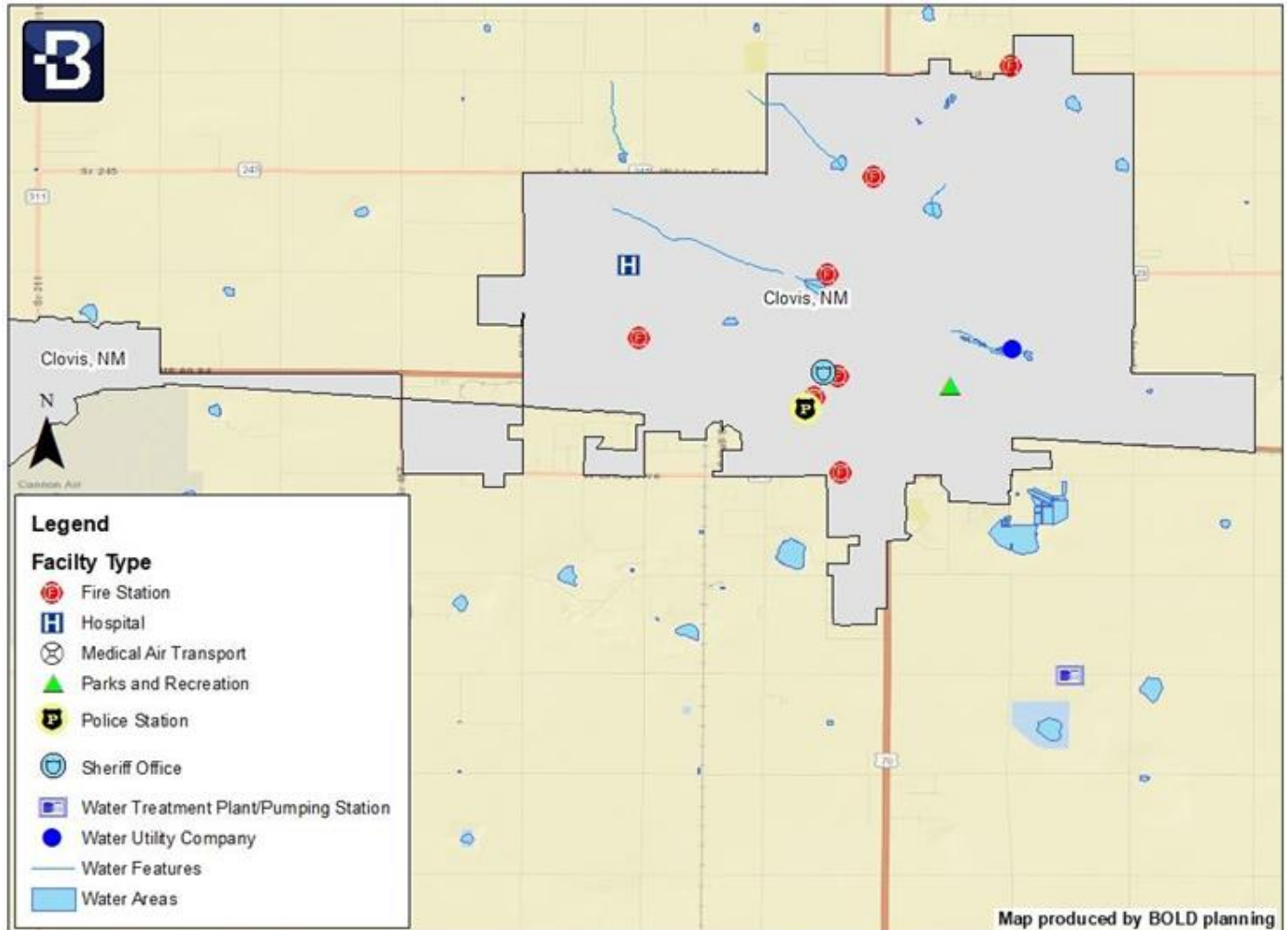
The following maps detail critical facility locations.



Map 14: Curry County Critical Facilities



Map 15: Clovis Critical Facilities



3.7 Climate Change

For hazards related to weather patterns, climate change 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

According to the United State Environmental Protection Agency's:"

- Every part of the U.S. Southwest experienced higher average temperatures between 2000 and 2020 than the long-term average (1895–2020). Some areas were more than 2°F warmer than average.
- Large portions of the Southwest have experienced drought conditions since weekly Drought Monitor records began in 2000. For extended periods from 2002 to 2005 and from 2012 to 2020, nearly the entire region was abnormally dry or even drier



- Based on the long-term Palmer Index, drought conditions in the Southwest have varied since 1895. Since the early 1900s, the Southwest has experienced wetter conditions during three main periods: the 1900s, 1940s, and 1980s. Drier conditions occurred through the 1920s/1930s, again in the 1950s, and since 1990, when the Southwest has seen some of the most persistent droughts on record.

Specifically, according to the United State Environmental Protection Agency’s “What Climate Change Means for New Mexico:”

- Most of the state has warmed at least one-degree Fahrenheit in the last century. Heat waves are becoming more common, and snow is melting earlier in spring. In the coming decades, our changing climate is likely to decrease the flow of water in the Colorado, Rio Grande, and other rivers; threaten the health of livestock; increase the frequency and intensity of wildfires; and convert some rangelands to desert.
- Increasing droughts and higher temperatures are likely to interfere with New Mexico’s farms and cattle ranches. Hot weather can threaten cows’ health and cause them to eat less, grow more slowly, and produce less milk. Livestock operations could also be impaired by fire and changes in the landscape from grassland to woody shrubs more typical of a desert. Reduced water availability would create challenges for ranchers, as well as farmers who irrigate fruits, vegetables, pecans, and other nut trees
- Wildfires and Changing Landscapes Higher temperatures and drought are likely to increase the severity, frequency, and extent of wildfires, which could harm property, livelihoods, and human health. On average, more than 2 percent of the land in New Mexico has burned per decade since 1984. Wildfire smoke can reduce air quality and increase medical visits for chest pains, respiratory problems, and heart problems.
- The changing climate is likely to increase the need for water but reduce the supply. Warmer temperatures increase the rate at which water evaporates (or transpires) into the air from soils, plants, and surface waters. Irrigated farmland would thus need more water. But less water is likely to be available, because precipitation is unlikely to increase enough to make up for the additional water lost to evaporation. Annual rainfall is more likely to decrease than increase. So soils are likely to be drier, and periods without rain are likely to become longer, making droughts more severe.



Section 4 – 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 Curry County and its participating jurisdictions face have been identified. Once this identification has been completed, Curry County 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 Curry County and its participating jurisdictions is reviewed and discussed in detail. In general, each hazard details the following information:

- Hazard Description
- Location and Extent
- Previous Occurrences
- Probability of Future Events
- Potential Vulnerability and Impact
- Critical Facilities and Infrastructure
- Land Use and Development Trends
- Unique and Varied Risk

Data sets used for this HMP were designed to follow the lead of the 2015 Curry County Hazard Mitigation Plan. Twenty-year data sets from the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCEI) were used, where applicable, for hazard occurrence and impact data. Where data sets were unavailable for a hazard, local reporting from participating jurisdictions was relied upon.

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.

Curry County has experienced one Major Disaster Declaration, two Emergency Declarations, and one Fire Management Assistance Grants. Smaller incidents are more frequent and are not reflected in the table.

Table 9: Curry County Presidential Disaster Declarations

Designation	Incident Period	Incident Type
DR-1690	03/23/2007 – 03/24/2007	Severe Storms and Tornadoes

Source: FEMA

Table 10: Curry County Emergency Declarations / Fire Assistance Management Grants

Designation	Incident Period	Incident Type
FM-2897	04/17/2011 – 04/21/2011	Tire Fire
EM-3229	08/29/2005 – 10/01/2005	Hurricane Katrina Evacuation
EM-3460	01/20/2020 – 01/05/2021	COVID-19 Pandemic

Source: FEMA

4.4 Identified Potential Hazards

The first step in developing a hazard assessment is to identify the hazards that have a reasonable risk of occurring in Curry County and its participating jurisdictions. Proper identification allows for appropriate and well-planned action in order to mitigate the extent and cascading impacts of an incident. Furthermore, while not all disaster contingencies can be planned for, applying an all-hazards approach to the mitigation process does yield greater awareness and better preparedness for unforeseen hazard incidents overall. The following table lists the hazards identified in the 2018 New Mexico Hazard Mitigation Plan and indicates if they are included in the Curry County HMP.



Table 11: Curry County Identified Hazards

State Plan Identified Hazard	Curry County HMP
Dam Failure	Included
Drought	Included
Earthquake	Excluded
Expansive Soils	Excluded
Extreme Heat	Excluded
Flood/Flash Floods	Included
Landslide	Excluded
Land Subsidence	Excluded
Severe Thunderstorms (Lightning, Thunderstorm Wind, and Hail)	Included
Tornadoes	Included
Volcanoes	Excluded
Wildfires	Included
Winter Storms	Included

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, and tsunami were not included in the scope of this plan. Numerous other hazards include in the State of New Mexico Hazard Mitigation Plan, detailed below, were not included for the enumerated reasons:

- **Earthquake:** There have been no recorded damaging earthquakes in Curry County. The 2018 State of New Mexico Hazard Mitigation Plan indicates the region surrounding Curry County has had only two 4.5+ magnitude earthquakes in the past 153 years. Additionally, mapping the 2018 State of New Mexico Hazard Mitigation Plan indicates that Curry County would expect very low damage from an earthquake. Due to a lack of documented history, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Expansive Soils:** The 2018 State of New Mexico Hazard Mitigation Plan indicates Curry County does not have high clay content soil, a marker for expansive soils. As such, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Extreme Heat:** While extreme temperature events have occurred in Curry County, there have been no documented damages or deaths associated with these events. Additionally, the 2018 State of New Mexico Hazard Mitigation Plan indicates Curry County has a low 8% probability of occurrence for extreme heat. As such, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Landslide:** There have been no recorded damaging landslide events in Curry County. Additionally, the 2018 State of New Mexico Hazard Mitigation Plan indicates that Curry County possess low susceptibility for landslide and rockfall hazard.
- **Land Subsidence:** There have been no recorded damaging subsidence events in Curry County. Due to a lack of documented history, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.
- **Volcano:** There have been no geologically recent recorded damaging volcanic events in Curry County in recent history. Additionally, the 2018 State of New Mexico Hazard Mitigation Plan indicates the State of New Mexico has a 1% chance of a volcanic eruption in the next 100 years. Due to a lack of documented history, the MPC opted to not allocate potential resources or funding to mitigate against this hazard in favor of prioritizing other hazards.



4.5 Hazard Profiles

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.

4.6 Dam Failure

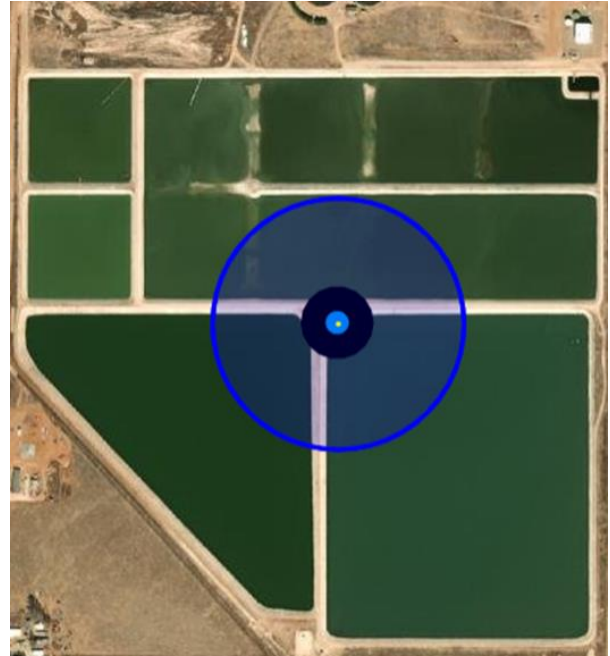
4.6.1 Hazard Description

A dam is a barrier across flowing water that obstructs, directs, or slows down the flow, often creating a reservoir, lake, or impoundment. Most dams have a section called a spillway or weir, over or through, which water flows, either intermittently or continuously. Dams commonly come in two types, embankment (the most common) and concrete (gravity, buttress, and arch), as well as sizes. They also serve a number of purposes and provide essential benefits, including drinking water, irrigation, hydropower, flood control, and recreation.

Large or small, dams have a powerful presence that is frequently overlooked until a failure occurs. Dams fail in two ways: 1) a controlled spillway release done to prevent full failure, or 2) the partial or complete collapse of the dam itself. In each instance, an overwhelming amount of water, and potentially debris, is released. Dam failures are rare, but when they do occur, they can cause loss of life and immense damage to property, critical infrastructure, and the environment.

Possible reasons for dam failure include but are not limited to:

- 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
- Terrorism



There are three classifications of dam failure, hydraulic, seepage, and structural. The following is an explanation of each these failure classifications:

- **Hydraulic:** This failure is a result of an uncontrolled flow of water over and around the dam structure as well as the erosive action on the dam and its foundation. The uncontrolled flow causing the failure is often classified as wave action, toe erosion, or gullyng. Earthen dams are particularly susceptible to hydraulic failure because earthen materials erode more quickly than other materials, such as concrete and steel. This type of failure constitutes approximately 40% of all dam failures.
- **Seepage:** Seepage is the velocity of an amount of water controlled to prevent failure. This occurs when the seepage occurs through the structure to its foundation, where it begins to erode within. This type of failure accounts for approximately 4% of all dam failures.
- **Structural:** A failure that involves the rupture of the dam or the foundation by water movement, earthquake, or sabotage. When weak materials construct dams (large, earthen dams) are the primary cause of this failure. Structural failure occurs with approximately 30% of dam failures.
-



4.6.2 Location & Extent

New Mexico’s Dam Safety Program is managed by the Dam Safety Bureau, The Dam Safety Bureau operates the program based on Title 19 Natural Resources and Wildlife, Chapter 25 Administration and Use of Water - General Provisions, Part 12 Dam Design, Construction and Dam Safety. This program is responsible for developing and maintaining an inventory of dams, classifying dams, and ensuring the compliance of all regulated dams. The Dam Safety Bureau uses the following definitions for state regulated dams.:

- **Dam:** A man-made barrier constructed across a watercourse or off-channel for the purpose of storage, control or diversion of water.
- **Jurisdictional dam:** A dam 25 feet or greater in height, which impounds more than 15 acre-feet of water or a dam that impounds 50 acre-feet or more of water and is 6 feet or greater in height. For purposes of these regulations, reference to a dam means a jurisdictional dam unless otherwise noted. See figure of jurisdictional dam size.
- **Non-jurisdictional dam:** Any dam not meeting the height and storage requirements of a jurisdictional dam. The state engineer does not regulate the design, construction and operation of a non-jurisdictional dam unless the dam is unsafe and there is a threat to life or property, as determined by the state engineer. Waters impounded by a non-jurisdictional dam may not be exempt from water right permit requirements. Therefore, a separate state engineer water right permit for the water impounded in the reservoir created by a non-jurisdictional dam may be required. Non-jurisdictional dams shall meet the requirements of 19.26.2.15 NMAC unless otherwise exempt. The structures listed below are considered non-jurisdictional dams:

Dams in the State of New Mexico are ranked by Dam Hazard Classification, which is determined by the potential for infrastructure and property damages downstream if a dam failure were to occur. Current Dam Hazard Classifications are:

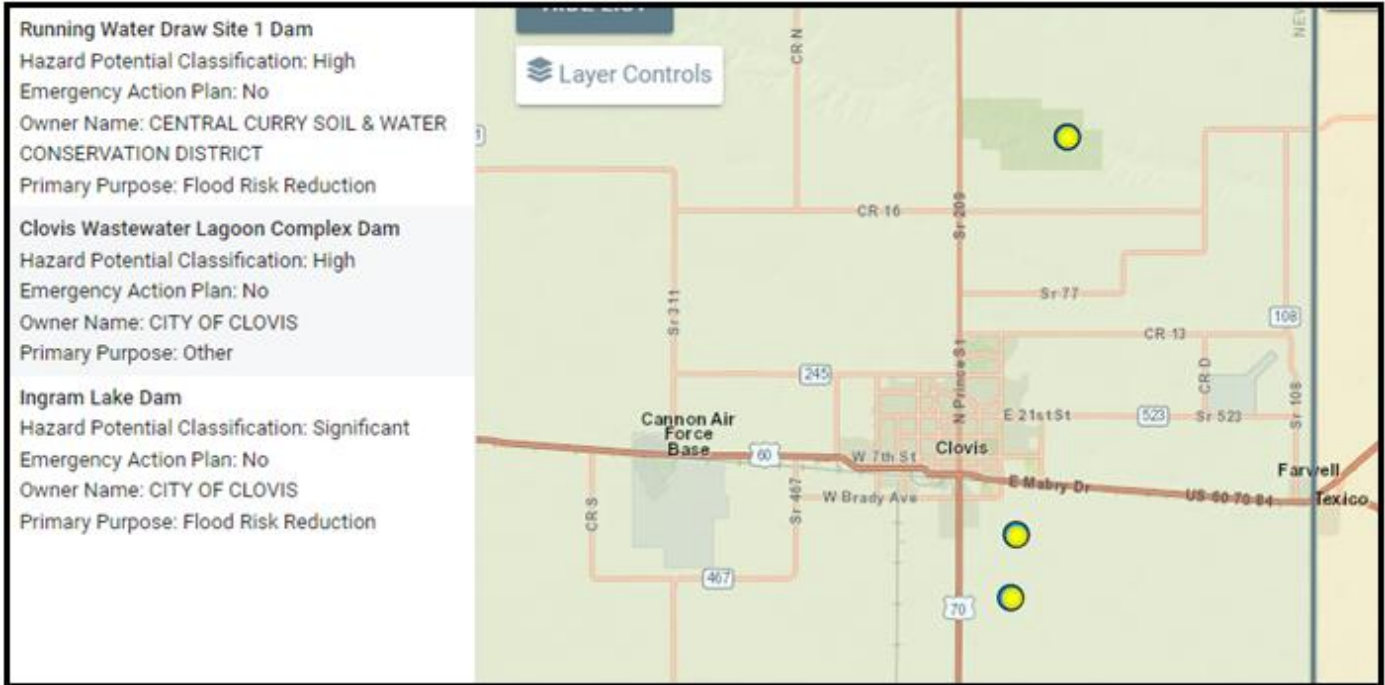
Table 12: Dam Hazard Potential Classification

Hazard Potential	Definition
High	Dams where failure or mis-operation will probably cause loss of human life.
Significant	Dams where failure or mis-operation will probably not result in loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but may be located on populated areas with significant infrastructure.
Low	Dams where failure or mis-operation results in no probable loss of life but may result in low economic or environmental losses. Losses would be principally limited to dam owner’s property.

The U.S. Army Corps of Engineers National Inventory of Dams (NID) program indicates that there are three dams in Curry County, Clovis Wastewater Lagoon Complex Dam, Running Water Draw Site 1 Dam, and Ingram Lake Dam. According to the Massachusetts Institute of Technology, the average lifespan of a dam is 50 years. NID data shows the average age of Curry County’s dams is 39 years.

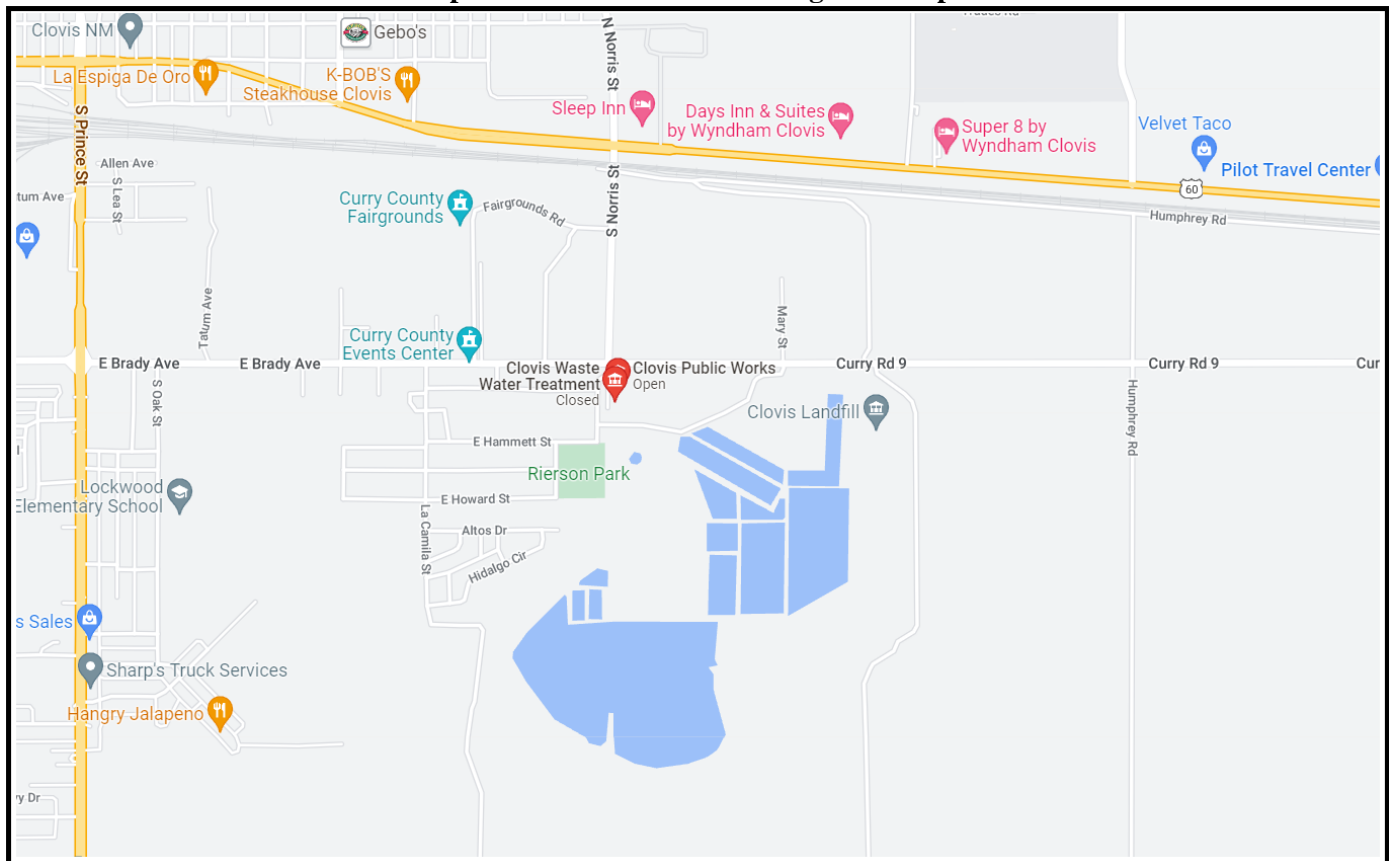
The following maps detail the locations of identified Curry County dams.

Map 16 - Curry County Summary of Dams

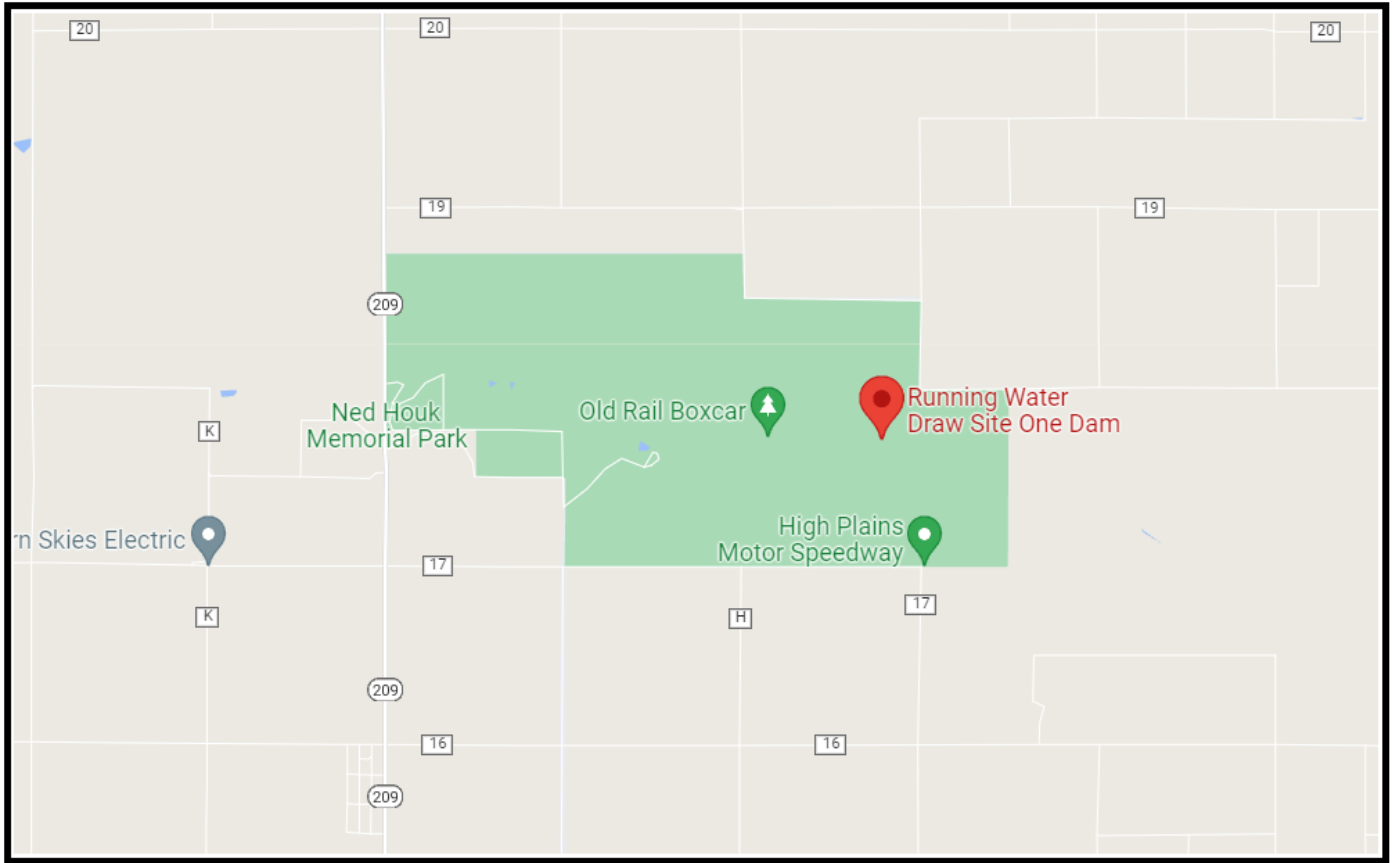


Map Source: USACE National Inventory of Dams; Curry County, NM Dam Locations

Map 17 – Clovis Wastewater Lagoon Complex



Map 18 – Running Water Draw Site One Dam



Map 19 – Ingram Lake Dam





The following table provides the complete inventory of Curry County dams, as identified by the U.S. Army Corps of Engineers NID Program. The definitions of the corresponding Condition Assessment ratings also follow.

Table 13: Dam Hazard Potential Classification

Dam Name	NID Number	Owner Names	Purpose	Dam Type	Year	Hazard Potential	Condition Assessment
Clovis Wastewater Lagoon Complex Dam	NM00665	City of Clovis	Other	Earth	1978	High	Fair
Running Water Draw Site 1 Dam	NM00422	Central Curry Soil & Water Conservation District	Water Supply; Flood Risk Reduction	Earth	1975	High	Poor
Ingram Lake Dam	NM00590	City of Clovis	Flood Risk Reduction	Earth	1999	Significant	Satisfactory

Data Source: USACE NID

The definition of dam condition assessment are as follows:

- **Satisfactory:** No existing or potential dam safety deficiencies are recognized. Acceptable performance is expected under all loading conditions in accordance with state engineer's rules and regulations for dams or tolerable risk guidelines.
- **Fair:** No existing dam safety deficiencies are recognized for normal loading conditions. Rare or extreme hydrologic and/or seismic incidents may result in a dam safety deficiency. Risk may be in the range to take further action.
- **Poor:** A dam safety deficiency is recognized for loading conditions, which may realistically occur. Remedial action is necessary. A POOR condition is used when uncertainties exist as to critical analysis parameters, which identify a potential dam safety deficiency. Further investigations and studies are necessary.
- **Unsatisfactory:** A dam safety deficiency is recognized that requires immediate or emergency remedial action for problem resolution.

4.6.3 Previous Occurrences

There is no single, comprehensive source of open-source information about a dam failure in the State of New Mexico. However, according to the New Mexico State Hazard Mitigation Plan, there have been no instances of dam failure in Curry County.

4.6.4 Probability of Future Incidents

As previously stated there can be advanced warning to no warning at all for a dam failure event. At present, there is no history of a dam failure of any size in Curry County or its participating jurisdictions. In lieu of any historical events, the next best prediction tool would be based on the structural state of the dam. However, maintenance and structural information on the dams in Curry County and its participating jurisdictions is not available for public use.

Historically, available data indicates there have been no reported dam failure events in Curry County or in any participating jurisdiction over a 100-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 0.0% probability of dam failure for any participating jurisdiction in a given year.



4.6.5 Vulnerability & Impact

Curry County and its participating jurisdictions have recorded no incidences of dam failure. Still, a dam failure could have an impact on the planning area, including the environment, much like a flood event. It will also disrupt the agricultural engine of the county.

While difficult to quantify, as the impacts of a dam failure will be determined by many factors, in general the following impacts may be expected:

Table 14: Economic Impact of Dam Failure

Jurisdiction	Crop Loss	Job Loss	Income Loss	Tax Revenue Loss
Curry County	Yes	No	No	No
City of Clovis	No	Yes	Yes	Yes
City of Texico	No	No	No	No
Village of Grady	No	No	No	No
Village of Melrose	No	No	No	No

Table 15: Social Impact of Dam Failure

Jurisdiction	Population Migration	Loss of Life or Injury	Health Risk	Reduced Quality of Life
Curry County	Yes	No	No	No
City of Clovis	Yes	Yes	Yes	Yes
City of Texico	No	No	No	No
Village of Grady	No	No	No	No
Village of Melrose	No	No	No	No

Vulnerability of Facilities

Facilities during a dam failure will typically not see an impact from a dam failure due to their distance from the dams in the planning area but, due to data limitations related to dam inundation zones for the planning area it is not entirely clear what the impacts of a dam failure would realistically be.

Vulnerability of Population

The greatest vulnerability of a jurisdiction’s population is the inability to predict a dam failure and evacuate potential inundation areas in a timely manner. It is important to note that no injuries or deaths have occurred in Curry County or its participating jurisdictions as a direct result of dam failure.

Vulnerability of Systems

Table 16: Vulnerability of Systems to Dam Failures

Community Lifeline	Vulnerability
Safety and Security	First responders may be exposed to flooding hazards or hazardous materials releases. Mutual Aid Resources will be needed from outside the local jurisdiction to support.
Food, Water, Shelter	Flooding may cause water contamination. Flooding may damage shelters or make roads to shelters impassible.
Health and Medical	may cause water contamination. Healthcare resources may be expended responding to the community’s healthcare needs.
Energy	Power generation may be affected by a dam failure to an energy provider’s resources. Infrastructure may be damaged by flooding and the available pool of water to support Steam could be unavailable.
Communications	Communication infrastructure may be damaged by flooding.



Table 16: Vulnerability of Systems to Dam Failures

Community Lifeline	Vulnerability
Transportation	Roads and rail lines may be damaged or impassible due to flooding.
Hazardous Materials	Hazardous materials may be released at fixed sites due to flooding.

4.6.6 Critical Facilities & Infrastructure

Critical infrastructure is anticipated to be impacted from a dam failure, including water treatment, possible power loss and transportation route disruption.

4.6.7 Land Use & Development Trends

Development near dams will increase vulnerability to dam failures.

4.6.8 Unique & Varied Risk

Citizens of Curry County living near dams are at an increased risk for injury, death and property loss due to dam failures.

4.7 Drought

4.7.1 Hazard Description

Drought is defined as 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. It is, however, a normal, seasonal, and recurrent feature of climate that occurs in virtually all climate zones—typically in late spring through early fall. The duration of drought varies widely. There are cases when drought develops relatively quickly and lasts a very short period of time, exacerbated by extreme heat and/or wind, and there are other cases when drought spans multiple years, or even decades. 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

When below average, little or no rain falls, soil can dry out, and plants can die. If unusually dry weather persists and water supply problems develop, the time period is defined as a drought. Human activity such as over-farming, excessive irrigation, deforestation, and poor erosion controls can exacerbate a drought’s effects. It can take weeks or months before the effects of below average precipitation on bodies of water are observed. Depending upon the region, droughts can happen more quickly, noticed sooner, or have their effects naturally mitigated. The more humid and wet an area is, the faster the effects will be realized. A naturally dry region, which typically relies more on subsurface water will take more time to actualize its effects.

Periods of drought can have significant environmental, agricultural, health, economic, and social consequences. The effects vary depending upon vulnerability and regional characteristics. Droughts can also reduce water quality through a decreased ability for natural rivers and streams to dilute pollutants and increase contamination. The most common effects are diminished crop yield, increased erosion, dust storms, ecosystem damage, reduced electricity production due to reduced flow through hydroelectric dams, shortage of water for industrial production, and increased risk of wildland fires.

Droughts are regularly monitored by multiple federal agencies using a number of different indices. Among them are the U.S. Drought Monitor, the Palmer Drought Index, and the Standardized Precipitation Index, as next described.

The U.S. Drought Monitor provides a summary of drought conditions across the U.S. and Puerto Rico. Often described as a blend of art and science, the map is updated weekly by combining a variety of data-based drought indices and indicators, along with local expert input, into a single composite drought indicator.

The Palmer Drought Index (PDI), devised in 1965, was the first drought indicator to assess moisture status comprehensively. It uses temperature and precipitation data to circulate water supply and demand; incorporates soil moisture; and is considered most effective for unirrigated cropland. It primarily reflects long-term drought and has been used extensively to initiate drought relief.

Table 17: Palmer Drought Severity Index

Category	Range (Per Year)
Extremely Wet	4.0 or more
Very Wet	3.0 to 3.99
Moderately Wet	2.0 to 2.99



Table 17: Palmer Drought Severity Index

Category	Range (Per Year)
Slightly Wet	1.0 to 1.99
Incipient Wet Spell	0.5 to 0.99
Near Normal	0.49 to -0.49
Incipient Dry Spell	-0.5 to -0.99
Mild Drought	-1.0 to -1.99
Moderate Drought	-2.0 to -2.99
Severe Drought	-3.0 to -3.99
Extreme Drought	-4.0 or less

Source: U.S. Drought Monitor

The Standardized Precipitation Index (SPI) is a way of measuring drought that is different from the PDI. Like the PDI, this index is negative for drought, and positive for wet conditions. However, the SPI is a probability index that considers only precipitation, while PDI indices are water balance indices that consider water supply (precipitation), demand (evapotranspiration) and loss (runoff).

Table 18: Standard Precipitation Index

Category	Range (Per Year)
Extremely Wet	2.0+
Very Wet	1.5 to 1.99
Moderately Wet	1.0 to 1.49
Near Normal	-.99 to .99
Moderately Dry	-1.0 to -1.49
Severely Dry	-1.5 to -1.99
Extremely Dry	-2 and less

Source: U.S. Drought Monitor

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 New Mexico. The following table details the U.S. Drought Monitor categories.

Table 19: U.S. Drought Monitor Categories

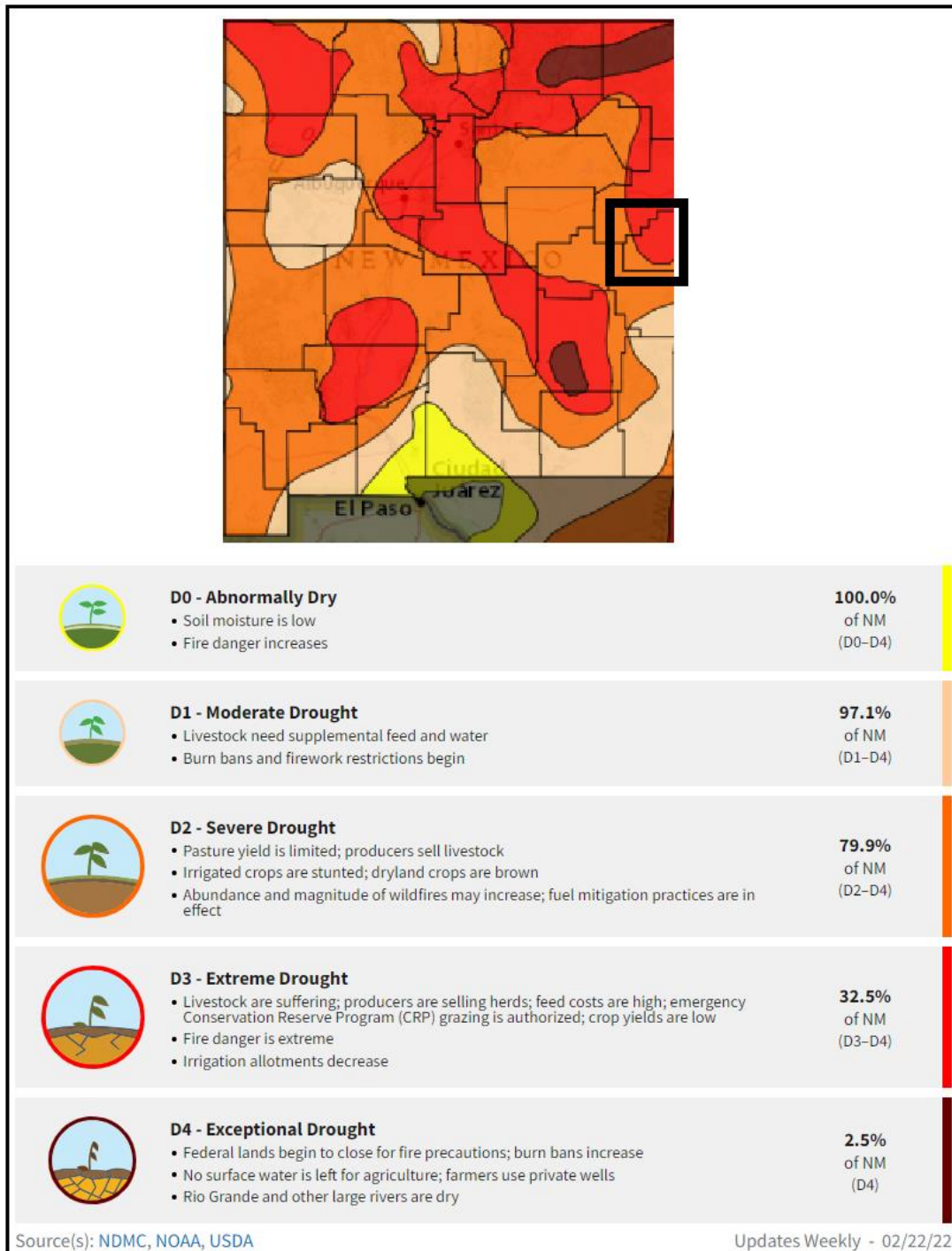
Rating	Described Condition
None	No drought conditions
D0	Abnormally Dry
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

Source: U.S. Drought Monitor

4.7.2 Location & Extent

Drought is a persistent problem across the State of New Mexico, as evidenced by its widespread presence in 2022. The U.S. Drought Monitor is currently reporting that for February 2022, 48.19% of the continental U.S. was in drought.

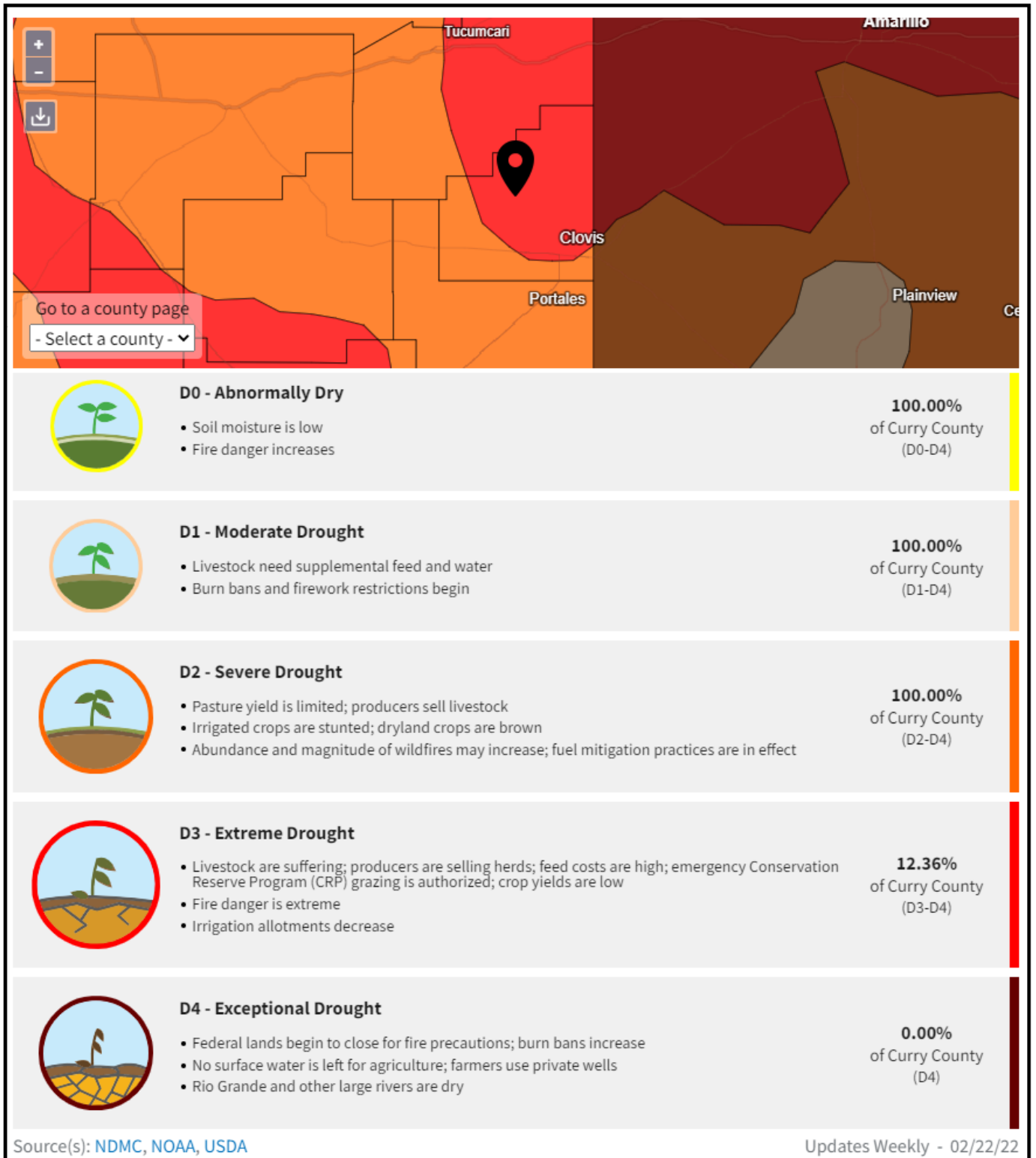
Map 20 – State of New Mexico Drought Conditions, February 2022



Map Source: U.S. Drought Monitor

At the time of this plan, 100% of Curry County is impacted at a severe drought or extreme drought rating.

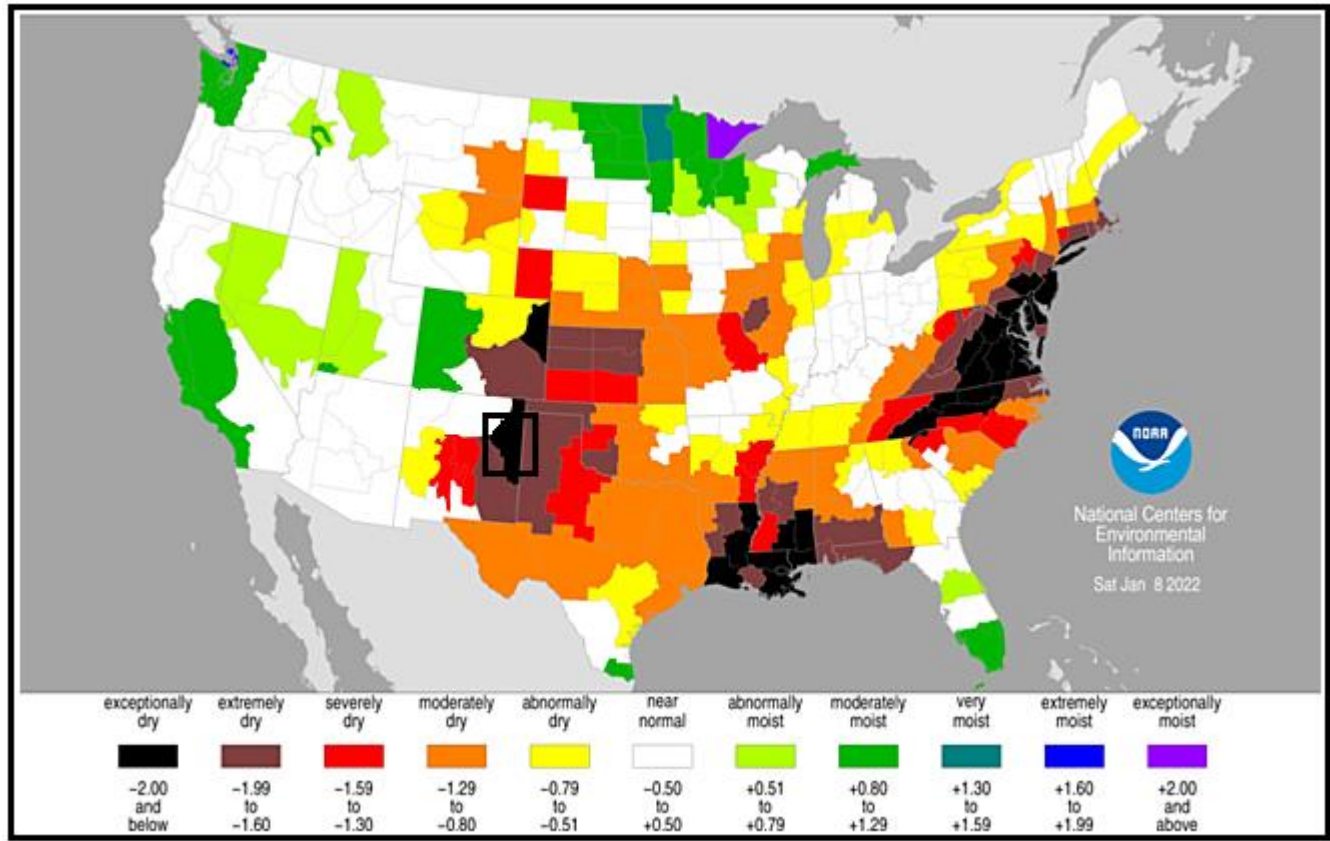
Map 21 - Curry County Drought Conditions, February 2022



Map Source: U.S. Drought Monitor

The following map indicates the SPI for the period of November and December 2021.

Map 22 - Curry County Drought Conditions, November – December 2021



Map Source: NCEI

4.7.3 Previous Occurrences

Comprehensive data on droughts, drought impacts, and drought forecasting is extremely limited and often inaccurate. Due to the complexity of drought monitoring and the large areas droughts impact, agencies have difficulty quantifying and standardizing drought data.

One of the best indicators of historic drought periods is provided by the U.S. Drought Monitor, which lists weekly drought conditions for the Curry County. Historical data was gathered from the U.S. Drought Monitor weekly reports for the ten-year period from the year 2012 through October 2021. This data was compiled and aggregated to provide a yearly estimate of the percentage of Curry County in each Drought Monitor category.

Table 20: Percentage Area in U.S. Drought Monitor Category

Year	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2021	0.0%	100.0%	100.0%	98.5%	55.4%	31.9%
2020	36.9%	63.1%	59.6%	47.3%	23.9%	13.2%
2019	83.9%	16.1%	0.0%	0.0%	0.0%	0.0%
2018	16.2%	83.8%	73.4%	59.0%	22.1%	0.0%
2017	68.5%	31.5%	10.4%	0.0%	0.0%	0.0%
2016	41.5%	58.5%	23.6%	0.0%	0.0%	0.0%
2015	69.3%	30.7%	15.9%	0.3%	0.0%	0.0%
2014	0.0%	100.0%	90.8%	55.8%	16.7%	4.5%
2013	0.0%	100.0%	100.0%	99.5%	69.1%	25.7%
2012	0.0%	100.0%	100.0%	100.0%	89.7%	9.4%

Source: U.S. Drought Monitor



4.7.4 Probability of Future Events

Historically, drought has affected the Curry County region on a reoccurring basis. In reviewing historical data from the U.S. Drought Monitor weekly reports from the year 2012 through October 2021 a yearly average can be created indicating the percentage time in each Drought Monitor category. This average can be used to extrapolate the potential likelihood of future drought conditions.

Table 21: Estimated Probability of Being in U.S. Drought Monitor Category, Calendar Year

None	D0-D4	D1-D4	D2-D4	D3-D4	D4
31.6%	68.4%	57.4%	46.0%	27.7%	8.5%

Data: U.S. Drought Monitor

4.7.5 Vulnerability and Impact

The impacts of drought can be categorized as economic, environmental, or social. Many economic impacts occur in agriculture and related sectors, including increasing food prices globally. In addition to obvious losses in yields in both crop and livestock production, drought is associated with increases in insect infestations, plant disease, and wind erosion. Droughts also bring increased problems with insects and disease to forests and reduce growth. The incidence of wildfires increases substantially during extended droughts, which in turn places both human and wildlife populations at higher levels of risk. Income loss is another indicator used in assessing the impacts of drought because so many sectors are affected.

Although environmental losses are difficult to quantify, increasing public awareness and concern for environmental quality has forced public officials to focus greater attention and resources on these effects. Environmental losses are the result of damages to plant and animal species, wildlife habitat, and air and water quality, wildfires, degradation of landscape quality, loss of biodiversity, and soil erosion. Some of the effects are short-term and conditions quickly return to normal following the end of the drought. Other environmental effects linger for some time or may even become permanent. Wildlife habitat, for example, may be degraded through the loss of wetlands, lakes, and vegetation. However, many species will eventually recover from this temporary aberration. The degradation of landscape quality, with increased soil erosion, may lead to a more permanent loss of biological productivity of the landscape.

A drought period can last for months, years, or even decades. However, droughts are rarely a direct cause of death, though the associated heat, dust, and stress can all contribute to increased mortality. Population effects will likely be minimized by predicted population decreases for all participating jurisdictions within Curry County. In addition, with a limited agricultural base the effects on agricultural production are expected to be low. Drought does not pose any risk to structures, infrastructure or critical facilities. The largest impact to Curry County will likely be in decreased grazing areas, and thus smaller herds, for county cattle operations and decreased availability of agricultural lands.

It is worth noting that according to the Agency Technical Work Group of the State of New Mexico that the “recurrence of a severe multi-year drought like that of the 1950s is likely sometime during this century, regardless of human-caused climate change. When such a drought does recur, higher evaporation rates because of warmer temperatures will exacerbate effects of drought and will at least partially offset the effect of any increase in precipitation that might occur due to climate change.”

While difficult to quantify, as the impacts of future drought will be determined by many factors, in general the following impacts may be expected:

Table 22: Economic Impact of Drought

Jurisdiction	Crop Loss	Job Loss	Income Loss	Tax Revenue Loss
Curry County	Yes	Yes	Yes	Yes
City of Clovis	Yes	Yes	Yes	Yes
City of Texico	Yes	Yes	Yes	Yes
Village of Grady	Yes	Yes	Yes	Yes



Table 22: Economic Impact of Drought

Jurisdiction	Crop Loss	Job Loss	Income Loss	Tax Revenue Loss
Village of Melrose	Yes	Yes	Yes	Yes

Table 23: Environmental Impact of Drought

Jurisdiction	Loss of Wildlife Habitat	Degradation of Air and Water Quality	Soil Erosion	Increased Wildfire Risk
Curry County	Yes	Yes	Yes	Yes
City of Clovis	Yes	Yes	Yes	Yes
City of Texico	Yes	Yes	Yes	Yes
Village of Grady	Yes	Yes	Yes	Yes
Village of Melrose	Yes	Yes	Yes	Yes

Table 24: Social Impact of Drought

Jurisdiction	Population Migration	Increased Urban Infrastructure Stress	Increased Poverty	Reduced Quality of Life
Curry County	Yes	Yes	Yes	Yes
City of Clovis	Yes	Yes	Yes	Yes
City of Texico	Yes	Yes	Yes	Yes
Village of Grady	Yes	Yes	Yes	Yes
Village of Melrose	Yes	Yes	Yes	Yes

Vulnerability of Population

Drought itself poses no direct risk of injury or death to populations in Curry County and its participating jurisdictions. However, 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. Water supply planning is the key to minimizing the effects of drought on the population. Public water suppliers should continue to work to identify vulnerabilities and develop infrastructure, conservation plans, and partnerships to reduce the likelihood of running out of water during a drought.

Vulnerability of Systems

Table 25: Vulnerability of Systems to Drought, Curry County

Community Lifeline	Vulnerability
Safety and Security	Droughts may affect the available water supply for firefighting.
Food, Water, Shelter	Droughts may affect the available water supply. Droughts may increase the risk of virus or bacteria contamination of ground and surface water. Droughts may affect crop production and grazing operations.
Health and Medical	Droughts may affect available water supply.
Energy	Droughts may hinder hydroelectric power generation.
Communications	Communications infrastructure may be impacted by underlying soil conditions.
Transportation	Bridges and roadways may be damaged do to underlying soil conditions.
Hazardous Materials	Fixed storage facilities may be damaged by underlying soil conditions.

Drought can have a significant effect on a community’s agriculture. If the precipitation level is below normal, farmers will struggle to grow crops and feed livestock. All jurisdictions throughout Curry County are susceptible to the effects of drought which includes limited water usage and damage to crops/vegetation.



4.7.6 Critical Facilities & Infrastructure

In general, critical facilities and infrastructure 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.

4.7.7 Land Use and Development Trends

Future development speaks to the potential impacts of land use and demographic changes in hazard prone areas. Data in this section 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 agriculture base of Curry County is increasingly vulnerable to the short- and long-term effects of drought. Future development of agricultural resources would tend to increase the risk and impact of a drought event. Continued development in the agricultural sector will likely increase both the exposure to, and damages from, a drought event. As indicated in the data above, Curry County is seeing a static state of agricultural activities and thus an unchanged future vulnerability to drought events. In 2019, the New Mexico Interstate Stream Commission held forums to bring stakeholders to hold Water Planning discussions throughout the State. The purpose of the meetings was to inform New Mexico communities about water planning activities by the New Mexico Interstate and Stream Commission. Also, the meetings were to help gather input on the impact of drought and needed drought resources within the community. The recent “Summary of the New Mexico Water Planning Drought Discussions” indicates that based on current drought conditions, farmers and ranchers were looking for ways to change their methods due to lack of water.

As indicated in the data above, the Curry County and all participating jurisdictions (with the exception of Clovis) have been seeing generally static or declining populations. These potential declines could decrease the impact to their populations from a drought event from decreased water demands.

4.7.8 Unique and Varied Risk

There are no unique or varied risks as all participating jurisdictions are at risk to droughts.

4.8 Flood/Flash Flood

4.8.1 Hazard Description

Flooding, as defined by the National Weather Service (NWS), is the rising and overflowing of a body of water onto normally dry land. It can result from any overflow of inland or tidal waters, or an unusual accumulation or runoff of surface waters from any source. Flooding is loosely classified as inland, riverine, or coastal.

Inland flooding, also known as “urban flooding” or “flash flooding,” can be caused by intense, short-term rain or by moderate rainfall over several days, which can overwhelm existing drainage infrastructure. Other factors that affect the dynamics of this type of flood include slope, width, and vegetation in place along the watercourse banks. The slope that a flash flood traverses has a definite relationship to the overall speed in which the water will travel. The incline on which the water moves affects the width of the flooding area. Generally, the faster the water moves, the narrower that channel will be created, since the water digs the channel deeper as it flows. When water flows over shallower slope, it tends to spread out more, decreasing its potential to cause mass damage but still considered dangerous. Finally, the type of vegetation located along the flood’s path can prevent further erosion of the channel banks. A structure that lies along a flood channel with no surrounding vegetation is at risk of having its foundation undercut, which can cause structural damage, or in some cases, a building’s complete collapse. Riverine or alluvial, flooding occurs when excessive rainfall over an extended period of time causes a river to exceed its capacity. Typical causes of flooding, both inland and riverine, include tropical cyclonic systems, frontal systems, and isolated thunderstorms combined with other environmental variables such as changes to the physical environment, topography, ground saturation, soil types, basin size, drainage patterns, and vegetative cover. The rate of onset and duration of flooding events depends on the type of flooding (typical flood or flash flood). The spatial extent of a flooding event depends on the amount of water overflow but can usually be mapped because of existing floodplains.



Photo Source: NOAA, Flooding

A floodplain is a flat or nearly flat land adjacent to a river or stream that experiences occasional or periodic flooding. Floodplains, or Special Flood Hazard Areas (SFHAs), are made when floodwaters exceed the capacity of the main channel or escape the channel by eroding its banks. The sediments (rock and debris) that build up over time from the floodplain’s floor. Floodplains also include a floodway, which consists of the water channel and adjacent areas that carry flood flows and the flood fringe, which are areas covered by the flood but do not experience a strong current.

In its common usage, floodplains refer to areas inundated by the 100-year flood, i.e., the flood that has a 1% chance of being equaled or exceeded in any given year and the 500-year flood, i.e., the flood that has a 0.2% chance of being equaled or exceeded in any given year. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP). The NFIP aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners, renters, and businesses and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of disasters by promoting the purchase and retention of general risk insurance and flood insurance.

The adverse impacts of flooding can include structural damage; agricultural crop loss; the death of livestock; loss of access to critical facilities due to roads being washed out or overtopped; unsanitary conditions resulting from materials such as dirt, oil, solvents, and chemicals being deposited during the recession; infestations of disease-carrying mosquitoes; mold and mildew, which pose a severe health risk to small children and the elderly; and temporary backwater effects in sewers and drainage systems. Raw sewage is a breeding ground for bacteria, such as E.coli and



other disease-causing agents. A boil order may need to be issued to protect people and animals from contaminated water.

Of equal concern is the long-term psychological effect that flooding has on the people impacted by it. They must contend with the loss of life, property, livelihood, etc., as they cope with the aftermath. The clean-up can take months. The cost to restore a home may be too much, especially for the unprepared or uninsured. Plus, there is the looming fear that it may flood again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

Unfortunately, the risks from future floods are significant, given expanded development in floodplains, increased urbanization, land-use changes, and climate change. Because of this, flooding may intensify, even in areas where total precipitation is projected to decline. According to FEMA, flooding accounts for about 40% of the Presidential declared disasters in the United States.

4.8.2 Location and Extent

A variety of factors affect the severity of flash and riverine flooding within the planning area. These include topography, weather characteristics, development, and geology. Intense flooding will create havoc in any jurisdictions affected. The predicative magnitude of flash and riverine floods varies greatly.

Flash Flooding

Flash flooding is unpredictable and can occur anywhere throughout the entire planning area. Curry County and its participating jurisdictions do not have any centralized, or identified re-occurring, locations that are more likely to experience flash flooding than other areas, based on previous events and historical documentation. The reviewed historical documentation repeatedly mentions roads and ditches being flooded, but no specific areas continually experiencing flash flooding. Additionally, when property damage occurred, none of the locations were repeatedly mentioned.

Historically, Curry County and its participating jurisdictions have seen sporadic, severe flash floods. All participating jurisdictions are exposed to flash flooding, but historically Clovis is the only jurisdiction to have experienced severe events. In Clovis, severe flash floods have accumulated about one inch of water in commercial and residential buildings and its typical to see to see three to six inches (curb height) of water in most streets, however, certain areas of roadway in northern Clovis are extremely low lying. In these particular areas, flash flooding has accumulated rapidly and to an extreme depth.

On one occasion, flash flooding exceeded the capacity of the planning area's retention ponds in and around the northern portion of Clovis. In this instance, flood waters quickly rose in the some low lying developed areas causes multiple commuters to become stuck in the accumulation. The water was 2 to 3 feet in some areas and a report cites one instance of a vehicle being submerged in 8 feet of water. Fortunately, these areas of accumulation did not as drastically affect residential or commercial properties. Only a few commercial properties reported 1 inch of accumulation from this event.

Riverine Flooding

Riverine flooding potential throughout the county varies and is identified via FEMA's FIRM maps detailed below. The magnitude of riverine floods is indeterminate and varies; however, Grady, Melrose, and Texico are not at risk to riverine flooding while Clovis and the county have identified potential flooding locations.



Table 26: Riverine Flood Depths

Jurisdiction	100 Year Depth (Feet)	500 Year Depth (Feet)
Curry County	0 - 34.48	0 - 37.85
Clovis	0 - 28.82	0 - 35.62
Grady	No Risk	No Risk
Melrose	No Risk	No Risk
Texico	No Risk	No Risk

Source: FEMA

The following table details FEMA’s FIRM flood zone classifications.

Table 27: Flood Zone Classifications

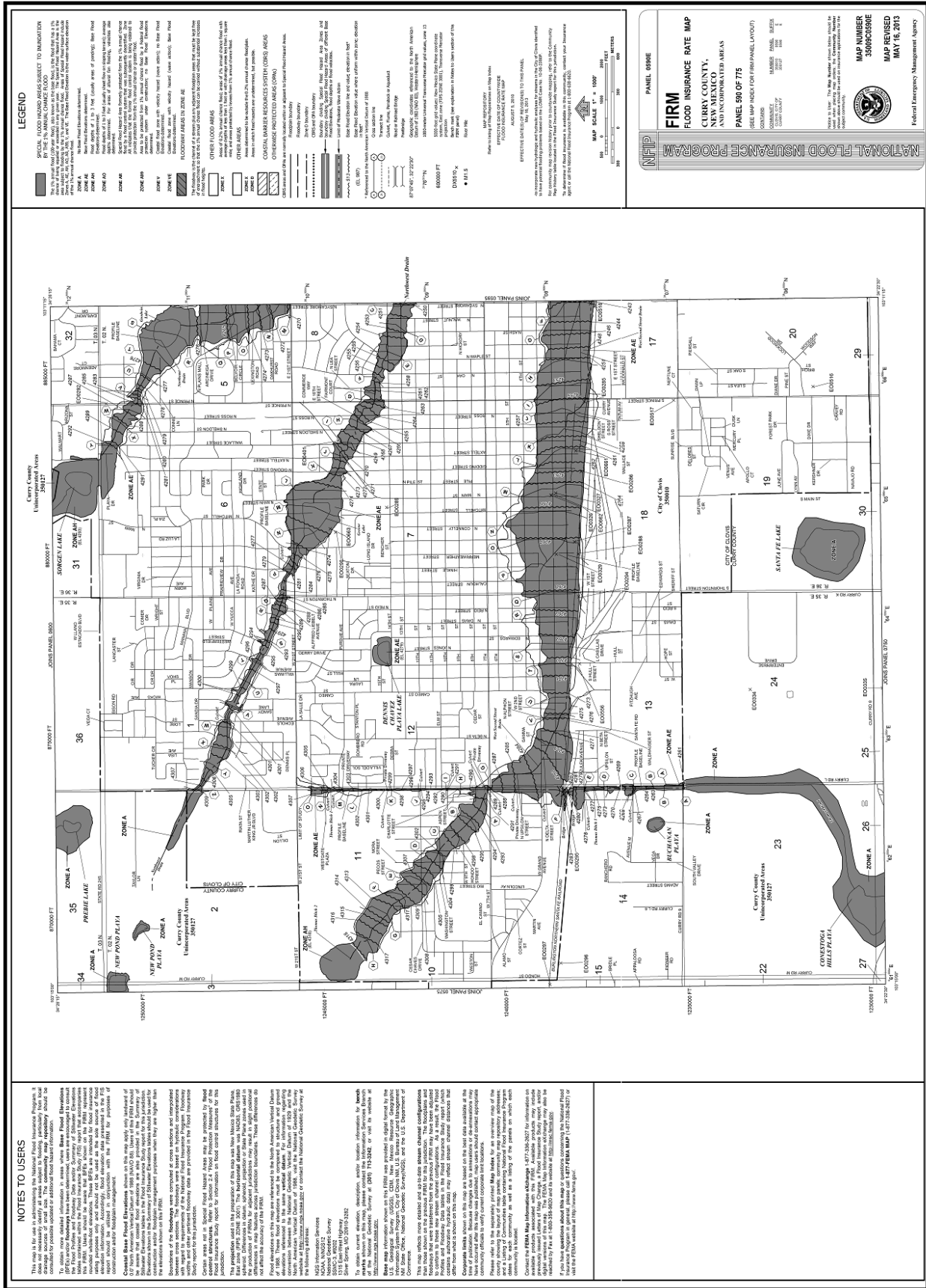
Zone	Description
A	An area inundated by 1% annual chance flooding, for which no BFEs have been determined. (100-Year Floodplain)
AE	An area inundated by 1% annual chance flooding, for which BFEs have been determined. (100-Year Floodplain)
Shaded X	Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood. An area inundated by 0.2% annual chance flooding.
Unshaded X	Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. Zone X is the area determined to be outside the 500-year flood and protected by levee from 100- year flood.

Source: FEMA

The following maps use FEMA’s FIRM data to depict the location of year floodplains within Curry County and its participating jurisdiction

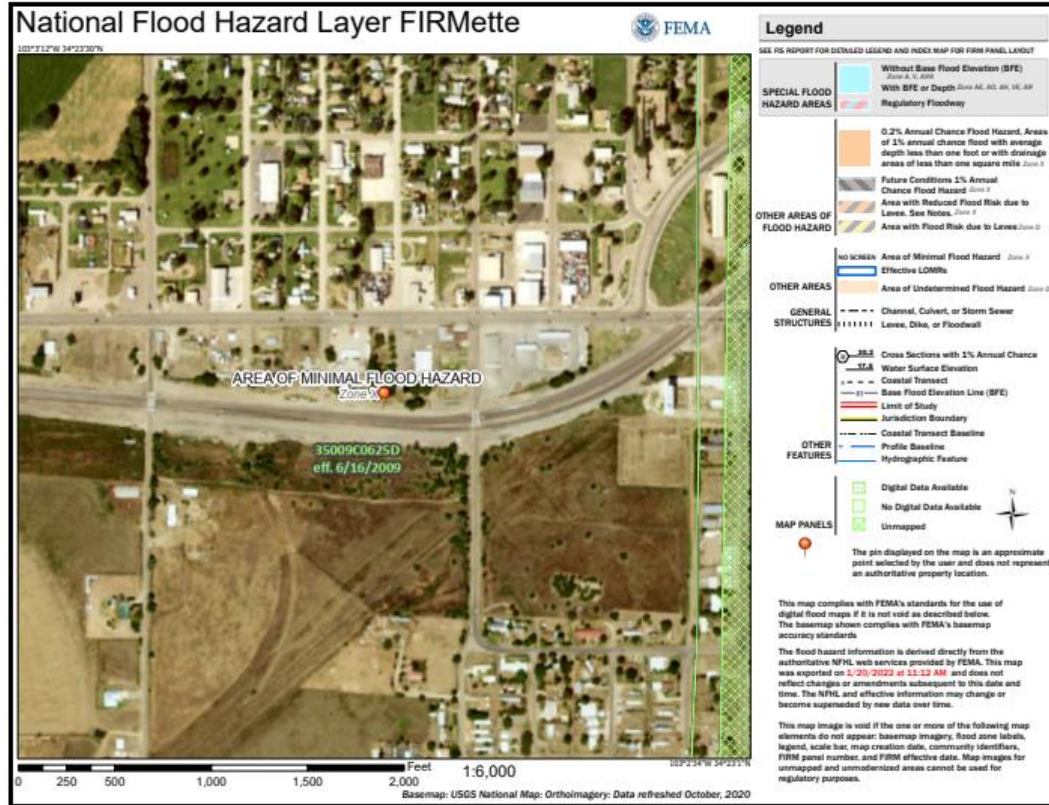


Map 24 – City of Clovis FEMA FIRM Panel 1

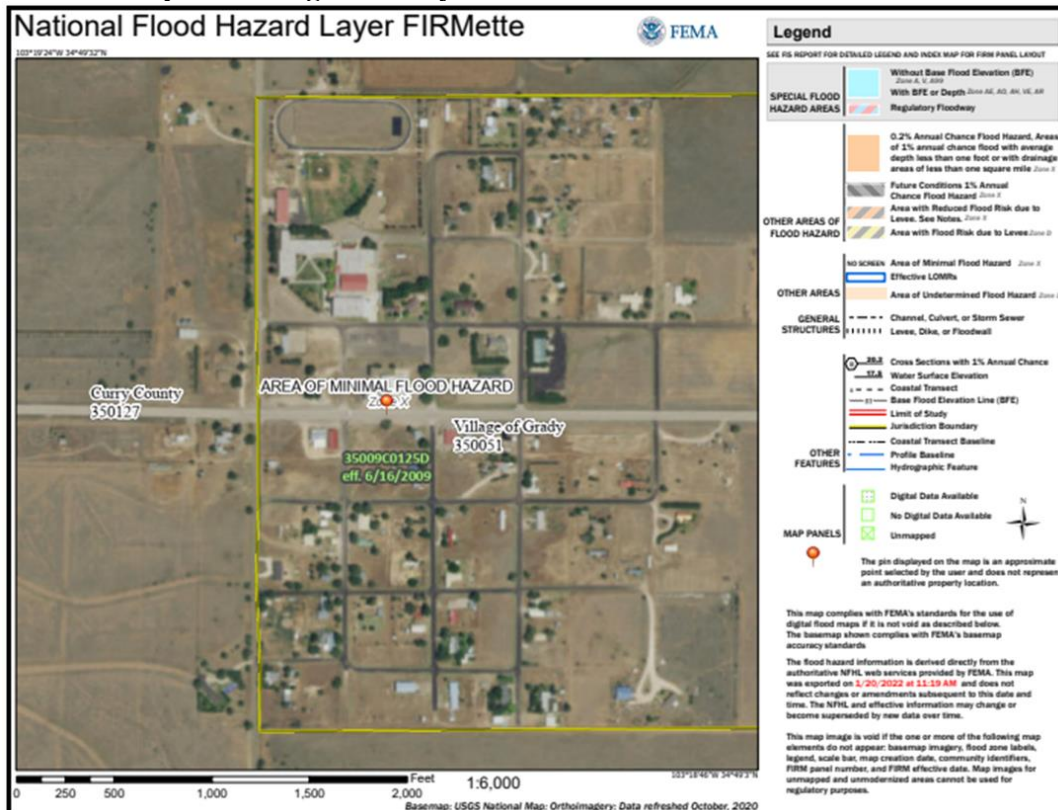




Map 27 – City of Texico National Flood Hazard Level FIRMette

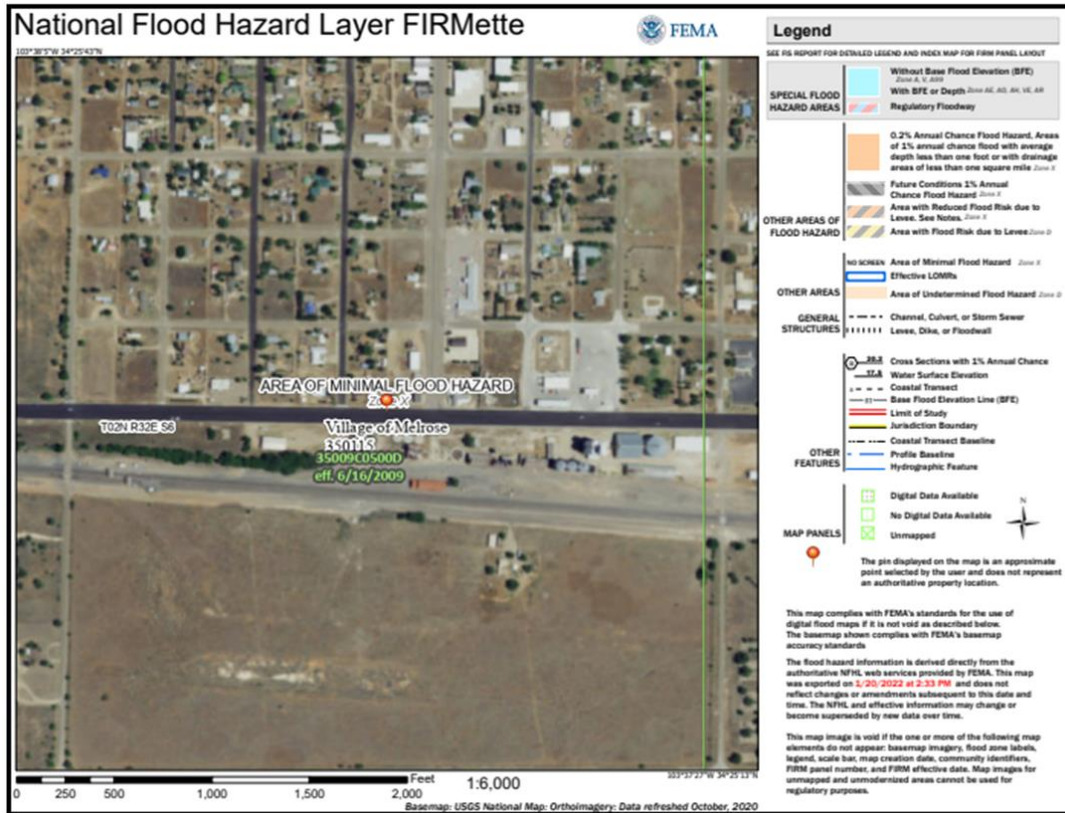


Map 28 – Village of Grady National Flood Hazard Level FIRMette





Map 29 – Village of Melrose National Flood Hazard Level FIRMette



4.8.3 Previous Occurrences

The following table presents NCEI identified flood events and the resulting damage totals in Curry County for the period 2001 – 2021.

Table 28: Curry County NCEI Flood and Flash Flood Events, 2001 - 2021

Jurisdiction	Event Type	Number of Days with Events	Property Damage	Deaths	Injuries
Curry County	Flood	2	\$3,000,000	0	0
	Flash Flood	4	\$0	0	0
Clovis	Flood	1	\$0	0	0
	Flash Flood	8	\$320,000	0	0
Grady	Flood	0	\$0	0	0
	Flash Flood	0	\$0	0	0
Melrose	Flood	0	\$0	0	0
	Flash Flood	2	\$0	0	0
Texico	Flood	0	\$0	0	0
	Flash Flood	1	\$100,000	0	0

Source: NCEI

The following provides both local accounts and NCEI descriptions of notable recorded events:

- October 1, 2019, Curry County:** A record high level of atmospheric moisture for the month of October that surged north into New Mexico in this pattern led to widespread showers and thunderstorms with torrential rainfall over southeast New Mexico. One day rainfall totals averaged two to four inches with locally heavier



amounts in excess of six inches from southern Chaves County northeastward into Roosevelt and Curry counties. Flash flooding impacted much of southern Chaves County where communities along U.S. 285 were inundated by flood waters. Flash flooding also occurred around Clovis and Portales as playa lakes overflowed onto nearby roadways. An amateur radio operator two miles west-northwest of Clovis reported 4.50 of rainfall in 24 hours. Significant flooding impacted low lying areas around Clovis. Dennis Chavez Park overflowed into nearby streets resulting in several stranded motorists. Local emergency services rescued several people from their vehicles. State Road 77 was also closed due to flooding near Pleasant Hill. Damage amounts are estimated for flood damage to one half dozen vehicles. Property damages were valued at \$100,000 with no injuries or deaths recorded.

- **May 4, 2015, Curry County:** Storms were produced anywhere from pea to quarter sized hail along with heavy rains. A train of storms over far eastern New Mexico resulted in rainfall amounts anywhere from an inch to over 5 inches, with 5.4 inches reported at the Cannon Air Force Base in less than 24 hours. This heavy rainfall resulted in flash flooding within the base and in nearby Clovis through the early morning hours on the 5th. Home evacuations and submerged cars resulted from the flash flooding. No injuries or fatalities resulted from the flooding or hail. According to local media reports, 65 homes in the Cannon Air Force Base area. Local officials evacuated 33 families from those homes and put them in hotel lodging. The flooding in Clovis forced the closure of U.S. Highway 60 and 84. Approximately 40 feet of state highway 108 between mile markers 6 and 10 was washed out. Clovis police had to use an armored vehicle to rescue 7 victims stranded by or caught in fast moving waters or flooded streets. The damages were recorded at \$3,000,000.
- **July 24, 2014, Curry County:** Widespread slow-moving heavy thunderstorms produced 2 to 4 inches of rain across much of this area, including as much as 4.5 inches in Clovis. Many roads around Fort Sumner became impassable due to high water. Clovis experienced dangerous flash flooding with significant street flooding. A car along a section of 14th street was submerged in 8 feet of water. Standing water and impacts to roadways across the region continued throughout the day, well after storms had exited the area. The City of Clovis has 3 detention ponds that are located in the upper portions of 3 small north-south oriented watersheds on the north side of the city. A lifetime resident of Clovis said it was the first time in at least 10 years that all three ponds filled, and it was the first time in recent memory that the Dennis Chavez Pond spilled. The police and fire departments received about 120 calls in one hour between 6:45am and 7:45 of stalled vehicles and at least 3 vehicles that were completely submerged. Police responded to 8 water rescues from vehicles. One vehicle along 14th street was submerged in 8 feet of water. Fortunately, no injuries or major damage. The owner of Enchanted Spirits Studios noted that up to 1 inch of water entered the business causing some carpet damage. Fire Station #6 and one house near Dennis Chavez Park (pond) were the only structures that had damage from high water and the damage estimate there was \$250,000. Flooding was also reported around Green Acres Park. Water receded very slowly through the day well after rainfall had ended.

4.8.4 Probability of Future Incidents

The definition of each flood zone’s classification is used for the purpose of calculating the yearly probability of a riverine flood. Jurisdictions with property in a 100-year floodplain can expect a 1% annual chance of flooding within the designated areas. Jurisdictions with property in a 500-year floodplain can expect a 0.2% annual chance of flooding within the designated areas.

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

Table 29: Curry County Riverine Flood Probability Summary

Data	Days
Number of Days with NCEI Reported Event (2001-2021)	1
Average Events per Year	<1

Source: NCEI



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

Table 30: Curry County Flash Flood Probability Summary

Data	Days
Number of Days with NCEI Reported Event (2001-2021)	14
Average Events per Year	1

Source: NCEI

4.8.5 Vulnerability and Impact

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

Table 31: Curry County Riverine Flood Impact Summary

Data	Recorded Impact
Deaths or Injuries (2001-2021)	0
Average Number of Deaths or Injuries	0
Total Reported NCEI Property Damage (2001-2021)	\$0
Average Property Damage per Year	\$0

Source: NCEI

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

Table 32: Curry County Flash Flood Impact Summary

Data	Recorded Impact
Deaths or Injuries (2001-2021)	0
Average Number of Deaths or Injuries	0
Total Reported NCEI Property Damage (2001-2021)	\$3,420,000
Average Property Damage per Year	\$171,000

Source: NCEI

The results of the HAZUS analysis were utilized to estimate potential losses for riverine flooding. The intent of this analysis was to enable Curry County 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®, version 5.0, was used to perform the analysis for Curry County using essential facility data available through HAZUS databases and HIFLD data. The analysis was completed by BOLDplanning. For this hazard, the risk assessment data and maps involved were from an analysis of 1% annual chance flood event (100-Year Flood). The reported losses are based upon essential facility and census data as part of HAZUS. We are also mapping updated essential facilities provided by CCOEM in relation to the flooded areas from HAZUS Level One modeling efforts.

HAZUS determines the displaced population based on the inundation area, not necessarily impacted buildings. As a result, there may be a 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 Curry County.

Table 33: Curry County HAZUS Flood Scenario Displaced Population Building Damages

Displaced Population	Person Seeking Shelter	Damaged Buildings	Destroyed Buildings
4,681	708	493	10

Source: FEMA HAZUS

The HAZUS analysis also provides an estimate of 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.

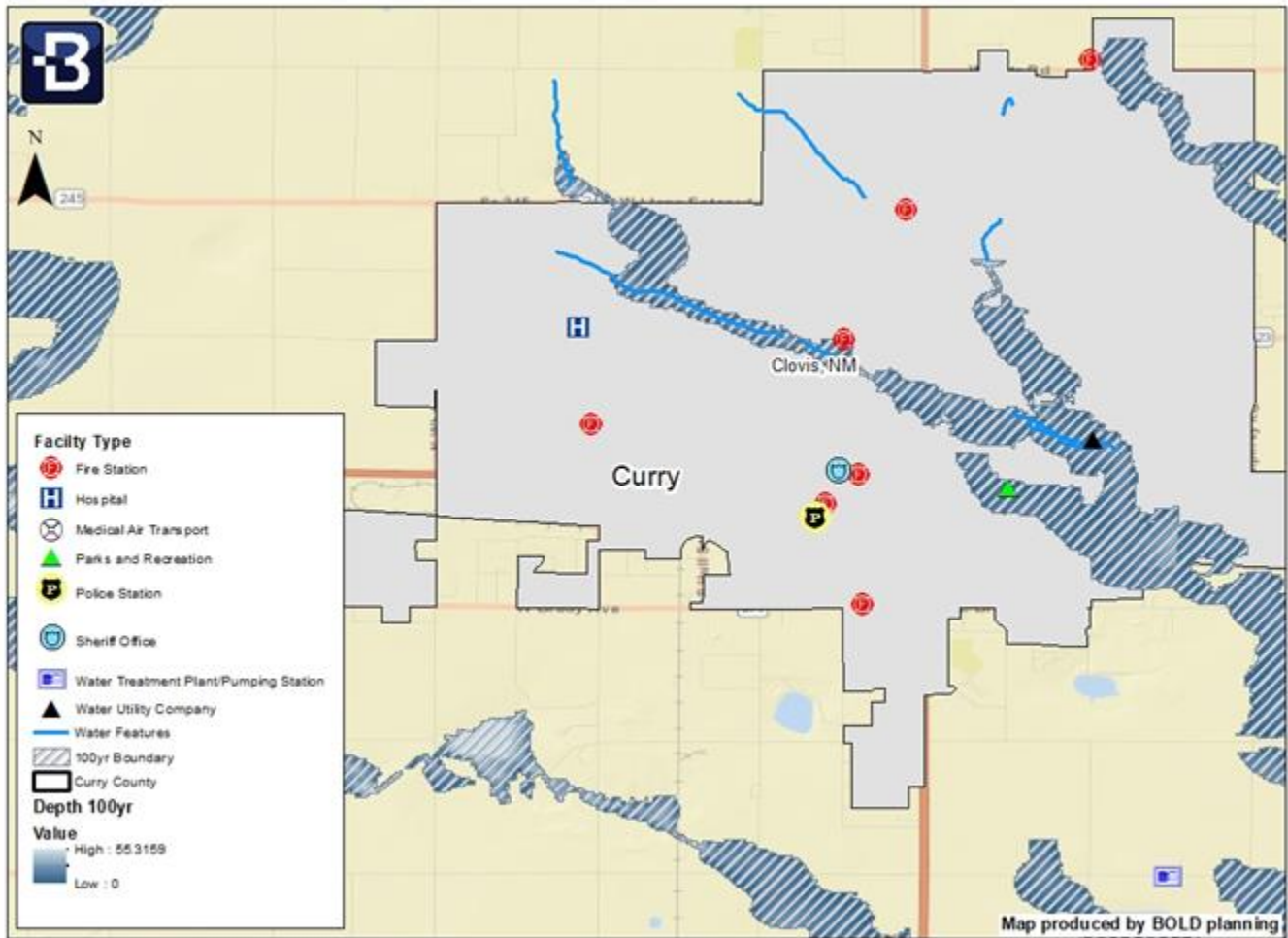
Table 34: Curry County HAZUS Flood Scenario Structural Damage and Income Loss

Structural Damage	Contents Damage	Inventory Loss	Total Direct Loss	Total Income Loss	Total Direct and Income Loss
\$45,710,000	\$52,730,000	\$1,340,000	\$99,760,000	\$144,880,000	\$244,660,000

Source: FEMA HAZUS

A HAZUS® analysis was performed to determine critical facility locations relative to the potential flood areas. Using GIS, the FIRM flood zones were overlaid on the critical facility location data. The following maps show critical facility locations and 100-year flood plains. HAZUS indicates that for critical facilities, one fire station and four schools will be impacted.

Map 30 – Critical Facilities in Potential Flood Areas



Vulnerability of Population

If evacuation is not heeded, or flood waters rise quickly enough, Curry County and its participating jurisdictions’ population can drown or become trapped on rooftops or points of high elevations. Depending on the conditions, this will expose them to elements and deprive them of basic needs and services. Long term care facilities housing vulnerable populations can take longer to evacuate. Additionally, the potential presence of mold after a flood requires extra care to be taken before their population can re-inhabit a facility.

Vulnerability of Systems

Table 35: Vulnerability of Systems to Flooding, Curry County

Community Lifeline	Vulnerability
Safety and Security	First responders may be exposed to dangerous flooding. Resources may be expended due to requests for assistance.
Food, Water, Shelter	Crops may be damaged. Water may be contaminated. Shelters may be unavailable due to flooding. Shelters may be without power due to energy system infrastructure damage.
Health and Medical	Hospitals may be forced to engage in vertical or horizontal evacuations. Facilities may be damaged. Facilities may be without power due to energy system infrastructure damage.
Energy	Energy infrastructure may be damaged or disrupted.
Communications	Communications infrastructure may be damaged.



Table 35: Vulnerability of Systems to Flooding, Curry County

Community Lifeline	Vulnerability
Transportation	Roads and railroads may be inaccessible or damaged.
Hazardous Materials	Flooding may generate hazardous materials releases from fixed sites or transportation.

4.8.6 Critical Facilities & Infrastructure

As per HAZUS, before the flood analyzed in this scenario, the region had 106 hospital beds available for use. On the day of the scenario flood event, the model estimates that 106 hospital beds are available in the region.

Additionally, the following number of critical facilities is estimated to be damaged or suffer loss of use from the flood scenario.

Table 36: HAZUS Flood Scenario Number of Critical Facilities Damaged or Impacted

Jurisdiction	Fire Stations	Hospitals	Police Stations	Schools
Curry County	0	0	0	0
Clovis	1	0	0	4
Grady	0	0	0	0
Melrose	0	0	0	0
Texico	0	0	0	0

Source: FEMA HAZUS

4.8.7 Land Use and Development Trends

Curry County’s current land-use regulations require the consideration of flood hazards during the development review process.

4.8.8 Unique and Varied Risk

Due to the nature of flash flooding, each jurisdiction in the planning area has an equal risk to a flash flood impact.

Due to the location specific requirements for riverine flooding, only the City of Clovis and select parts of Curry County (excluding all other participating jurisdictions), as detailed on the above FEMA FIRMs, are at risk.

4.8.9 Repetitive Loss Structures

A high priority to Curry County 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.



One RL property was reported in Curry County, as indicated in the following table.

Table 37: Curry County Repetitive Loss Properties, As of December 2017

Community Name	Losses per Structure	Total Claim Amount Paid Out
Clovis	5	\$234,322.49

Source: State of New Mexico

4.8.10 – National Flood Insurance Program Communities

The 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 NFIP participating communities.

Table 38: Curry County NFIP Communities

Community	Initial Flood Hazard Boundary Map Identified	Initial Flood Insurance Rate Map Identified	Current Effective Map Date
Curry County	02/07/78	08/05/10	05/16/13
Clovis City	06/28/74	02/04/81	05/16/13
Grady Village	NSFHA	08/05/10	NSFHA

Notes: NSFHA: No Special Flood Hazard Area - All Zone C

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 SFHAs areas or non-SFHA areas. One Curry County community currently participates in the CRS:

Table 39: Curry County CRS Participating Jurisdictions

Jurisdiction	CRS Entry Date	CRS Class	% Discount for SFHA	% Discount for Non-SFHA	Status
Clovis	10/01/1991	8	10%	5%	Active

Source: FEMA

4.8.11 – FEMA Flood Policy Data

Curry County flood policy information was pulled from FEMA’s Flood Insurance Data and Analytic. The number of flood insurance policies in effect may not include all structures at risk to flooding, and 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 statistics for Curry County.

Table 40: Curry Policy and Loss Statistics

Jurisdiction	Number of Policies in Force	Total Coverage
Clovis	245	\$52,550,000
Curry County	4	\$785,900
Unknown	6	\$773,000

Source: FEMA Flood Insurance Data and Analytics

4.9 Severe Thunderstorms

4.9.1 Hazard Description

Severe thunderstorms comprise the hazardous and damaging weather effects often found in violent storm fronts. They can occur together or separate, they are common and usually not hazardous, but on occasion they can pose a threat to life and property.

This plan defines severe thunderstorms as a combination of the following severe weather effects as defined by NOAA and the National Weather Service (NWS).



- **Hail:** Precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud.
- **Lightning:** A visible electrical discharge produced by a thunderstorm. The discharge may occur within or between clouds, between the cloud and air, between a cloud and the ground or between the ground and a cloud.
- **Thunderstorm Winds:** The same classification as high or strong winds but accompanies a thunderstorm. It is also referred to as a straight-line wind to differentiate from rotating or tornado associated wind.

Severe thunderstorms have been so consistent throughout modern history that much of the vulnerability is mitigated. However, this section is not concerned with everyday wind, lightning in the sky, or mild precipitation. This section is concerned with common storm elements when they behave such that they pose a threat to property and life.

4.9.2 – Location and Extent

Severe thunderstorms can rapidly descend on an area but in many cases are predictable. Most weather forecasts focus on more than just temperature but on quickly changing conditions that may lead to the onset of severe storms. All of Curry County is susceptible to severe thunderstorms.

The National Weather Service (NWS) classifies thunderstorms, often the generator of hail, lightning and 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

In the United States, hail causes more than \$1,000,000,000 in damage to property, crops and livestock each year. Because of the large agricultural industry in Curry County, crop damage and livestock losses due to hail are a concern. Vehicles, roofs of buildings and homes, and landscaping are the other things most commonly damaged by hail. Hail has been known to cause injury and the occasional fatality to humans, often associated with traffic accidents.

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 41: Tornado and Storm Research Organization Hail Damage Descriptions

Intensity Category	Diameter (inches)	Size Description	Typical Damage Impacts
Hard Hail	0.2-0.4	Pea	No damage
Potentially Damaging	0.4-0.6	Mothball	Slight general damage to plants, crops
Significant	0.6-0.8	Marble, grape	Significant damage to crop and vegetation
Severe	0.8-1.2	Walnut	Severe damage to crops, damage to glass and plastic, paint and wood scored
Severe	1.2-1.6	Pigeon's egg > squash ball	Widespread glass damage, vehicle bodywork damage
Destructive	1.6-2.0	Golf ball > Pullet's egg	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	2.0-2.4	Hen's egg	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	2.4-3.0	Tennis ball > cricket ball	Severe roof damage, risk of serious injuries
Super Hailstorms	3.6-3.9	Grapefruit	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	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

There is currently no scale to indicate the severity of a lightning strike.

To measure wind speed and its correlating potential for damage, experts use the Beaufort scale as shown below.

Table 42: Beaufort Scale

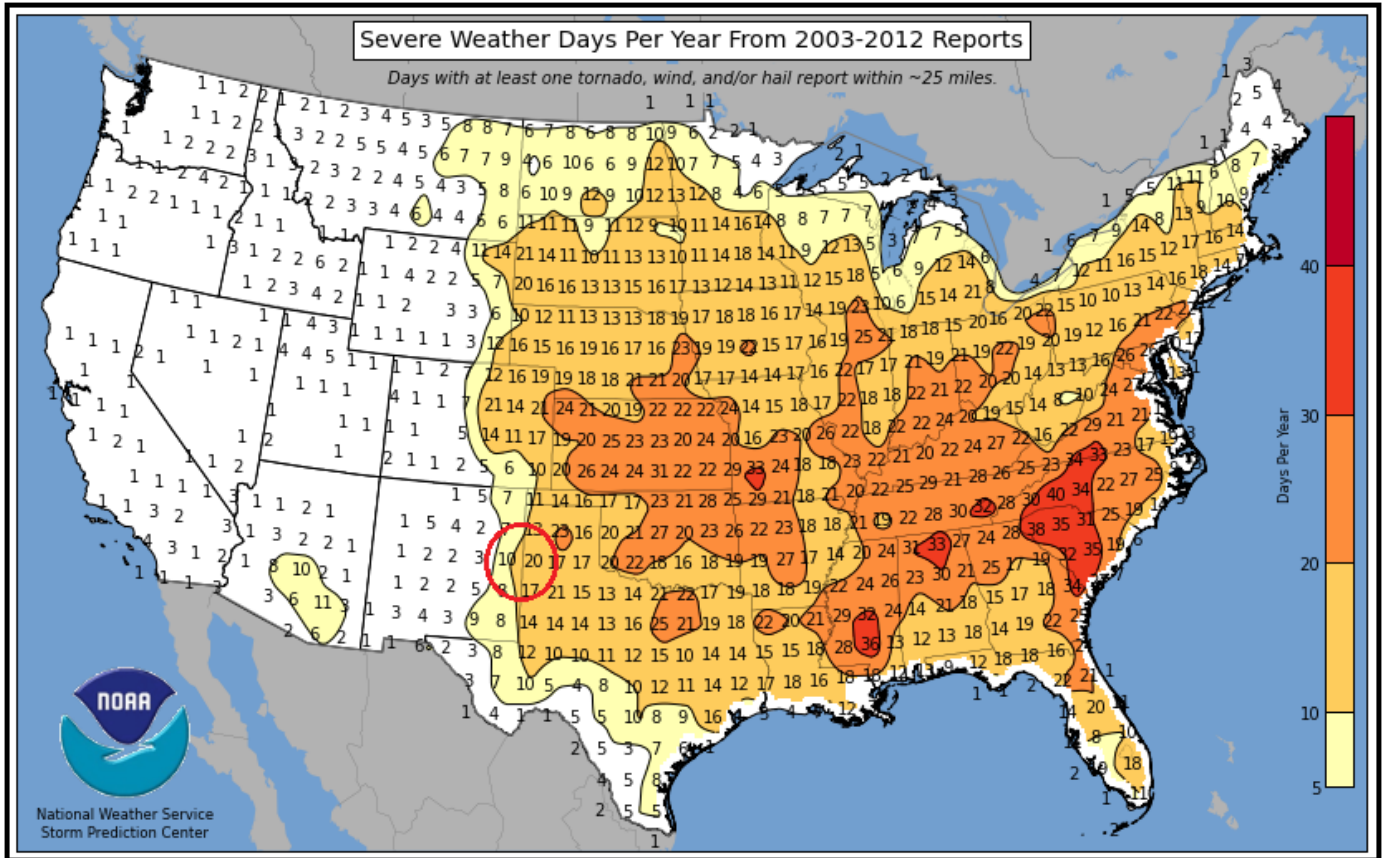
Beaufort Number	Wind Speed (mph)	Effects on Land
0	Under 1	Calm, smoke rises vertically
1	1-3	Smoke drift indicates wind direction, vanes do not move
2	4-7	Wind felt on face, leaves rustle, vanes begin to move
3	8-12	Leaves, small twigs in constant motion. Light flags extended.
4	13-18	Dust, leaves and 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

Source: NOAA



Severe thunderstorms strike Curry County with accompanying hail, lightning, and wind that can cause injury, death, property damage and wildfires. The widespread and frequent nature of thunderstorms makes hail, lightning and high wind a relatively common occurrence.

Map 31 – Severe Weather Days per Year, 2003-2012

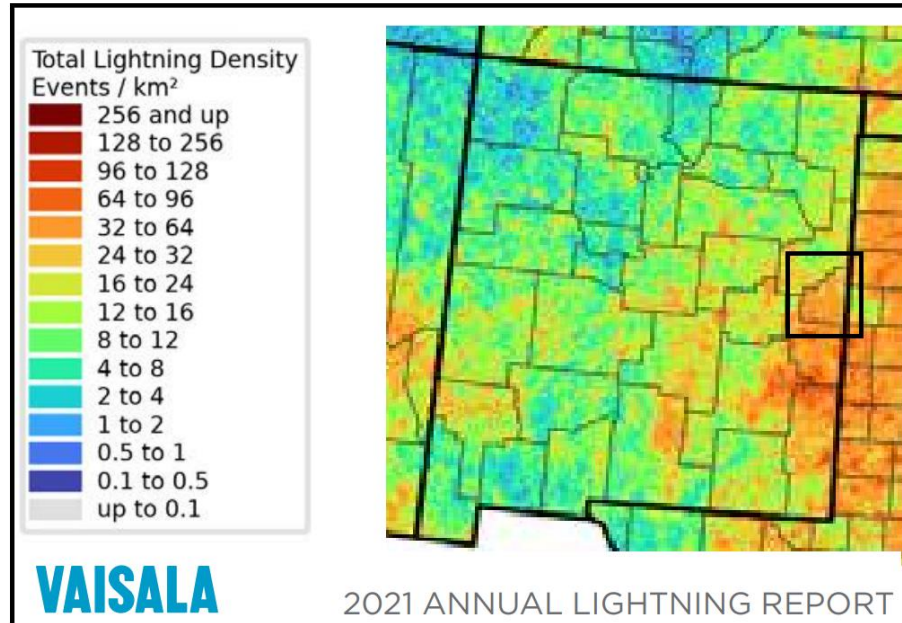


Map Source: NOAA

Data from Vaisala indicates that in 2021 the State of New Mexico had an estimated 5,114,235 cloud to ground lightning strikes, number 13 out of the 50 states. The following map indicates total lightning density for Curry County.



Map 32 – 2021 Total Lightning Density Events



Map Source: Vaisala

4.9.3 Previous Occurrences

In the 20-year period from 2001 to present, there has been one Presidential Disaster Declaration for Curry County for severe storms (along with other associated hazard events). Please note that these declarations were not exclusive declared for Curry County.

Table 43: Curry County Severe Storm Disaster Declarations, 2001 - 2021

Declaration Number	Incident Period	Disaster Description
DR-1690	03/23/2007 – 03/24/2007	Severe Storms and Tornadoes

Source: FEMA

The following table presents NCEI identified severe thunderstorm events, by category, and the resulting damage totals in Curry County from the period 2001 - 2021.

Table 44: Curry County NCEI Severe Thunderstorm Events, 2001 - 2021

Event Type	Number of Events	Property Damage	Crop Damage	Deaths	Injuries
Hail	71	\$1,592,000	\$77,000	0	0
Lightning	3	\$142,000	\$0	0	0
Thunderstorm Winds	73	\$956,250	0	0	1

Source: NCEI

The following table presents NCEI identified severe thunderstorm events, by category, and the resulting damage totals in Curry County participating jurisdictions, a subset of the Curry County data, from the period 2001 - 2021.

Table 45: NCEI Severe Thunderstorm Events, by Participating Jurisdiction 2001 - 2021

Jurisdiction	Number of Hail Events	Number of Lightning Events	Number of Thunderstorm Wind Events	Property Damage	Crop Damage	Deaths	Injuries
Clovis	53	3	45	\$1,809,000	\$0	0	1



Table 45: NCEI Severe Thunderstorm Events, by Participating Jurisdiction 2001 - 2021

Jurisdiction	Number of Hail Events	Number of Lightning Events	Number of Thunderstorm Wind Events	Property Damage	Crop Damage	Deaths	Injuries
Grady	7	0	2	\$125,000	\$0	0	0
Melrose	12	0	6	\$464,250	\$0	0	0
Texico	4	0	3	\$0	\$0	0	0

Source: NCEI

The following provides brief descriptions of notable NCEI identified severe storm events:

May 9, 2017, Ranchvale: The NMSU Agricultural Science Center northeast of Clovis reported major damage from a severe hailstorm. Hail estimated at least to the size of hen eggs produced a major crop loss at the facility. Property damage was reported at \$110,000.

August 8, 2015, Clovis: Fire crews responded to lightning caused blaze at a duplex home that resulted in significant damage to the property. Property damage was reported at \$10,000

July 6, 2015, Clovis: Wet microburst winds toppled a metal grain silo onto a nearby truck, resulting in 1 injury. Two other silos were also severely damaged. Numerous tree branches were broken at a nearby home. A spotter reported storm total rainfall of 3.25 inches from these storms. Property damage was reported at \$250,000

June 12, 2010, Clovis: The hailstorm left much of the Clovis area battered by hail up to the size of golf balls. The majority of the damage occurred in the northeastern portion of the community. Over 1600 home and auto claims were submitted to insurance companies. Property damage was reported at \$1,250,000.

4.9.4 Probability of Future Events

Predicting the probability of severe thunderstorm occurrences is tremendously challenging due to the large number of factors involved and the random nature of formation. Data from the NCEI indicates that Curry County can expect on a yearly basis, relevant to severe thunderstorm events:

Table 46: Curry County Severe Thunderstorm Probability Summary

Data	Days
Number of Days with NCEI Reported Event (2001-2021)	147
Average Events per Year	7

Source: NCEI

4.9.5 Vulnerability and Impact

Data from the NCEI indicates that Curry County can expect on a yearly basis, relevant to severe thunderstorm events:

Table 47: Curry County Severe Thunderstorm Impact Summary

Data	Recorded Impact
Deaths or Injuries (2001-2021)	1
Average Number of Deaths or Injuries	<1
Total Reported NCEI Property Damage (2001-2021)	\$2,398,250
Average Property Damage per Year	\$119,913

Source: NCEI



Data from HAZUS was used to provide a county building stock valuation. This data was then compared to NCEI structural damage figures to determine the percentage of impacted building within the county for the period of 2011-2021 for each severe storm component. Data was only available on a county level.

Table 48: Curry County HAZUS and NCEI Severe Storm Percentage Loss Data

Hazard	HAZUS Building Valuation	NCEI Structure Damage, 2011-2021	Percentage of Building Valuation Damaged
Hail	\$4,068,864,000	\$1,592,000	0.04%
Lightning	\$4,068,864,000	\$142,000	0.003%
Wind	\$4,068,864,000	\$956,250	0.02%

Source: FEMA HAZUS

While difficult to quantify, as the impacts of future severe storms will be determined by many factors, in general the following impacts may be expected:

Table 49: Potential Impact of Severe Storms

Jurisdiction	Crop Loss	Job Loss	Income Loss	Tax Revenue Loss	Tourism Loss	Population Migration	Increased Urban Infrastructure Stress
Curry County	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clovis	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Grady	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Melrose	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Texico	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Vulnerability of Population

Curry County and its participating jurisdictions’ vulnerability to severe storms is the same throughout the planning area. In the absence of proper shelter, hail can cause serious injury to an unprotected person. As long as Curry County and its participating jurisdictions’ citizens stay indoors and away from windows, they will be protected against hail injury and death. Similarly, they can avoid being struck by lightning by staying indoors. Although lightning may strike a structure sheltering people, it is extremely unlikely that the strike itself will directly injure or kill a sheltered person. As long as a structure is able to maintain its integrity during high-speed winds, it will protect people from wind injury or death. However, old or poorly constructed facilities are not good shelter as previously mentioned flying debris can break windows or cause structural damage. Either of these instances have the potential to seriously injure or kill anyone taking shelter in older, less well constructed building.

Vulnerability of Systems

Table 50: Vulnerability of Systems to Severe Thunderstorm, Curry County

Community Lifeline	Vulnerability
Safety and Security	First responders may be exposed to the impacts of severe thunderstorm incidents. Facilities may be damaged. Resources may be expended responding to calls for assistance. Communications may be disrupted due to infrastructure damage and/or system overload.
Food, Water, Shelter	Crops may be damaged. Shelters may be damaged. The delivery of energy services to shelters may be interrupted by damaged infrastructure. Communications may be disrupted due to infrastructure damage and/or systems overload.
Health and Medical	Facilities may be damaged. The delivery of energy and communications may be disrupted by infrastructure damage.



Table 50: Vulnerability of Systems to Severe Thunderstorm, Curry County

Community Lifeline	Vulnerability
Energy	The delivery of power and natural gas may be disrupted due to infrastructure damage.
Communications	System overload or infrastructure damage may cause communications to be disrupted. Landline and cellular networks may be overloaded.
Transportation	Roads and railroads may be damaged or impassible. Air travel may be delayed or canceled due to safety concerns.
Hazardous Materials	Fixed sites that store or generate hazardous materials may be damaged causing a release.

4.9.6 Critical Facilities & Infrastructure

Critical infrastructure vulnerability to severe thunderstorms is the same throughout Curry County and its participating jurisdictions. Hail can be costly by damaging communications equipment, rooftops, outdoor equipment, and windows. Lightning can strike anything with the potential to significantly damage electrical infrastructure or ignite a fire. Wind events create flying debris which can damage infrastructure and buildings. Strong enough wind can cause structure damage to older, less well constructed buildings even toppling or leveling them.

4.9.7 Land Use and Development Trends

As the entire planning area is at risk to severe thunderstorms, increased development and population growth can reasonably translate to increased damage potential for new and existing structures. Structural design details, including roof profile, type and strength of windows, and foundation systems would need to be considered to determine an increased structural risk. However, enforced building codes are instrumental in ensuring that structures can withstand all but the most extreme weather incidents.

4.9.8 Unique and Varied Risk

Severe storms have ability to impact the entire planning area. Unfortunately, there is no accurate method of predicting the location or extent of a severe storm’s impact or location. It is not possible to predict any varying probability between the participating jurisdictions with the exception of varying risk as it is proportionate to a participating jurisdiction’s demographics. Logically, participating jurisdictions with a greater population are at a higher risk as participating jurisdictions with a lower population are at a lower risk.

4.10 Tornadoes

4.10.1 Hazard Description

A tornado is a violent, dangerous, rotating column of air that is in contact with both the surface of the earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud. Often referred to as a twister, 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.



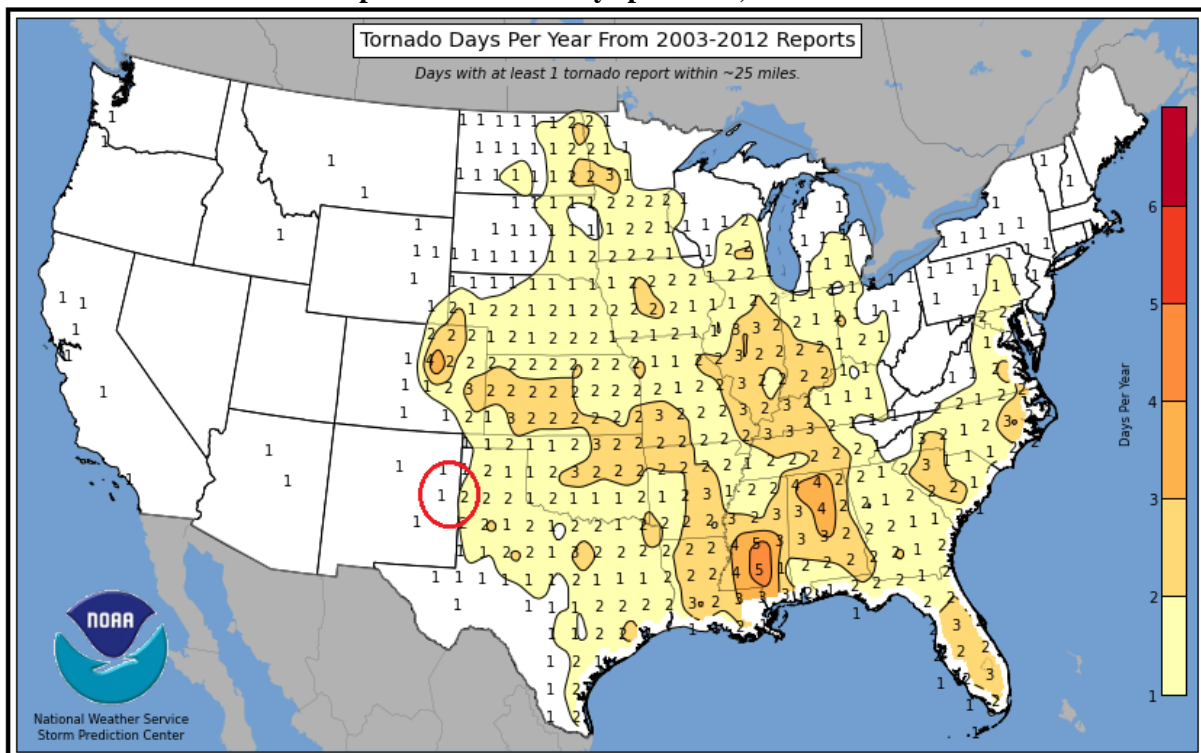
Tornadoes can cause several kinds of damage to buildings. Tornadoes have been known to lift and move objects weighing more than 3 tons, toss homes more than 300 feet from their foundations, and siphon millions of tons of water. However, less spectacular damage is much more common. Houses and other obstructions in the path of the wind cause the wind to change direction. This change in wind direction increases pressure on parts of the building. The combination of increased pressures and fluctuating wind speeds creates stress on the building that frequently causes connections between building components, roofing, siding, windows, etc., to fail. Tornadoes can also generate a tremendous amount of flying debris. If wind speeds are high enough, airborne debris can be thrown at buildings with enough force to penetrate windows, roofs, and walls.

4.10.2 – Location and Extent

Tornadoes can strike anywhere in Curry County or its participating jurisdictions placing the entire planning area at risk. A tornado may arrive with a squall line or cold front and touch down quickly. Smaller tornadoes 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.

The following map indicates the average number of tornado days per year for the period 2003 – 2012.

Map 33 – Tornado Days per Year, 2003 - 2012





Since 2007, the United States uses the Enhanced Fujita Scale to categorize tornadoes. The scale correlates wind speed values per F level and provides a rubric for estimating damage.

Table 51: 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 tornadoes 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.
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

4.10.3 Previous Occurrences

The following table presents NCEI identified tornado events and the resulting damage totals in Curry County from the period 2001 - 2021.

Table 52: Curry County NCEI Tornado Events, 2001 - 2021

Event Type	Number of Events	Property Damage	Crop Damage	Deaths	Injuries
Tornado	9	\$16,800,000	\$0	2	33

Source: NCEI

The following provides brief descriptions of notable NCEI identified tornado events:

March 23, 2007, Curry County: Three large power transmission poles were snapped and toppled to the ground, no less than three center pivot irrigation sections were flipped over or destroyed, several sections of range land fencing were damaged, and dozens of small yucca plants were uprooted. The tornado missed a nearby residence by only 300 yards and barely missed the nearby Palla West Dairy. Damage amounts are estimated for utility and property losses. Damages were reported at \$300,000.

March 23, 2007, Curry County: A tornado that developed in Roosevelt County continued north northwest into Curry County for about 3.5 miles then tracked north northeast an additional 4.6 miles into southern and east central sections of Clovis. Intensity of the tornado appeared to wane from EF2 120 mph in Roosevelt County to EF1 100 mph as it moved north into Curry County along Highway 70 where damage was limited to



power lines and farm irrigation equipment. Intensity increased again to EF2 level 125 mph for a segment extending from about four miles south of Clovis northward into southeast Clovis which sustained the heaviest and most consistent damage as indicated by structural damage and downed power poles. The tornado appeared to wane again as it moved north over Highway 60/84 just east of the intersection with Highway 70. The tornado track became intermittent north of Highway 60/84 with winds likely less than 85 mph before a final one-half mile track of heavier damage and EF2 level winds of 120-125 mph. Average width was estimated at 200 yards. About 500 homes and other facilities sustained at least some damage ranging from complete destruction of mobile homes in southeast Clovis and wall collapse at several businesses along Highway 60/84 to the loss of roof shingles and roof top air conditioning units. Thirty-five people suffered treatment injuries including five that required hospitalization. Two elderly citizens died later from injuries sustained during the event making these the first tornado fatalities in New Mexico since October of 1974. Damages were reported at

4.10.4 Probability of Future Events

Predicting the probability of tornado occurrences is tremendously challenging due to the large number of factors involved and the random nature of formation. Data from the NCEI indicates that Curry County can expect on a yearly basis, relevant to tornado events:

Table 53: Curry County Tornado Probability Summary

Data	Events
Number of Days with NCEI Reported Event (2001-2021)	9
Average Events per Year	<1

Source: NCEI

4.10.5 Vulnerability and Impact

Data from the NCEI indicates that Curry County can expect on a yearly basis, relevant to Winter Storm events:

Table 54: Curry County Tornado Impact Summary

Data	Recorded Impact
Deaths or Injuries (2001-2021)	35
Average Number of Deaths or Injuries	2
Total Reported NCEI Property Damage (2001-2021)	\$16,800,000
Average Property Damage per Year	\$840,000

Source: NCEI

Data from HAZUS was used to provide a county building stock valuation. This data was then compared to NCEI structural damage figures to determine the percentage of impacted building within the county for the period of 2011-2021. Data was only available on a county level.

Table 55: Curry County HAZUS and NCEI Tornado Percentage Loss Data

Hazard	HAZUS Building Valuation	NCEI Structure Damage, 2011-2021	Percentage of Building Valuation Damaged
Tornado	\$4,068,864,000	\$16,800,000	0.4%

Source: FEMA HAZUS

While difficult to quantify, as the impacts of future severe storms will be determined by many factors, in general the following impacts may be expected:



Table 56: Potential Impact of Tornadoes

Jurisdiction	Crop Loss	Job Loss	Income Loss	Tax Revenue Loss	Tourism Loss	Population Migration	Increased Urban Infrastructure Stress
Curry County	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clovis	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Grady	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Melrose	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Texico	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Vulnerability of Population

Curry County and its participating jurisdictions’ vulnerability to tornadoes is the same throughout the planning area. An EF4 or EF5 tornado has the potential to level the smaller jurisdictions. A lesser magnitude tornado can rip off roofs and walls while launching airborne missiles born from debris. All of these damages can result in considerable injuries and deaths.

Vulnerability of Systems

Table 57: Vulnerability of Systems to Tornadoes, Curry County

Community Lifeline	Vulnerability
Safety and Security	First responders may be exposed to the impacts of tornado incidents. Facilities may be damaged. Resources may be expended responding to calls for assistance. Communications may be disrupted due to infrastructure damage and/or system overload.
Food, Water, Shelter	Crops may be damaged. Shelters may be damaged or destroyed. The delivery of energy services to shelters may be interrupted by damaged infrastructure. Communications may be disrupted due to infrastructure damage and/or systems overload.
Health and Medical	Facilities may be damaged or destroyed. The delivery of energy and communications may be disrupted by infrastructure damage. Resources may be expended responding to the community’s healthcare needs.
Energy	The delivery of power and natural gas may be disrupted due to infrastructure damage.
Communications	System overload or infrastructure damage may cause communications to be disrupted. Landline and cellular networks may be overloaded.
Transportation	Roads and railroads may be damaged or impassible. Air travel may be delayed or cancelled due to safety concerns.
Hazardous Materials	Fixed sites that store or generate hazardous materials may be damaged causing a release.

4.10.6 Critical Facilities & Infrastructure

All infrastructure and critical facilities are equally at risk, since tornadoes indiscriminately impact the entire planning area.

4.10.7 Land Use and Development Trends

Increased residential growth increases a community’s risk to tornadoes by way of its facilities, population, and systems’ vulnerabilities. As Curry County and its participating jurisdictions grow, it will need to initiate more programs building tornado safe rooms and encouraging the construction of private safe rooms. Additionally, community and school safe rooms will need to be built based on projections of future population and not the current number. Any buildings or infrastructure built in the future will have the same risk as other buildings or infrastructure built within the planning area.



4.10.8 Unique and Varied Risk

Tornadoes have ability to impact the entire planning area. Unfortunately, there is no accurate method of predicting the location or extent of a tornado's impact. Melrose and Grady are both older municipalities that have seen little historical growth. The majority of their residential and commercial structures are older and more vulnerable to tornadoes. Clovis has pockets of older building as well as some mobile home parks. Mobile homes are extremely vulnerable to any wind related hazard. These pockets of older buildings and mobile homes are located within the city limits.

Additionally, it is not possible to predict any varying probability between the participating jurisdictions with the exception of varying risk as it is proportionate to a participating jurisdiction's demographics and the previously mentioned factors. Logically, participating jurisdictions with a greater population are at a higher risk as participating jurisdictions with a lower population are at a lower risk.

4.11 Wildfires

4.11.1 Hazard Description

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.



According to the National Park Service there three classifications of wildfires:

- **Surface Fire:** Burning which may spread rapidly and ignites leaf litter, fallen branches and other fuels located at ground level.
- **Ground Fire:** Burning of organic matter in the soil beneath the surface.
- **Crown Fire:** Burning through the top layer (canopy) of trees. Crown fires, which can be very intense and difficult to contain, require strong winds, steep slopes, and large amounts of fuel to burn.

Wildfires are strongly influenced by multiple factors, including:

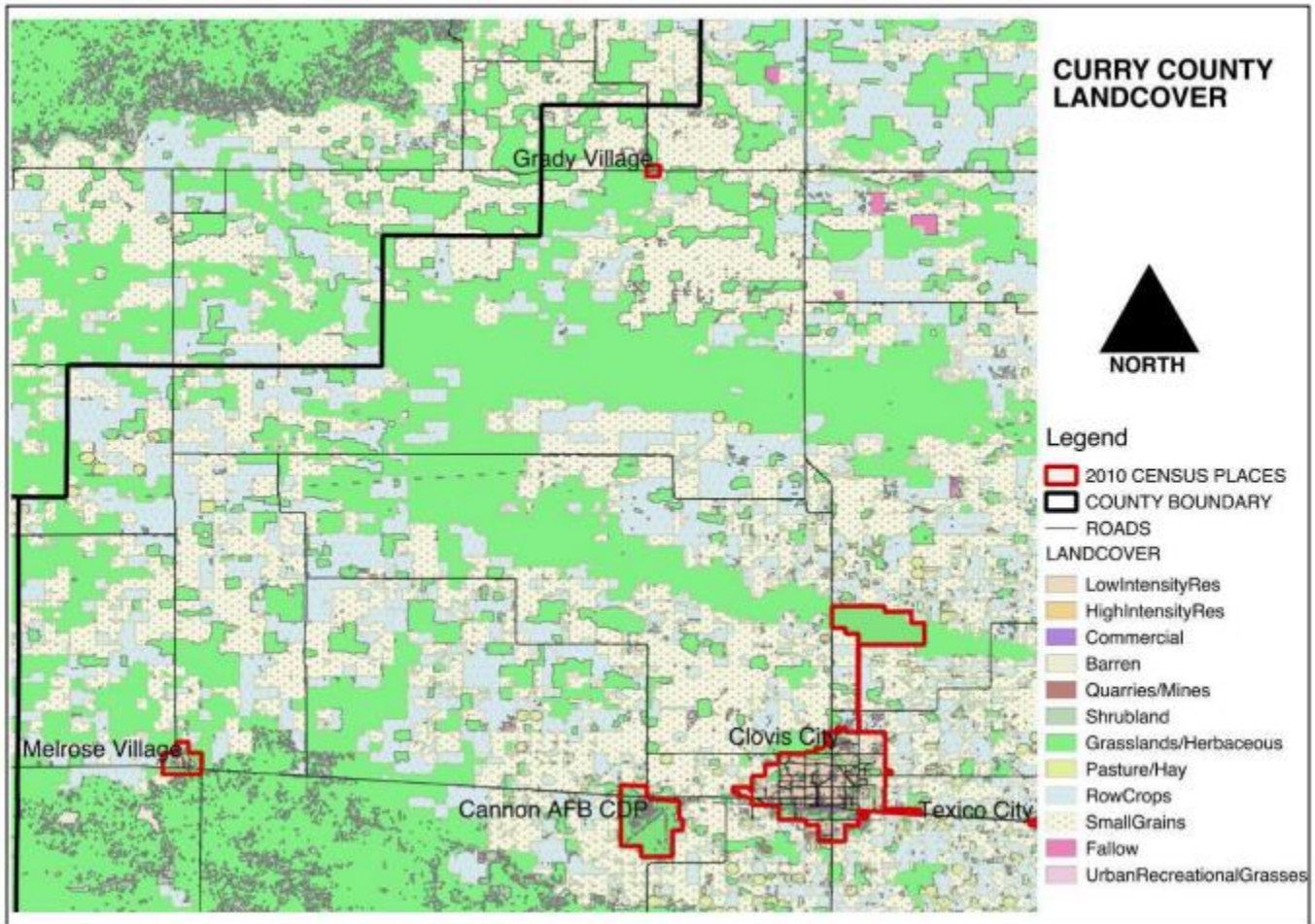
- **Weather:** Factors such as relative humidity, wind speed, ambient temperature and precipitation all influence the formation and growth of wildfires.
- **Topography:** Natural features, such as canyons or ridges, can increase the spread rate of a fire by funneling or drawing heated air and fire.
- **Fuel Type, Distribution and Moisture:** Available fuels, the spacing and density of available fuels, and fuel moisture content can determine spread rates and intensity of wildfires.
- **Drought Conditions:** Drought tends to increase both the likelihood and severity of wildfires.

4.11.2 – Location and Extent

In Curry County, approximately 93% of land is held privately. As indicated by the following map from the 2016 Curry County Community Wildfire Protection Plan (CWPP), the most common land use is rangeland which comprises 60% of land use. Cultivated farmland makes up 39% of the county. According to the Census of Agriculture, approximately 82% of this farmland is dryland and the remaining 18% is irrigated cropland.



Map 34 – Curry County Land Cover Map



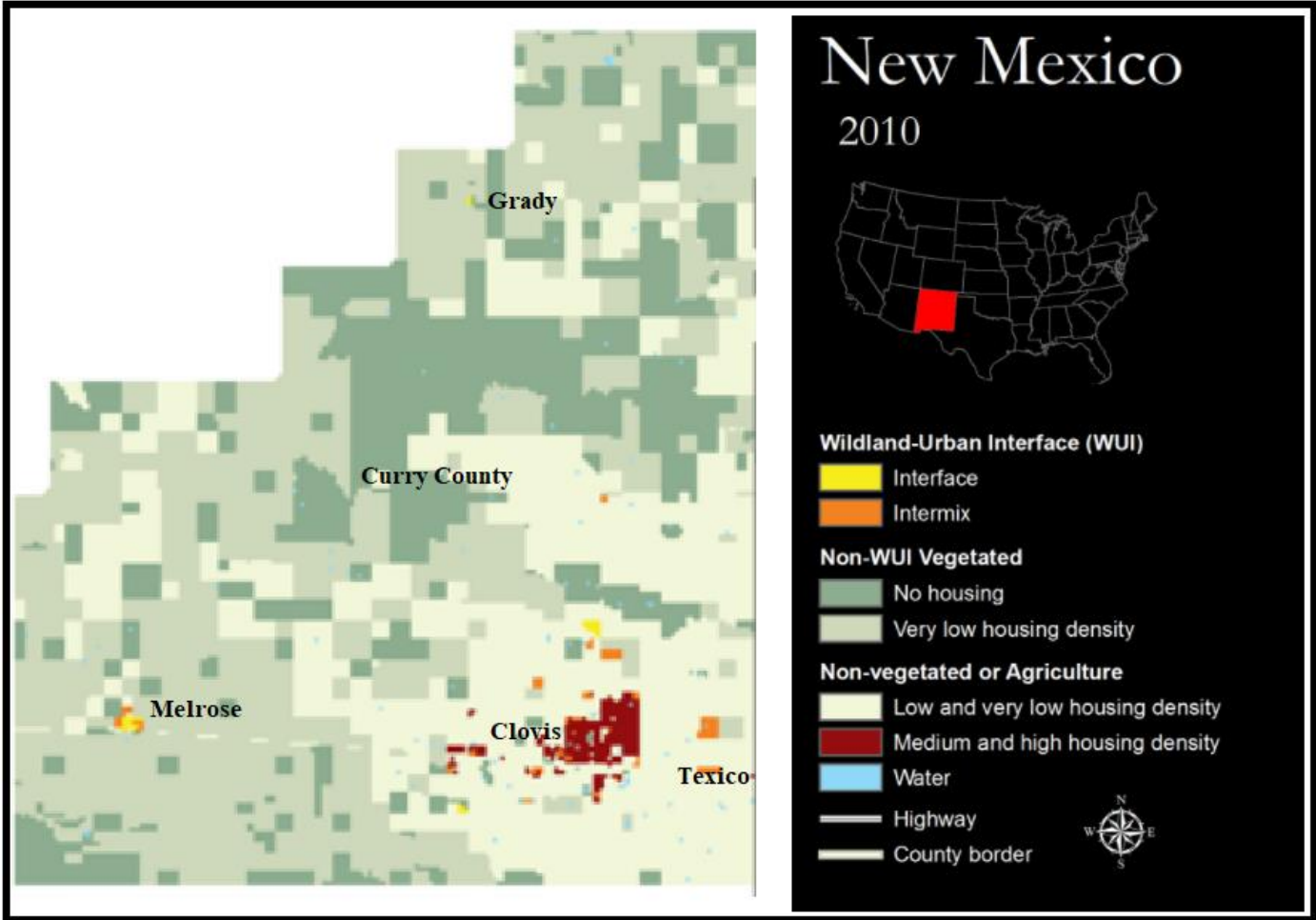
Source: 2016 Curry County Community Wildfire Protection Plan

The wildland/urban interface (WUI) is the area where human improvements such as homes, ranches and farms come in contact with the wildlands. The WUI creates an environment in which fire can move readily between structure and vegetation fuels, often resulting in massive fires, or conflagrations, that may lead to widespread evacuations. The expansion of the WUI in recent decades has significant implications for wildfire management and its impact. Two types of WUI are mapped: intermixed and interface. Intermix WUI are areas where housing and vegetation intermingle, and interface WUI are areas with housing in the vicinity of dense, contiguous wildland vegetation.

The following map, from SILVIS Labs using 2010 data (the latest available) indicates WUI areas in Curry County.



Map 35 – Curry County WUI MAP



Source: SILVIS Labs

The duration of a wildfire depends on the weather conditions, how dry it is, the availability of fuel to spread, and the ability of responders to contain and extinguish the fire. Historically, some wildfires have lasted only hours, while other fires have continued to spread and grow for an entire season. They spread quickly and often begin unnoticed until they have grown large enough to signal by dense smoke. If fuel is available, and the high wind speeds hit, a wildfire can spread over a large area in a very short amount of time. These factors make the difference between small upstart fires easily controlled by local fire services to fires destroying thousands of acres requiring multiple state and federal assets for containment and suppression.

The National Fire Danger Rating System allows fire managers to estimate today's or tomorrow's fire danger for a given area. It combines the effects of existing and expected states of selected fire danger factors into one or more qualitative or numeric indices that reflect an area's fire protection needs. It links an organization's readiness level (or pre-planned fire suppression actions) to the potential fire problems of the day. The following is a brief explanation of the different fire danger levels based on criteria established by the National Fire Danger Rating System.

Table 58: National Fire Danger Rating System

Rating	Description
Low	Fuels do not ignite easily from small embers, but a more intense heat source, such as lightning, may start fires in duff or dry rotten wood. Fires in open, dry grasslands may burn easily a few hours after a rain, but most wood fires will spread slowly, creeping or smoldering. Control of fires is generally easy.



Table 58: National Fire Danger Rating System

Rating	Description
Moderate	Fires can start from most accidental causes, but the number of fire starts is usually pretty low. If a fire does start in an open, dry grassland, it will burn and spread quickly on windy days. Most wood fires will spread slowly to moderately. Average fire intensity will be moderate except in heavy concentrations of fuel, which may burn hot. Fires are still not likely to become serious and are often easy to control.
High	Fires can start easily from most causes and small fuels (such as grasses and needles) will ignite readily. Unattended campfires and brush fires are likely to escape. Fires will spread easily, with some areas of high intensity burning on slopes or concentrated fuels. Fires can become serious and difficult to control unless they are put out while they are still small.
Very High	Fires will start easily from most causes. The fires will spread rapidly and have a quick increase in intensity, right after ignition. Small fires can quickly become large fires and exhibit extreme fire intensity, such as long-distance spotting and fire whirls. These fires can be difficult to control and will often become much larger and longer-lasting fires.
Extreme	Fires of all types start quickly and burn intensely. All fires are potentially serious and can spread very quickly with intense burning. Small fires become big fires much faster than at the "very high" level. Spot fires are probable, with long-distance spotting likely. These fires are very difficult to fight and may become very dangerous and often last for several days.

Source: Wildfire Fire Assessment System

As of March 2022, the Fire Danger Rating for Curry County and all participating jurisdictions was rated as High.

The severity of the wildfire depends on several quickly changing environmental factors. It is impossible to strategically estimate the severity of a wildfire as these factors, including drought conditions and wind speed, have such a great influence on the wildfire conditions. The Characteristic Fire Intensity Scale within the Southern Wildfire Risk Assessment Summary Report specially identifies areas where significant fuel hazards and associated dangerous fire behavior potential exist based on a weighted average of four percentile weather categories.

The following table details the range of wildfire damages.

Table 59: Characteristic Fire Intensity Scale

Class	Description
Class 1- Very Low	Very small, discontinuous flames, usually less than 1 foot in length; very low rate of spread; no spotting. Fires are typically easy to suppress by firefighters with basic training and non-specialized equipment.
Class 2- Low	Small flames, usually less than two feet long; small amount of very short-range spotting possible. Fires are easy to suppress by trained firefighters with protective equipment and specialized tools.
Class 3- Moderate	Flames up to 8 feet in length; short-range spotting is possible. Trained firefighters will find these fires difficult to suppress without support from aircraft or engines, but dozer and plows are generally effective. Increasing potential for harm or damage to life and property.
Class 4 - High	Large Flames, up to 30 feet in length; short-range spotting common; medium range spotting possible. Direct attack by trained firefighters, engines, and dozers is generally ineffective, indirect attack may be effective. Significant potential for harm or damage to life and property
Class 5- Very High	Very large flames up to 150 feet in length; profuse short-range spotting, frequent long-range spotting; strong fire-induced winds. Indirect attack marginally effective at the head of the fire. Great potential for harm or damage to life and property.

Source: Southern Wildfire Risk Assessment Summary Report



4.11.3 Previous Occurrences

The following table presents NCEI identified wildfire events and the resulting damage totals in Curry County from the period 2001 - 2021.

Table 60: Curry County NCEI wildfire Events, 2001 - 2021

Event Type	Number of Events	Property Damage	Crop Damage	Deaths	Injuries
Wildfire	3	\$350,000	\$0	0	3

Source: NCEI

The following provides brief descriptions of notable NCEI identified wildfire events:

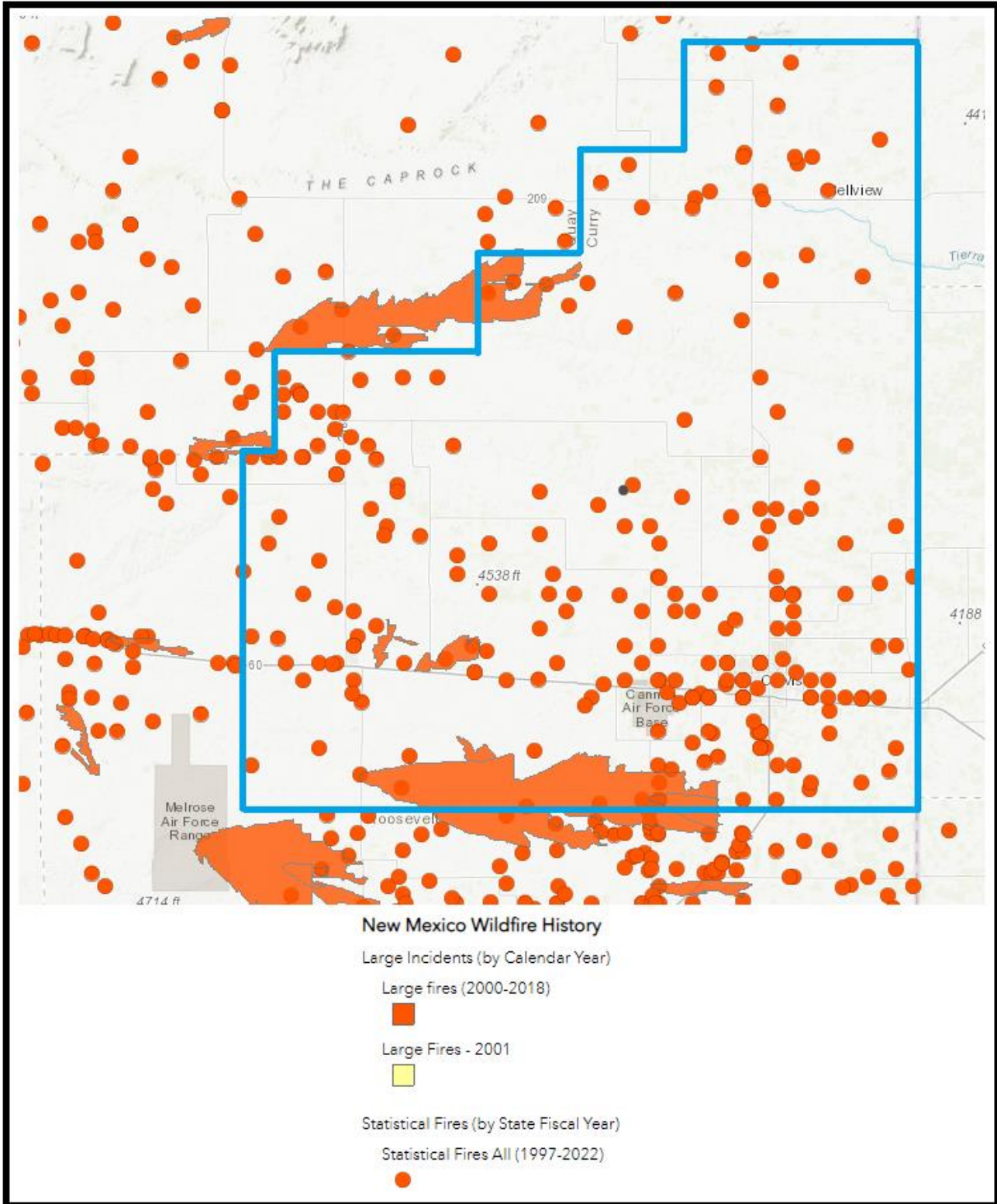
April 17, 2011, Curry County: Several media outlets as well as the Southwest Coordination Center reported that a grass fire erupted during the late morning hours of the 17th. A person traveling along Highway 267 had a blowout which caused sparks along the rim of the vehicle, igniting the fire. The fire raced eastward from six miles south of Melrose eastward along the Curry/Roosevelt County line for approximately 20 miles as antecedent dry conditions and east winds of at least 20 mph fueled the fire. In all, 24,000 acres of land was scorched, much of it cattle grazing land, and three homes were destroyed. No cattle were harmed; however, three firefighters were treated for minor burns and smoke inhalation. Damages were reported at \$300,000.

February 28, 2011, Curry County: A wildfire scorched a 7 mile long by 1/2-mile-wide path from Curry Road H near Ned Houk Memorial Park to Curry Road D. One home was damaged in the area of Curry Road G and 19. In all, the wildfire burned 4,000 acres. This wildfire continued to burn into March. Damages were reported at \$50,000.

In addition, data was sourced from the Wildfire History Map. This web mapping application displays wildfire history in the state of New Mexico and relevant fire management data. Wildfire history data includes all statistical fires reported by New Mexico State Forestry (as points), as well as large incidents (as polygons) that get reported annually by the U.S. Forest Service. Mapping does not include fires recorded on federal lands that don't reach large incident status. Data is compiled from a variety of sources, including data from New Mexico State Forestry Division, Department of Transportation, Resource Geographic Information System Program Data Clearinghouse, and the Bureau of Land Management, Forest Service, and the U.S. Geological Survey.



Map 36 – New Mexico State Forestry Curry County Wildfire Map, 1997 - 2022



Source: New Mexico State Forestry

According to the above map, Curry County has experienced 211 statistical wildfires for the period 1997 – 2022.



Additionally, the information from the New Mexico Forestry Division indicates that most fires within Curry County were human caused. Data from 2016 shows that for that year Curry County had six reported fires burning 8,932 acres, of which five were human caused.

4.11.4 Probability of Future Events

Predicting the probability of wildfire occurrences is tremendously challenging due to the large number of factors involved and the random nature of formation. However, the following map, using data from U.S. Forest Service Rocky Mountain Research Station, indicates that large areas of the county are at a very low risk for wildfire occurrence.

Map 37 – Curry County Wildfire Risk



Source: State of New Mexico



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

Table 61: NCEI Curry County Wildfire Probability Summary

Data	Events
Number of Days with NCEI Reported Event (2001-2021)	3
Average Events per Year	<1

Source: NCEI

However, NCEI data only captures large wildfire events and as such underreports the true nature of the hazard. Data from the New Mexico State Forestry Division indicates the following:

Table 62: New Mexico State Forestry Division Curry County Wildfire Probability Summary

Data	Events
Number of Statistical Wildfires (1997-2022)	211
Average Events per Year	8

Source: New Mexico State Forestry Division

4.11.5 Vulnerability and Impact

All participating jurisdictions are vulnerable to wildfires. Wildfires have the ability to impact a portion of, or the entire, planning area. Unfortunately, there is no accurate method of predicting the location or extent of a wildfire’s starting point or the potential impact. Although this plan addresses vulnerability to wildfires, without the possibility of being able to calculate all components of risk at a jurisdictional level, each jurisdiction’s individual risk to wildfires is not possible to calculate and is assumed as equal.

Data from the NCEI indicates that Curry County can expect on a yearly basis, relevant to Winter Storm events:

Table 63: NCEI Curry County Wildfire Impact Summary

Data	Recorded Impact
Deaths or Injuries (2001-2021)	3
Average Number of Deaths or Injuries	<1
Total Reported NCEI Property Damage (2001-2021)	\$350,000
Average Property Damage per Year	\$17,500

Source: NCEI

While difficult to quantify, as the impacts of future wildfires will be determined by many factors, in general the following impacts may be expected:

Table 64: Economic Impact of Wildfire

Jurisdiction	Crop Loss	Job Loss	Income Loss	Tax Revenue Loss	Tourism Loss
Curry County	Yes	Yes	Yes	Yes	Yes
Clovis	Yes	Yes	Yes	Yes	Yes
Grady	Yes	Yes	Yes	Yes	Yes
Melrose	Yes	Yes	Yes	Yes	Yes
Texico	Yes	Yes	Yes	Yes	Yes

Table 65: Environmental Impact of Wildfire

Jurisdiction	Loss of Wildlife Habitat	Degradation of Air and Water Quality	Soil Erosion	Increased Flood Risk
Curry County	Yes	Yes	Yes	Yes
Clovis	Yes	Yes	Yes	Yes



Table 65: Environmental Impact of Wildfire

Jurisdiction	Loss of Wildlife Habitat	Degradation of Air and Water Quality	Soil Erosion	Increased Flood Risk
Grady	Yes	Yes	Yes	Yes
Melrose	Yes	Yes	Yes	Yes
Texico	Yes	Yes	Yes	Yes

Table 66: Social Impact of Wildfire

Jurisdiction	Population Migration	Loss of Life or Injury	Health Risk	Reduced Quality of Life
Curry County	Yes	Yes	Yes	Yes
Clovis	Yes	Yes	Yes	Yes
Grady	Yes	Yes	Yes	Yes
Melrose	Yes	Yes	Yes	Yes
Texico	Yes	Yes	Yes	Yes

Vulnerability of Population

A jurisdiction’s population greatest vulnerability is an inability to properly evacuate. They can be caught off guard due to improper warning systems and become trapped in a growing wildfire.

Vulnerability of Systems

Table 67: Vulnerability of Systems to Wildfires, Curry County

Community Lifeline	Vulnerability
Safety and Security	First responders may be exposed to the impacts of wildfire incidents. Facilities may be damaged. Resources may be expended responding to calls for assistance. Communications may be disrupted due to infrastructure damage and/or system overload.
Food, Water, Shelter	Crops may be damaged. Water may be contaminated. Shelters may be damaged or destroyed. The delivery of energy services to shelters may be interrupted by damaged infrastructure. Communications may be disrupted due to infrastructure damage and/or systems overload.
Health and Medical	Facilities may be damaged or destroyed. Respiratory issues may be prevalent. The delivery of energy and communications may be disrupted by infrastructure damage. Resources may be expended responding to the community’s healthcare needs.
Energy	The delivery of power and natural gas may be disrupted due to infrastructure damage.
Communications	System overload or infrastructure damage may cause communications to be disrupted. Landline and cellular networks may be overloaded. Electronic equipment may be damaged from ash and smoke.
Transportation	Roads and railroads may be damaged or impassible. Evacuation may be clogged. Air travel may be delayed or cancelled due to safety concerns.
Hazardous Materials	First responders may be exposed to the impacts of wildfire incidents. Facilities may be damaged. Resources may be expended responding to calls for assistance. Communications may be disrupted due to infrastructure damage and/or system overload.



4.11.6 Critical Facilities & Infrastructure

All infrastructure and critical facilities are equally at risk since wildfires may impact the entire planning area.

4.11.7 Land Use and Development Trends

Increased residential growth increases a community’s risk to wildfires by way of its facilities, population, and systems’ vulnerabilities. None of the participating jurisdictions have seen significant growth into identified hazard areas thus their risk to wildfires has not increased. Any buildings or infrastructure built in the future will have the same risk as other buildings or infrastructure built within the identified hazard areas.

4.11.8 Unique and Varied Risk

The planning area does not have any unique or varied risks throughout the participating jurisdictions. The county at large is geographically monolithic comprising of flat land and farm fields. Additionally, variations in vegetation composition are integrated into the WUI GIS analysis used throughout this section.

Curry County has created a Community Wildfire Protection Plan (CWPP) to reduce the overall vulnerability. The CWPP identifies specific areas at risk and provides actions that can be taken to reduce risk. The Healthy Forests Restoration Act (HFRA) provides communities with a CWPP an opportunity to influence where and how federal agencies implement fuel reduction projects on federal lands. Additionally, communities with CWPPs in place are given priority for funding of HFRA hazardous fuels reduction projects. The Curry County CWPP indicates the following risk rating for each participating jurisdictions.

Table 68: Curry County CWPP Communities at Risk

Jurisdiction	Risk Rating 2016
Curry County	Moderate
Clovis	Moderate
Grady	Moderate
Melrose	High
Texico	Moderate

Source: 2016 Curry County CWPP

4.12 Winter Storms

4.12.1 Hazard Description

A winter storm encompasses multiple effects caused by winter weather. Included are strong winds, ice storms, heavy or prolonged snow, sleet, and extreme temperatures. Winter storms can be increasingly hazardous in areas and regions that only see winter storms intermittently.

This plan defines winter storms as a combination of the following winter weather effects as defined by NOAA and the NWS.



- **Ice Storm:** An ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication. These accumulations of ice make walking and driving extremely dangerous. Significant ice accumulations are usually accumulations of 1/4" or greater.
- **Heavy Snow:** This generally means snowfall accumulating to 4" or more in depth in 12 hours or less; or snowfall accumulating to 6" or more in depth in 24 hours or less.
- **Winter Storm:** Hazardous winter weather in the form of heavy snow, freezing rain, or heavy sleet. It may also include extremely low temperatures and increased wind.
- **Cold Wave/Extreme Cold:** As described by NWS, a cold wave is a rapid fall in temperature within a 24-hour period requiring substantially increased protection to agriculture, industry, commerce, and social activities. As evidenced by past incidents across the U.S., extreme cold can cause impact to human life and property.

4.12.2 – Location and Extent

Winter storms occur regularly throughout Curry County and its participating jurisdictions and often affect the entire planning area. These events occur on a large geographic scale, often affecting multiple counties, regions, and states.

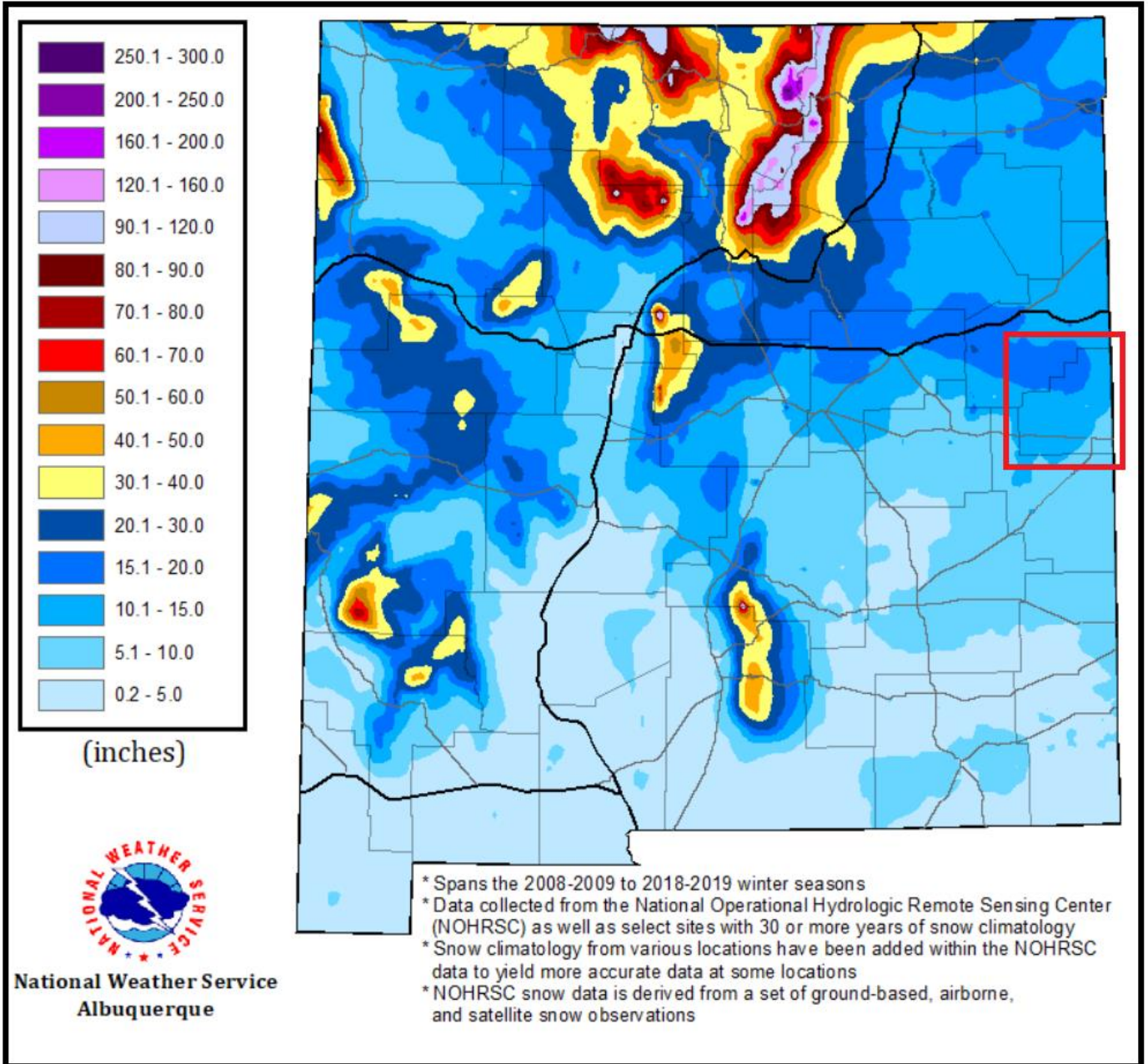
Winter storms typically form with warning and are often anticipated. Like other large storm fronts, the severity of a storm is not as easily predicted and when it is, the window of notification is up to few hours to under an hour. Although meteorologists estimate the amount of snowfall a winter storm will drop, it is not known exactly how many feet of snow will fall, whether or not it will form an ice storm, or how powerful the winds will be until the storm is already affecting a community.

Winter storms can range from moderate snow over a few hours to blizzard conditions with high winds, freezing rain or sleet, heavy snowfall with blinding wind-driven snow and extremely cold temperatures that last several days.

Historically, as indicated by the following maps, Curry County and its participating jurisdictions will typically an average of 10 to 20 inches of snowfall and an annual two to five days with over one inch of snow.



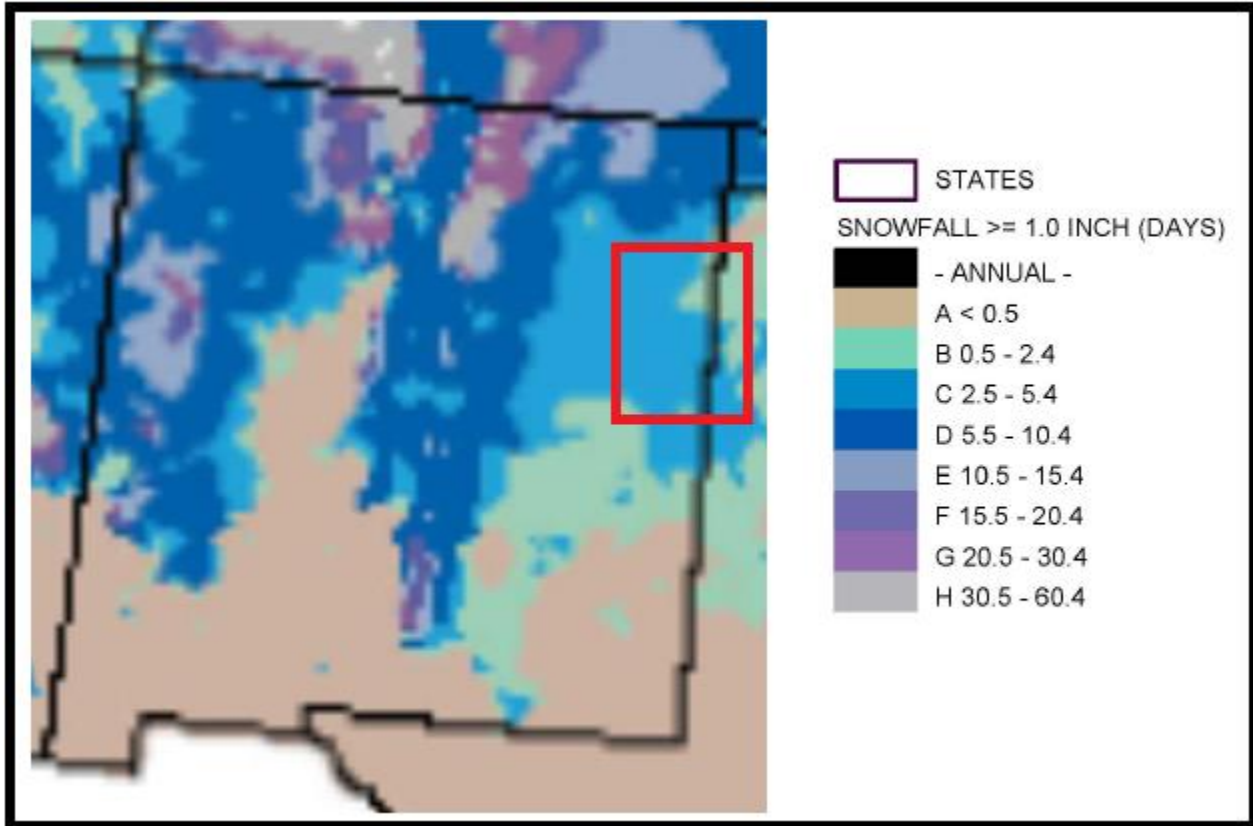
Map 38 – Curry County Average Snowfall



Source: NOAA



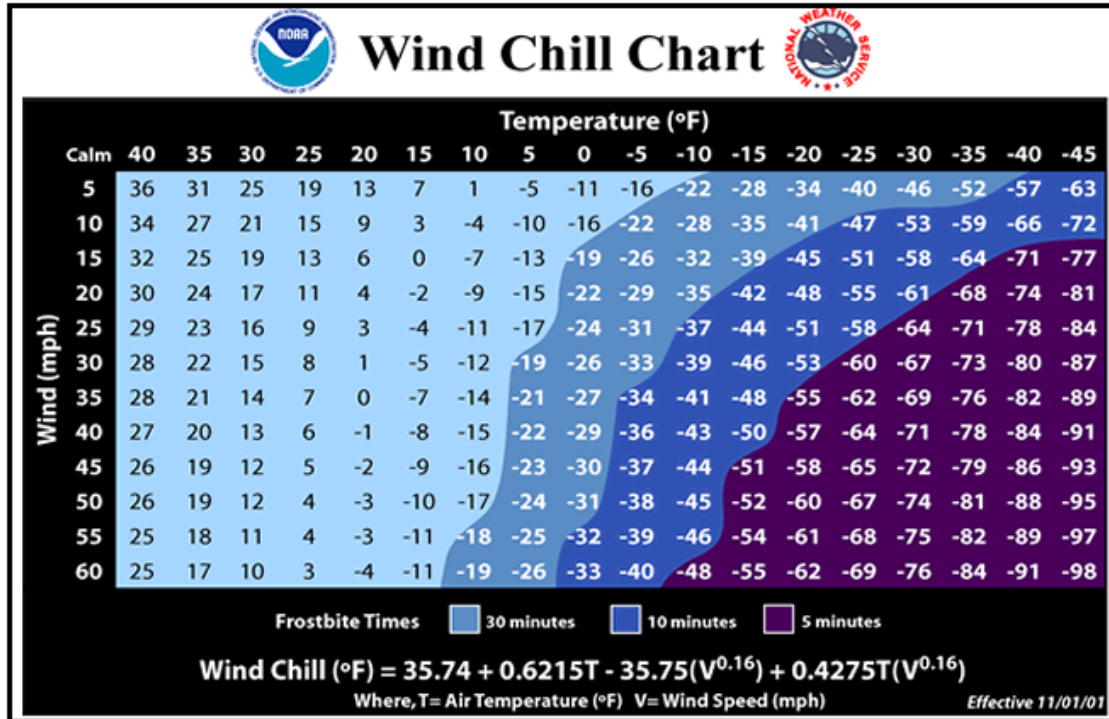
Map 39 – Curry County Average Annual Number of Days with Snowfall ≥ 1 ”



Source: NOAA

Severe winter storms can be accompanied by extremely cold temperatures accompanied by strong winds result in potentially lethal wind chills. The Wind Chill is the temperature your body feels when the air temperature is combined with the wind speed. It is based on the rate of heat loss from exposed skin caused by the effects of wind and cold. As the speed of the wind increases, it can carry heat away from your body much more quickly, causing skin temperature to drop. The Wind Chill chart shows the difference between actual air temperature and perceived temperature, and amount of time until frostbite occurs.

Chart 1: Wind Chill Chart



4.12.3 Previous Occurrences

The following table presents NCEI identified Winter Storm events, by category, and the resulting damage totals in Curry County from the period 2001 - 2021.

Table 69: Curry County NCEI Winter Storm Events, 2001 - 2021

Event Type	Number of Events	Property Damage	Crop Damage	Deaths	Injuries
Ice Storm	1	\$50,000	\$0	0	0
Extreme Cold	1	\$0	\$0	0	0
Winter Storm	1	\$0	\$0	0	0

Source: NCEI

The following provides brief descriptions of notable NCEI identified severe winter storm events:

November 26, 2015, Curry County: One quarter inch to one half inch of freezing rain downed power lines around the Clovis area. Near 2000 residents were without power. Widespread treacherous travel conditions were reported across the county.

4.12.4 Probability of Future Events

Predicting the probability of Winter Storm occurrences is tremendously challenging due to the large number of factors involved and the random nature of formation. Data from the NCEI indicates that Curry County can expect on a yearly basis, relevant to Winter Storm events:



Table 70: Curry County Winter Storm Probability Summary

Data	Events
Number of Days with NCEI Reported Event (2001-2021)	3
Average Events per Year	<1

Source: NCEI

4.12.5 Vulnerability and Impact

Data from the NCEI indicates that Curry County can expect on a yearly basis, relevant to Winter Storm events:

Table 71: Curry County Winter Storm Impact Summary

Data	Recorded Impact
Deaths or Injuries (2001-2021)	0
Average Number of Deaths or Injuries	0
Total Reported NCEI Property Damage (2001-2021)	\$50,000
Average Property Damage per Year	\$2,500

Source: NCEI

While difficult to quantify, as the impacts of future severe storms will be determined by many factors, in general the following impacts may be expected:

Table 72: Potential Impact of Winter Storms

Jurisdiction	Crop Loss	Income Loss	Tax Revenue Loss	Tourism Loss	Deaths or Injuries	Increased Urban Infrastructure Stress
Curry County	Yes	Yes	Yes	Yes	Yes	Yes
Clovis	Yes	Yes	Yes	Yes	Yes	Yes
Grady	Yes	Yes	Yes	Yes	Yes	Yes
Melrose	Yes	Yes	Yes	Yes	Yes	Yes
Texico	Yes	Yes	Yes	Yes	Yes	Yes

Extremely cold temperatures are a threat to anyone exposed to them. Extreme cold can cause frostbite and hypothermia. Bitterly cold temperatures can also burst water and create an excessive demand on providers to delivery energy for household heating. There are also fire dangers associated with home heating.

Heavy snow can paralyze communities. Roads can become hazardous which may cause accidents, disrupted flow of supplies, and challenges in the delivery of emergency and medical services. Large accumulations of snow can collapse roofs of buildings and knock down trees and power lines. Heavy snow can also isolate rural communities and kill livestock on farms.

Ice storms can bring down trees and topple utility poles and communication towers. Ice can disrupt communications and power for days while utility companies repair extensive damage. Ice covered roads are dangerous and may cause accidents, disrupted flow of supplies, and challenges with the delivery of emergency and medical services.

Vulnerability of Population

Curry County and its participating jurisdictions’ population are equally vulnerable throughout the planning area. Curry County and its participating jurisdictions’ citizens are at risk from prolonged, cold temperatures if they fail to be sheltered in an adequately heated structure or are unable to reach shelter. Some structures are dependent on electricity for their heating making them vulnerable if a winter storm causes power outages. Additionally, if a winter storm restricts travel, people may become immobile on roadways and be at the mercy of their vehicle’s gas supply. Exposure from winter storms in any of these cases can lead to frostbite and hypothermia. Both of these conditions if untreated can lead to death.



Vulnerability of Systems

Table 73: Vulnerability of Systems to Winter Storm Curry County

Community Lifeline	Vulnerability
Safety and Security	Personnel may be exposed to extreme cold for extended periods of time. Travel for first responders may be hazardous due to ice and snow. Resources may be expended responding to requests for assistance.
Food, Water, Shelter	Water service may become disrupted due to damaged water mains, pipes, and other infrastructure. Grocery stores may be closed or may be unable to restock shelves due to hazardous travel conditions or energy service disruptions. Shelters may be required to open. Shelters may experience power outages due to increased demand on energy providers or damaged infrastructure.
Health and Medical	Healthcare facilities may experience power outages due to infrastructure damage or an increased demand on energy providers. Healthcare resources may be expended responding to the community’s healthcare needs.
Energy	Service may be disrupted due to infrastructure damage. Providers may be challenged by an increased demand for energy.
Communications	Communication infrastructure may be damaged by snow and ice.
Transportation	Roads and bridges may become hazardous and/or damaged by extremely cold temperatures, snow, and ice. Air travel may be delayed or cancelled due to safety concerns.
Hazardous Materials	Winter Storm will have little effect on fixed sites that store or produce hazardous materials. However, hazardous materials being transported may have a greater risk of being released due to an accident generated by hazardous roads.

4.12.6 Critical Facilities & Infrastructure

Critical infrastructure vulnerability to Winter Storm is the same throughout Curry County and its participating jurisdictions

4.12.7 Land Use and Development Trends

Increased residential growth increases a community’s risk to Winter Storm by way of its facilities, population, and systems’ vulnerabilities. Only the City of Clovis has seen jurisdictional growth and thus their risk to severe storms has slightly increased.

4.12.8 Unique and Varied Risk

Winter storms have ability to affect a portion of or the entire planning area. Unfortunately, there is no accurate method of predicting the location or extent of a Winter Storm event’s impact, that being if it will affect one participating jurisdiction up to any number or all participating jurisdictions.

Vulnerable populations are at a specific risk to winter storms. Clovis is the only participating jurisdiction with assisted living centers. These locations are equipped with backup generators to keep them heated during winter storms. As long as they have the resources to run the generators, they are not vulnerable to winter storms that bring down the electrical grid. Transportation routes throughout the planning area are minimally affected but are not considered more than a nuisance.

It is not possible to predict any varying probability between the participating jurisdictions with the exception of varying risk as it is proportionate to a participating jurisdiction’s demographics and the previously mentioned factors. Logically, participating jurisdictions with a greater population are at a higher risk as participating jurisdictions with a lower population are at a lower risk.



Section 5 – Mitigation Strategy

5.1 Introduction

As part of this planning effort, Curry County and its participating jurisdictions worked to minimize the risk of future impacts from identified hazards to all citizens of the county. 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 Curry County for all our citizens

As per the previous hazard mitigation plan, and considering all of the factors listed above, the MPC continues to implement the following mitigation strategy:

- **Implement** the action plan recommendations of this plan.
- **Use** existing regulations, policies, programs, procedures, and plans already in place.
- **Monitor** multi-objective management opportunities, share and package funding opportunities, and garner broader constituent support.
- **Communicate** the hazard information collected and analyzed through this planning process so that local governments and residents better understand where disasters occur, and what they can do to mitigate their impacts. In doing so, also publicize the success stories that have been achieved through the County’s ongoing mitigation efforts.

5.2 Identification of Goals

The following goals and objectives for hazard mitigation were established from the MPC’s discovery and deliberation process, which consisted of:

- A review of identified hazards, vulnerabilities and impacts
- A review of hazard events subsequent to the last hazard mitigation plan revision
- A review of demographic, infrastructure and built environment data
- A review of the goals and objectives identified in previous hazard mitigation plans
- A review of local mitigation strategies and goals
- A review completed and remaining hazard mitigation actions

These goals represent a vision for hazard mitigation and disaster resistance for Curry County. Each mitigation goal was reviewed and approved by both MPC members and stakeholders. Through group discussions at meetings, the MPC refined and combined the identified goals from the previous hazard mitigation plan. During this process 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. The identified goals are as follows:

- **Goal 1:** Reduce the risk to the people and property from the identified hazards in this plan.
- **Goal 2:** Work to protect all vulnerable populations, structures, and critical facilities from the impacts of the identified hazards.
- **Goal 3:** Improve outreach measure to inform public of impending or active incidents.



5.3 Mitigation Capabilities

Curry County and its participating jurisdictions’ governments utilize a single emergency management agency for their services, this being the CCOEM. Local initiatives, programs, and policies are often facilitated by the CCOEM in coordination with local governments, and other emergency related entities, as it is the sole, primary agency responsible for emergency management. The CCOEM does this by fostering local partnerships and relationships, an active Local Emergency Planning Committee (LEPC), and assisting local governments with funding and training initiatives.

All future implemented mitigation projects will be overseen by the CCOEM and will coordinate with the corresponding local municipal government. The corresponding local government involvement will vary by jurisdiction and be decided by that jurisdictional government as they see it fit to best plan, design, and implement mitigation projects.

Each jurisdiction has the ability to levee their own taxes through law, or in the case of school districts, through referendum. Each jurisdiction has their own budget to appropriate towards hazard mitigation as they deem appropriate or necessary. Additionally, the CCOEM will seek out grant opportunities through the State of New Mexico and FEMA to help decrease the financial burden on local government.

The development and implementation of this plan comes with the full authority of the CCOEM, through the participating jurisdictions, and all resources deemed appropriate and necessary.

All participating jurisdictions in the Curry County HMP are obligated by law to abide by the International Building Codes 2009. The Curry County HMP does not change any of the codes requirements and therefore does not interfere with any jurisdiction’s current building code enforcement or land use planning. Some of the participating jurisdictions have adopted newer building codes, these are noted in the capabilities’ tables.

Curry County and its participating jurisdictions adhere to a wide variety of land use and zoning plans and restrictions.

The following tables outline each jurisdiction’s authorities, resources, policies, and programs as it relates to hazard mitigation. Personnel resources are measures on a scale according to the U.S. Small Business Administration’s size categories: (1 – 6) Micro, (7 – 250) Small, (251 – 500) Medium, (501 – 1000) Large, and (> 1000) Enterprise. It is assumed any labor needed will be contracted for jurisdictions with no personnel resources pertaining to mitigation.

Table 74: Local Mitigation Capabilities

Jurisdiction	Leading Authority	Policies & Programs	Personnel Resources
Curry County	County Commissioners	International Building Codes 2009, Wildfire Prevention Codes	Fire (Small), EOC (Micro), Police (Micro), Public Works (Small)
Clovis	City Commission, Office of Emergency Management	International Building Codes 2009	Fire (Small), Police (Small), Public Works (Micro)
Grady	Village Council	International Building Codes 2009	Fire (Micro), Public Works (Micro)
Melrose	Village Council	International Building Codes 2009	Fire (Micro), Police (Micro), Public Works (Micro)
Texico	City Council	International Building Codes 2009	Fire (Micro), Police (Micro), Public Works (Micro)



Table 75: Local Mitigation Capabilities

Jurisdiction	Building Codes	Capital Improvement Plan	Comprehensive Plan	Emergency Operations Plan
Curry County	Yes	No	No	Covered under Clovis
Clovis	Yes	No	No	Yes
Grady	Yes	No	No	Covered under Clovis
Melrose	Yes	No	No	Covered under Clovis
Texico	Yes	No	No	Covered under Clovis

Table 76: Local Mitigation Capabilities

Jurisdiction	Floodplain Management Ordinance	Growth Management Plan	Post-Disaster Plan	Site Plan Review Requirement	Subdivision Ordinance
Curry County	Yes	No	No	Yes	Yes
Clovis	Yes	No	No	Yes	Yes
Grady	Yes	No	No	No	No
Melrose	Yes	No	No	No	No
Texico	Yes	No	No	No	No

5.4 Jurisdictional Compliance with NFIP

NFIP participating jurisdictions in Curry County are required to meet the minimum standards set forth by participating in the NFIP through the local NFIP Coordinator. The county’s NFIP coordinator currently ensures all new construction projects are properly surveyed and receive an elevation certificate.

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

Key to achieving across the board reduction in flood damages is a robust community assistance, education and awareness program. As such, Curry County and its participating jurisdictions will continue to develop both electronic (including social media) and in person outreach activities.

For jurisdictional mitigation actions, specific mitigation actions supporting regional commitment to both the NFIP and CRS compliance are identified with a bold type **NFIP** in the subsequent mitigation action sections.

5.5 Classification of Mitigation Actions

For this plan update members of the MPC were provided with a complete list of previous mitigation actions and asked to review them to determine if they had been achieved, are in process or on hold, or had been cancelled. Additionally, MPC members and stakeholders were provided with forms to identify and incorporate newly identified actions.

In preparing a mitigation strategy all reasonable and obtainable mitigation actions were considered to help achieve the general goals. Priorities were developed based on past damages, existing exposure to risk, other community goals, and weaknesses identified by the local government capability assessments. In identifying mitigation actions, the following activities 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.

In preparing the county’s mitigation strategy all reasonable and obtainable mitigation actions were considered to help achieve the identified goals. In general, all identified mitigation actions can be classified under one of the following broad categories:

Emergency services: Although not typically considered a “mitigation” technique, these are actions that protect people and property during and immediately after a disaster or hazard event, including:

- Warning systems
- Evacuation planning and management
- Emergency response training and exercises
- Sandbagging for flood protection
- Installing temporary shutters for wind protection

Natural resource protection: Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems, including

- Floodplain protection
- Watershed management
- Riparian buffers
- Forest/ vegetation management
- Erosion and sediment control
- Wetland preservation and restoration
- Habitat preservation
- Slope stabilization

Prevention: Administrative or regulatory actions or processes that influence the way land and buildings are developed and built, including:

- Planning and zoning
- Building codes
- Open space preservation
- Floodplain regulations
- Stormwater management regulations
- Drainage system maintenance
- Capital improvements programming
- Shoreline and riverine setbacks

Property protection: Actions that involve the modification of existing buildings or structures to protect them from a hazard or remove them from the hazard area, including:



- Acquisition
- Relocation
- Building elevation
- Critical facilities protection
- Retrofitting
- Safe room and shatter-resistant glass
- Insurance

Public education and awareness: Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them, including:

- Outreach projects
- Speaker and/ or demonstration events
- Hazard map information
- Real estate disclosure
- Library materials
- School children’s educational programs

Structural: Actions that involve the construction of structures to reduce the impact of hazard, including:

- Reservoirs
- Dams and levees
- Diversion, detention and/or retention
- Channel modification
- Storm sewers

5.6 Prioritization of Mitigation Actions

The MPC and subject matter experts worked together to prioritize both previously identified and newly identified hazard mitigation actions. The methodology used to determine mitigation action priorities was based upon the following:

- Review of the updated risk assessments
- Review of revised goals and objectives
- Review of local capabilities

In formulating a mitigation strategy, a wide range of activities were considered to help achieve identified goals and to lessen the vulnerability to the effects of identified hazards.

A self-analysis method was used for determining and prioritizing mitigation actions. 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. The following provides a brief description of each consideration:

- Are all people within the jurisdiction being treated equally and fairly?
- Will the action disrupt the social fabric of the jurisdiction?
- Does the proposed action work and is it technically feasible?
- Does the action offer a long-term solution to the problem?
- Does the jurisdiction have adequate staffing?
- Is there someone to coordinate and lead the effort?
- Is there sufficient funding available?
- Are there ongoing administrative requirements that need to be met?



- Does the action have political and public support?
- Does the jurisdiction have the legal authority to implement the action?
- Will the jurisdiction be liable for the action or for any inaction?
- Could the action face any legal challenges?
- What are the costs and benefits of this action?
- Do the benefits exceed the costs?
- Has funding for the action been identified?

Identified actions were prioritized and were given one of the following rankings:

- **High:** Actions that should be implemented as soon as possible
- **Medium:** Actions that should be implemented in the long-term
- **Low:** Actions that should be implemented if and when funding becomes available

Of major concern was the potential or identified 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 cost effectiveness is primarily assessed on likely future benefits as these actions may not easily result in a quantifiable reduction in damage.

5.7 Completed Mitigation Actions

Curry County and its participating jurisdictions remain committed to investigating and obtaining all available grant funding for the completion of hazard mitigation projects. Since the completion of the previous HMP, the MPC has been tracking the completion status of all identified hazard mitigation actions. Unfortunately, no hazard mitigation projects have been completed.

5.8 Jurisdictional Mitigation Actions

During this plan update, the MPC assessed existing actions and developed new actions for consideration based on:

- Updated state risk assessment and information from local risk assessments
- Goals and objectives
- Existing state actions
- State and local capabilities
- Actions identified in local plans

While the Curry County hazard mitigation program has matured over the years, and unfortunate lack of funding and grant opportunities has prevented the completion of any major hazard mitigation projects. As such, relevant actions from the previous hazard mitigation plan are identified as carried over and are awaiting a funding to start.

For each identified action, the following applies:

- New actions that have been added to this plan update are identified as such.
- All mitigation action information was provided by jurisdictional officials through outreach from the MPC.



The following table provides a mitigation action cross check for each participating jurisdiction.

Table 77: Participating Jurisdiction Mitigation Action Cross Check

Hazard	Curry County Mitigation Action Number	Clovis Mitigation Action Number	Grady Mitigation Action Number	Melrose Mitigation Action Number	Texico Mitigation Action Number
Dam Failure	1, 2, 3	1	-	-	-
Drought	4, 5, 6	2, 3	1, 2	1, 2	1, 2
Flood	1, 2, 7, ,8 ,9 10	4, 5, 6, 7	3, 4, 5	3, 4	3, 4
Severe Thunderstorm	1, 2, 11, 13, 14	8, 9, 10, 11	6, 7, 8	5, 6, 7	5, 6, 7
Tornado	1, 2, 11, 13, 14	8, 9, 10, 11	6, 7, 8	5, 6, 7	5, 6, 7
Wildfire	1, 2, 11, 15, 16, 17	8 12	6, 9	5, 6, 8	5, 6, 8
Winter Storms	1, 2, 11, 14, 18, 19, 20, 21	8, 9, 10, 13	6, 7, 10	5, 6, 9	5, 6, 9

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



Table 78: Curry County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Curry County 1	Purchase equipment to update alert, broadcast and warning system to give information and instructions in the face of an impending hazard impact to prevent injury and property damage.	Dam Failure, Flood, Severe Thunderstorms, Tornado, Wildfire, Winter Storm	Clovis/ Curry County OEM	High	1, 2, 3	\$50,000 - \$200,000	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 2	Purchase and install transportation status and routing system along major transportation routes using smart grid and intelligent transit control systems.	Dam Failure, Flood, Severe Thunderstorms, Tornado, Wildfire, Winter Storm	Clovis/ Curry County OEM	Medium	1, 2, 3	\$300,000	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 3	Complete inundation mapping for all jurisdictional dams.	Dam Failure	Clovis/ Curry County OEM	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Local Budgets	Five years	New
Curry County 4	Construct remote water monitoring stations to measure drought severity in all major basins.	Drought	Clovis/ Curry County OEM	High	1, 2	\$30,000 - \$75,000 per location	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 5	Install low flow utilities in all jurisdictional buildings.	Drought	Clovis/ Curry County OEM	Medium	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 6	Conduct a Xeriscaping program for all jurisdictional owned facilities	Drought	Clovis/ Curry County OEM	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding



Table 78: Curry County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Curry County 7	Continued participation and compliance with the NFIP .	Flood	NFIP Administrator	High	1, 2	Staff Time	Local Budgets	Continuous	New. On-going to meet program requirement
Curry County 8	Conduct an upgrade of stormwater drainage systems, prioritizing areas with older systems.	Flood	Floodplain Manager, Clovis/ Curry County OEM	Medium	1, 2	\$75,000 - \$105,000 per location	HMGP, BRIC, Local Budgets	Ten years	Carried over due to lack of funding
Curry County 9	Construct rainwater retention/detention ponds at strategic locations.	Flood	Floodplain Manager, Clovis/ Curry County OEM	Low	1, 2	Facility size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 10	Purchase repetitive loss properties.	Flood	Clovis/ Curry County OEM	Low	1, 2	Per facility cost	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 11	Purchase and install critical facility backup generators.	Severe Thunderstorms, Tornado, Wildfire, Winter Storm	Clovis/ Curry County OEM	High	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 12	Institute a tree wire installation program in population centers.	Severe Thunderstorms, Tornado, Winter Storm	Clovis/ Curry County OEM	Medium	1, 2	\$5,000 - \$25,000, location and size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 13	Construct FEMA Code 361 community safe rooms.	Severe Thunderstorm, Tornado	Clovis/ Curry County OEM	Medium	1, 2	\$1,000,000 per room	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 14	Transfer existing above ground electrical utilities to underground.	Severe Thunderstorms, Tornado, Winter Storm	Clovis/ Curry County OEM	Low	1, 2	Location and size dependent	HMGP, BRIC, Local Budgets	Twenty years	Carried over due to lack of funding



Table 78: Curry County Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Curry County 15	Retrofit jurisdictional structures with screened vent enclosures, double paned glass, and spark arrestors.	Wildfire	Clovis/ Curry County OEM	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, PDM, Local Budgets	Five years	Carried over due to lack of funding
Curry County 16	Conduct removal of debris, natural fuels, and clearing of quick-to-burn vegetation.	Wildfire	Clovis/ Curry County OEM	Low	1, 2	\$10,000 - \$25,000	HMGP, BRIC, Local Budgets	As required	Carried over due to lack of funding
Curry County 17	Conduct program at all critical facilities to create defensible spaces and buffer zones void of vegetative fuel	Wildfire	Clovis/ Curry County OEM	Low	1, 2	Facility size dependent	HMGP, BRIC, Local Budgets	As required	Carried over due to lack of funding
Curry County 18	Conduct an insulation and energy upgrade efficiency program for all jurisdictional buildings.	Winter Storm	Clovis/ Curry County OEM	Low	1, 2	\$75,000 - \$125,000	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 19	Construct snow fences along major transportation routes.	Winter Storm	Clovis/ Curry County OEM	Low	1, 2	\$25,000 - \$100,000 per location	HMGP, PDM, Local Budgets	Ten years	Carried over due to lack of funding
Curry County 20	Insulate water lines in all jurisdictional facilities.	Winter Storm	Clovis/ Curry County OEM	Low	1, 2	\$10,000 - \$50,000 per location	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Curry County 21	Modernize HVAC systems in jurisdictional facilities.	Winter Storm	Clovis/ Curry County OEM	Low	1, 2	\$50,000 per location	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding



Table 79: Clovis Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Clovis 1	Complete inundation mapping for all jurisdictional dams.	Dam Failure	Clovis/ Curry County OEM	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Local Budgets	Five years	New
Clovis 2	Install low flow utilities in all jurisdictional buildings.	Drought	Clovis/ Curry County OEM	Medium	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Clovis 3	Conduct a xeriscaping program for all jurisdictional owned facilities	Drought	Clovis/ Curry County OEM	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Clovis 4	Continued participation and compliance with the NFIP and CRS.	Flood	NFIP Administrator	High	1, 2, 3	Staff Time	Local Budgets	Continuous	New. On-going to meet program requirement
Clovis 5	Acquire and preserve parcels of land subject to repetitive flooding from willing and voluntary property owners. (NFIP)	Flood	NFIP Administrator, City Planners	High	1, 2	Staff time, acquisition cost property dependent	HMGP, BRIC, Local Budgets	Ten years	Not started, lack of funding
Clovis 6	Conduct an upgrade of stormwater drainage systems, prioritizing areas with older systems.	Flood	Clovis/ Curry County OEM, City Planner	Medium	1, 2	\$75,000 - \$105,000 per location	HMGP, BRIC, Local Budgets	Ten years	Carried over due to lack of funding
Clovis 7	Construct rainwater retention/detention ponds at strategic locations.	Flood	Clovis/ Curry County OEM, City Planner	Low	1, 2	Location and size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Clovis 8	Purchase and install critical facility backup generators.	Severe Storms, Tornado, Wildfire, Winter Storm	Clovis / Curry OEM	Medium	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding



Table 79: Clovis Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Clovis 9	Institute a tree wire installation program in population centers.	Severe Thunderstorms, Tornado, Winter Storm,	Clovis/ Curry County OEM	Medium	1, 2	\$5,000 - \$25,000, location and size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Clovis 10	Transfer existing above ground electrical utilities to underground.	Severe Thunderstorms, Tornado, Winter Storm,	Clovis/ Curry County OEM	Medium	1, 2	Location and size dependent	HMGP, BRIC, Local Budgets	Twenty years	Carried over due to lack of funding
Clovis 11	Construct FEMA Code 361 community safe rooms.	Severe Thunderstorm, Tornado	Clovis/ Curry County OEM	Medium	1, 2	\$1,000,000 per room	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Clovis 12	Conduct program at all critical facilities to create defensible spaces and buffer zones void of vegetative fuel	Wildfire	Clovis/ Curry County OEM	Low	1, 2	Facility size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Clovis 13	Conduct an insulation and energy upgrade efficiency program for all jurisdictional buildings.	Winter Storm	Clovis/ Curry County OEM	Low	1, 2	\$75,000 - \$125,000	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding



Table 80: Grady Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Grady 1	Install low flow utilities in all jurisdictional buildings.	Drought	Mayor	Medium	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Grady 2	Conduct xeriscaping at all jurisdictional facilities.	Drought	Mayor	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Local Budgets	Ten years	Carried over due to lack of funding
Grady 3	Continued participation and compliance with the NFIP .	Flood	NFIP Administrator	High	1, 2, 3	Staff Time	Local Budgets	Continuous	New, to meet requirement
Grady 4	Upgrade stormwater drainage systems, prioritizing older systems.	Flood	Mayor, City Planner	Medium	1, 2	\$75,000 - \$105,000 per location	HMGP, BRIC, Local Budgets	Ten years	Carried over due to lack of funding
Grady 5	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor, City Planner	Low	1, 2	Location and size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Grady 6	Purchase and install critical facility backup generators.	Severe Thunderstorms, Tornado, Wildfire, Winter Storm,	Mayor	Medium	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Grady 7	Institute a tree wire installation program in population centers.	Severe Thunderstorms, Tornado, Winter Storm,	Mayor	Medium	1, 2	Location and size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Grady 8	Construct FEMA Code 361 community safe rooms.	Severe Thunderstorm, Tornado	Mayor	Medium	1, 2	\$1,000,000 per room	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Grady 9	Create defensible spaces and buffer zones at all jurisdictional facilities	Wildfire	Mayor	Low	1, 2	Facility size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Grady 10	Conduct an insulation and energy efficiency upgrade program for all jurisdictional buildings.	Winter Storm	Mayor	Low	1, 2	\$75,000 - \$125,000	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding



Table 81: Melrose Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Melrose 1	Install low flow utilities in all jurisdictional buildings.	Drought	Mayor	Medium	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Melrose 2	Conduct a xeriscaping program for all jurisdictional facilities.	Drought	Mayor	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Local Budgets	Ten years	Carried over due to lack of funding
Melrose 3	Upgrade stormwater drainage systems, prioritizing older systems.	Flood	Mayor, City Planner	Medium	1, 2	\$75,000 - \$105,000 per location	HMGP, BRIC, Local Budgets	Ten years	Carried over due to lack of funding
Melrose 4	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor, City Planner	Low	1, 2	Facility size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Melrose 5	Purchase and install critical facility backup generators.	Severe Storm, Tornado, Wildfire, Winter Storm	Mayor	Medium	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Melrose 6	Institute a tree wire installation program in population centers.	Severe Thunderstorm, Tornado, Winter Storm	Mayor	Medium	1, 2	\$5,000, location and size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Melrose 7	Construct FEMA Code 361 community safe rooms.	Severe Thunderstorm, Tornado	Mayor	Medium	1, 2	\$1,000,000 per room	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Melrose 8	Create defensible spaces and buffer zones at all jurisdictional facilities	Wildfire	Mayor	Low	1, 2	Facility size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Melrose 9	Conduct an insulation and energy upgrade efficiency program for all jurisdictional buildings.	Winter Storm	Mayor	Low	1, 2	\$75,000 - \$125,000	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding



Table 82: Texico Mitigation Actions

Action Identification	Description	Hazard Addressed	Responsible Party	Overall Priority	Goal(s) Addressed	Estimated Cost	Potential Funding Source	Proposed Completion Timeframe	Status
Texico 1	Install low flow utilities in all jurisdictional buildings.	Drought	Mayor	Medium	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Texico 2	Conduct a xeriscaping program for all jurisdictional facilities.	Drought	Mayor	Low	1, 2	\$5,000 - \$50,000 per location	HMGP, BRIC, Local Budgets	Ten years	Carried over due to lack of funding
Texico 3	Upgrade stormwater drainage systems, prioritizing older systems.	Flood	Mayor, City Planner	Medium	1, 2	\$75,000 - \$105,000 per location	HMGP, BRIC, Local Budgets	Ten years	Carried over due to lack of funding
Texico 4	Construct rainwater retention/detention ponds at strategic locations.	Flood	Mayor, City Planner	Low	1, 2	Facility size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Texico 5	Purchase and install critical facility backup generators.	Severe Storm, Tornado, Wildfire, Winter Storm	Mayor	Medium	1, 2	\$25,000 - \$50,000 per facility	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Texico 6	Institute a tree wire installation program in population centers.	Severe Thunderstorm, Tornado, Winter Storm	Mayor	Medium	1, 2	\$5,000, location and size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Texico 7	Construct FEMA Code 361 community safe rooms.	Severe Thunderstorm, Tornado	Mayor	Medium	1, 2	\$1,000,000 per room	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Texico 8	Create defensible spaces and buffer zones at all jurisdictional facilities	Wildfire	Mayor	Low	1, 2	Facility size dependent	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding
Texico 9	Conduct an insulation and energy upgrade efficiency program for all jurisdictional buildings.	Winter Storm	Mayor	Low	1, 2	\$75,000 - \$125,000	HMGP, BRIC, Local Budgets	Five years	Carried over due to lack of funding



5.9 Mitigation Action Implementation and Monitoring

Curry County and all participating jurisdictions, along with relevant identified positions for each mitigation action, are responsible for implementing each mitigation action. To foster accountability and increase the likelihood that actions will be implemented, every proposed action is assigned to a specific department or position as a champion. In general:

- The identified champion will be responsible for tracking and reporting on action status.
- The identified champion should provide input on whether the action as implemented is successful in reducing vulnerability, if applicable.
- 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 determine if the action is being implemented according to plan.

In general, CCOEM is responsible for monitoring the progress of mitigation activities and projects throughout the county in conjunction with participating jurisdictions. To facilitate the tracking of any awarded hazard mitigation grants, CCOEM, in conjunction with participating jurisdictions, will compile a list of projects funded throughout the calendar year, if any, and add it to an electronic database. Additionally, the MPC will be solicited annually to provide information on any other mitigation projects that were not funded through hazard mitigation grants for addition to the electronic database.

To track mitigation projects from initiation to closeout, participating jurisdictions will use a project tracking spreadsheet that includes, at a minimum, the following information:

- Applicant/Subrecipient
- Grant Identifier
- Contractor
- Total Cost Estimate
- Federal/Local share
- Award Date
- Period of Performance
- Quarterly Reports
- Subrecipient Risk
- Reimbursements

Upon completion of a project, a member of the CCOEM or the awarded participating jurisdiction will conduct a closeout site visit to:

- Review all files and documents
- Review all procurement files and contracts to third parties
- Take photos of the completed project

Project closeout packages will generally be submitted 90 days after a project has been completed, and will include the following:

- Summary of documentation
- Pictures of completed project
- Materials, labor and equipment forms, if required
- Close-out certification



5.10 Plan Integration

The Curry County HMP will be incorporating into existing planning mechanisms in varying processes. These processes will be tailored to the unique characteristics of the planning mechanism and the governing structure of each participating jurisdiction.

Emergency Management Planning

All jurisdictions in the Curry County HMP, have deferred their emergency management authority to the CCOEM.

Emergency Operations Plans – The Curry County Emergency Operations Plan (EOP) will be reviewed and updated to reflect the most probable and dangerous hazard event scenarios from the HMP’s risk assessment. Additionally, the HMP will be added in its entirety as an Appendix to the EOP. This revision is the responsibility of the CCOEM for all of the jurisdictions participating in this plan. Upon revision completion, all participating jurisdictions and appropriate emergency services will be notified of the revisions and sent out new copies of the EOP.

State of New Mexico Hazard Mitigation Plan – The state’s HMP is required by FEMA regulation to include all local HMPs. The process of integrating the Curry County HMP into this plan is already an established process and is managed by the New Mexico Department of Homeland Security and Emergency Management.

Infrastructure, Development & Construction Projects

All jurisdictions in Curry County approach infrastructure, development, and construction projects in the same way. The demographics of Curry County allows for planning to exist only through collaboration with their LEPC.

Curry County LEPC

The Curry County LEPC is a conduit for all mitigation actions and projects. It is headed by the CCOEM and meets quarterly, although there is flexibility in their schedule. The location of the meetings is not fixed as to increase jurisdictional participation. Members of the LEPC come from all jurisdictions and a wide variety of local agencies and departments.

Capital Improvement & Economic Development Planning

Upon adoption of this plan, the CCOEM will notify each participating jurisdiction’s authority. The notification will also contain a special notice to incorporate the following procedure into any capital improvement projects or economic development planning they may initiate.

Upon project conception the county commissioners, city council, school board, mayor, or school superintendent, will contact the CCOEM for funding guidance and grant assistance. In Curry County and its participating jurisdictions improvement and development projects rely on grant funding. The CCOEM will advise the project proposing jurisdiction on which grant program is appropriate.

Following a funding source decision, a project proposal will be written by the CCOEM. The proposals will then return to the project proposing jurisdiction and undergo a vote by the appropriate governing body for approval.

Upon approval by the governing body, the CCOEM will assist in applying for and managing the grant funding for the new improvement or development project.

Any and all economic development plans initiated or supported by a jurisdiction will undergo a hazard application process in which all hazard risk assessments from the HMP will be weighed into the cost to benefit analysis of a capital improvement project or economic development planning. This can be done at the local level prior to working with the CCOEM and LEPC or exist as a known future consideration and requirement. However, if done at the local level, it must be reviewed and approved by the CCOEM. If the hazard assessment process is not done at the local level it will be completed by the CCOEM.



5.11 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 of a single jurisdiction. This section provides a general description of some of the avenues available to jurisdictions to defray the cost of implementing mitigation actions. The following are potential available funding streams:

- **Hazard Mitigation Grant Program (HMGP):** The HMGP assists in implementing long-term hazard mitigation measures following Presidential disaster declarations. Funding is available to implement projects in accordance with State, Tribal, and local priorities.
- **Building Resilient Infrastructure and Communities (BRIC):** BRIC support states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. Working in coordination with BRIC, the National Mitigation Investment Strategy is intended to provide a national, whole-community approach to investments in mitigation activities and risk management.
- **Public Assistance Grant Program:** The mission of FEMA's Public Assistance program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. Through the Public Assistance program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain private non-profit organizations. The Public Assistance Program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process. The Federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration. The grantee determines how the non-Federal share (up to 25%) is split with the eligible applicants.
- **Small Business Administration Disaster Loans:** The Small Business Administration provides low-interest disaster loans to homeowners, renters, businesses of all sizes, and most private nonprofit organizations. Small Business Administration 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.
- **The Housing and Urban Development Agency** provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.
- **Community Development Block Grant Program -** The Community Development Block Grant program is a flexible program that provides communities with resources to address a wide range of unique community development needs. The program provides annual grants on a formula basis to general units of local government and States.
- **Individual and Households, Other Needs Assistance Program:** The Other Needs Assistance 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 provides grants for necessary expenses and serious needs that cannot be provided for by insurance, another federal program, or other source of assistance. The current maximum allowable amount for any one disaster to individuals or families is \$25,000. The program gives funds for disaster-related necessary expenses and serious needs, including the following categories:



- Personal property
 - Transportation
 - Medical and dental
 - Funeral
 - Essential tools
 - Flood insurance
 - Moving and storage
-
- WUI Grants: The 10-Year Comprehensive Strategy focuses on assisting people and communities in the WUI to moderate the threat of catastrophic fire through the four broad goals of improving prevention and suppression, reducing hazardous fuels, restoring fire-adapted ecosystems, and promoting community assistance. 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.



Appendix A – Meeting Information



480 Duke Drive, Suite 130
Franklin, TN 37067-2700
(615) 489-5558
www.BOLDplanning.com



Clovis/Curry County Emergency Management

Curry County, NM Multi-Jurisdictional Hazard Mitigation Plan Kick Off Meeting

Hazard Mitigation planning is an initiative to lessen the impact of natural hazards that the County and its jurisdiction face. This is done by completing an assessment of the hazards and how vulnerable the County is to those hazards. The next step is to develop mitigation projects for each hazard that affects the County and its jurisdictions. Best of all, by completing an approved Hazard Mitigation Plan it will open a stream of funds for the County.

This is where each one of you come in!

We need your input into the plan because you know this area better than anyone else. By participating in this meeting, you can represent your community and provide valuable experiences and ideas to the planning process.

To learn more, please join us at the meeting:

**Wednesday, May 19, 2021, virtually via Zoom
1300 – 14:00 / 1:00 p.m. – 2:00 p.m.**

Please register in advance for this meeting [here](#) or copy and paste the following link into your browser:

(https://us02web.zoom.us/j/zoommeeting/register/tZE*dOmggz0pE9Y:FZHrNI6N-aR+UW*2igr1).

After registering, you will receive a confirmation email containing details about joining.

For any questions related to the upcoming Curry County, NM MJHMP Kick-Off Meeting, or if you would like someone invited who is not on the initial participant list, please contact the contractor Emily Long at emily_c@boldplanning.com.

We look forward to your participation in this important meeting.



EVENT: __Curry County, NM HMP Kickoff Meeting__ DATE / TIME: __May 19, 2021 / __1:40PM-3:03PM__

Zoom Meeting ID: 85130856392	Curry County, NM Multi-Jurisdictional Hazard Mitigation Plan Update Kick-off Meeting	05/19/2021 01:40:49 PM	05/19/2021 03:03:50 PM
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Number	Participant Name	Organization	Title	User Email	Join Time	Leave Time	Total Duration on Kickoff Call (Minutes)
1	Emily Long (BOLDplanning Meeting Room 5)	BOLDplanning, Inc.	Program Manager/Mitigation Project Lead	meeting5@boldplanning.com	05/19/2021 01:40:49 PM	05/19/2021 03:03:50 PM	84
2	Karla O'Grady	BOLDplanning, Inc.	Regional Director	meeting5@boldplanning.com	05/19/2021 02:00:43 PM	05/19/2021 03:03:48 PM	64
3	James Woulfe	BOLDplanning, Inc	Manager, Global Solutions	meeting5@boldplanning.com	05/19/2021 01:44:28 PM	05/19/2021 03:03:50 PM	80
4	Dan Heerding	City of Clovis	Emergency Management Director	dheerding@cityofclovis.org	05/19/2021 01:46:48 PM	05/19/2021 03:03:50 PM	78
5	Ruthann Kelly	Clovis/Curry County OEM	EM Specialist	rkelly@cityofclovis.org	05/19/2021 01:52:24 PM	05/19/2021 03:01:24 PM	70
6	Paul Nelson	City of Clovis, NM	IT Director	pnelson@cityofclovis.org	05/19/2021 01:59:04 PM	05/19/2021 02:45:50 PM	57
7	Sara Williford	Clovis-Carver Public Library	Adult Services	swilliford@cityofclovis.org	05/19/2021 01:50:47 PM	05/19/2021 02:48:14 PM	56
8	Megan Palla	City of Clovis	City Commissioner	mpalla@cityofclovis.org	05/19/2021 01:53:01 PM	05/19/2021 02:47:27 PM	53
9	Bryan Ellis	High Plains Sleep Disorders Center	President/CEO	bryan@highplainsleep.com	05/19/2021 01:53:22 PM	05/19/2021 02:48:07 PM	56
10	Ken De Los Santos	Plains Regional Medical Center (Presbyterian Healthcare Services)	Support Services Manager (Safety/Security/Emergency Preparedness)	kdelossan@phs.org	05/19/2021 01:56:06 PM	05/19/2021 02:48:26 PM	54
11	Sara Gerlitz	NM DHSEM	Mitigation Specialist	saram.gerlitz@state.nm.us	05/19/2021 01:56:46 PM	05/19/2021 03:03:46 PM	67



EVENT: __ Curry County, NM HMP Kickoff Meeting __ DATE / TIME: __ May 19, 2021 / __ 1:40PM-3:03PM __

Zoom Meeting ID: 85130856392	Curry County, NM Multi-Jurisdictional Hazard Mitigation Plan Update Kick-off Meeting	05/19/2021 01:40:49 PM	05/19/2021 03:03:50 PM
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12	Teresa Broeker	Clovis Health Office	Nurse Manager	teresa.broeker@state.nm.us	05/19/2021 01:56:49 PM	05/19/2021 02:44:41 PM	47
13	Catherine Watson	NM DHSEM	Sub Grant Analyst	catherine_watson@state.nm.us	05/19/2021 01:46:17 PM	05/19/2021 02:48:15 PM	50
14	David Kube	Curry County Fire	Fire & Safety Director	dkube@currycounty.org	05/19/2021 01:57:44 PM	05/19/2021 02:48:07 PM	52
15	Shayne Walker	Ranchvale fire Dept	Firefighter	trailman968@hotmail.com	05/19/2021 01:58:26 PM	05/19/2021 01:58:26 PM	47
16	Jocelyn Padilla	NM DHSEM	Mitigation Specialist	jocelyn_padilla@state.nm.us	05/19/2021 01:58:31 PM	05/19/2021 02:48:20 PM	51
17	Freddie Salazar	Clovis Community College	Security Director	salazarf@clovis.edu	05/19/2021 02:01:04 PM	05/19/2021 02:48:57 PM	49
18	Annie Hoogland	Curry County Clerk's Office	County Clerk	ahogland@currycounty.org	05/19/2021 02:02:05 PM	05/19/2021 02:58:52 PM	58
19	Les Ciaccio	City of Clovis	Assistant City Manager	lciancio@cityofclovis.org	05/19/2021 02:02:16 PM	05/19/2021 02:48:19 PM	47
20	Casey Peacock	United Way of Eastern New Mexico	NM Southern Baptist Disaster Relief	volunteer@unitedwaynm.org	05/19/2021 02:02:36 PM	05/19/2021 02:48:07 PM	47
21	Rodney Roach	Clovis Building Safety	Director Building Safety	roach@cityofclovis.org	05/19/2021 02:04:43 PM	05/11/2021 09:39:43 AM	21
22	Michael Brockett	Curry County Sheriff's Office	Undersheriff	mbrockett@currycounty.org	05/19/2021 02:04:50 PM	05/19/2021 02:48:14 PM	45
23	Larry Nelson	ENMU	EM Specialist	lawrence.nelson@enmu.edu	05/19/2021 02:06:02 PM	05/19/2021 02:48:04 PM	43
24	Crissy Leal	La Casa Family Health Center	Practice Manager	cleal@lacasahealth.com	05/19/2021 02:14:26 PM	05/19/2021 02:48:09 PM	35



Curry County, NM, Kickoff Meeting by Participants by Phone

Number	Phone Number	Join Time	Leave Time	Total Duration on Kickoff Call (Minutes)
1	1-575-714-7788	05/19/2021 01:46:22 PM	05/19/2021 02:00:34 PM	15
2	1-505-553-5737	05/19/2021 01:59:26 PM	05/19/2021 02:48:20 PM	49
3	15757147788	05/19/2021 02:04:15 PM	05/19/2021 02:48:01 PM	44



Legal 9518
April 13, 2022
April 17, 2022

The Curry County Local Emergency Planning Committee (LEPC) will meet on April 19, 2022 at 1:00 p.m. in the City Hall Assembly Room, 321 N Connelly in Clovis, NM. This meeting will start the two (2) week public comment period on the Curry County Hazard Mitigation Plan. The plan addresses Curry County's natural hazard vulnerabilities and will comply with state and federal regulations. Contact the Clovis/Curry County Office of Emergency Management at 575-763-9494 or oem@cityofclovis.org with any questions.



LEPC
April 19, 2022

Name	Organization	Signature
Abrego, Debbie	Southwest Cheese	
Alvarez, Linda	La Casa	
Amicone, Christine	DOH/PHD SE Region	<i>Cef</i>
Baca, Bill	Volunteer	
Baize, Cecilia	Volunteer	
Ball, Ashley	CAFB	
Berry, Jena	Interim Healthcare	
Brockett, Michael	CCSO	<i>[Signature]</i>
Broeker, Teresa	DOH/PHO	
Burch, Erinn	United Way	
Campos, Jonathan	CAFB FD	
Collins, Lorenzo	Community Healthcare	
Collins, Mary	CATS	
Craigmile, Fay	CFD	
Cumpian, Renee	St. Anthonys	
De Los Santos, Ken	PRMC	<i>[Signature]</i>
Dean, Roy	ENMARC	
Dietz, Stuart	American Red Cross	
Dischert, Michelle	La Casa	<i>[Signature]</i>
Docherty, Jimmy	State NM Police	
Donofrio, Celia		



Essex, Erica	Southwest Cheese	
Flores, Jude	CAP - ENMARC	
Franse, Clayton	Red Cross	
Glowcecki, Molly	Volunteer	
Gordon, Louis	City of Clovis	
Guerin, Mitchell	CAFB	
Guevara, Misty	CAFB EM	
Guillot, Staci	CAFB	
Harmon, Cary	North Plains Mall	
Harris, Doyle	Retirement Ranch	Arvon Parks Josephine's maint. Director
Harris, James	Clovis Regional Airport	
Heerding, Dan	OEM	
Hetzel, Mike	UNITEL	
Hinchee, Margaret	Clovis Carver Public Library	
Ibarra, Maria	Salvation Army	
Ibarra, Miguel	Salvation Army	
Iremonger, Katie	Community Healthcare	
Javier, Rhallette	Community Therapies	
Jimenez, Ava	Community Therapies	
Johnson, Cliff	Civil Air Patrol	
Johnson, Nicholas	Cannon AFB	
King, Michelle	NMED	
Kshir, Bill	City of Clovis - PW	
Kube, David	Curry County	
Kube, Weldon	CFD & ENMARC	



Lewis, Sarah	BN College CCC Bookstore	
Loomis, Riley	CCSO	
Lopez, Michael	City of Clovis IT	<i>Michael Lopez</i>
Luscombe, Michael	La Casa	
Marshall, Chris	Cannon AFB	
Martinez, Alexandria	Community Healthcare	
McCorkle, Edd	Curry County	
McNeil, Nathan	CAFB-Fire	
Mirabal, Audri	La Casa	
Monarrez, Alejandra	La Casa	
Mondragon, Nick	Chamber of Commerce	
Moreno, Francisco	CAFB 27 SOW ES	
Moreno, Nancy	Fresenius	
Mowery, Eric	CHCR	
Nelson, Larry	ENMU	<i>Larry Nelson</i>
O'Connell, Jerry	Volunteer	
Odom, Joshua	CAFB	
O'Leary, David	State NM Police	
Palla, Megan	City Commissioner	
Pavlik, Kim	Kindred Hospice	
Peacock, Casey	United Way	
Pellegrino-Spear, Lisa	Clovis Main Street	
Riggan, Barbara	City of Clovis - OAD	
Roberts, Ben	Curry County	
<i>Trollinger, Kendra</i> Rutter, Twila	Interim Healthcare	<i>Kendra Trollinger</i>



Salazar, Freddie	CCC	<i>Freddie Salazar</i>
Schmitt, Travis	CAFB	
Smith, Kimberlie	CCC	
Sparks, Rhonda	CMS	
Spence, Karl	Airport/CCS	
Stebbins, Brooke	La Casa	
Suggs, Teddy Mark	Cannon AFB	
Sundquist, Leilani	Fresenius	
Taylor, Keelyn	NMED	
West, John	ENMARC	
Whitaker, Kym	Volunteer	
Williams, Daniel	Volunteer	
Williford, Elaine	NMBDR	
Williford, Sara	Clovis Carver Public Library	<i>SWW</i>
Wilson, Emma	Cannon AFB FD	



Appendix B – FEMA Approval Documentation



Appendix C – Jurisdictional Resolutions of Adoption



Appendix D – Critical Facilities