Torrance County/Town of Estancia/City of Moriarty/Town of Mountainair/Village of Willard/Village of Encino/Claunch-Pinto SWCD
Hazard Mitigation Plan

December 2017

Prepared --by Torrance County Emergency Management, the Town of Estancia, the City of Moriarty, the Town of Mountainair, the Village of Willard, the Village of Encino and the Claunch-Pinto Soil and Water Conservation District

Technical Assistance provided by AECOM of Albuquerque, NM & Germantown, MD

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Acronym List

BLM	Bureau of Land Management
BOR	Bureau of Reclamation
CDBG	Community Development Block Grant
CEDS	Comprehensive Economic Development Strategy
cfs	cubic feet per second
DMA 2000	Disaster Mitigation Act 2000
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographic Information Systems
HMP	Hazard Mitigation Plan
HMPT	Hazard Mitigation Planning Team
NFIP	National Flood Insurance Program
NMDHSEM	New Mexico Department of Homeland Security and Emergency Management
NRCS	Natural Resources Conservation Services
PGA	Peak Ground Acceleration
PRI	Priority Risk Index
QA/QC	Quality Assurance and Quality Control
SOW	Scope of Work
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
USFS	United States Forest Service
WUI	Wildfire Urban Interface

RESOLUTION 2017-055

RESOLUTION ADOPTING THE TORRANCE COUNTY HAZARD MITIGATION PLAN

WHEREAS the County of Torrance, has experienced natural hazards that result in public safety hazards and damage to private and public property;

WHEREAS the hazard mitigation planning process set forth by the State of New Mexico and the Federal Emergency Management Agency offers the opportunity to consider natural hazards and risks, and to identify mitigation actions to reduce future risk;

WHEREAS the New Mexico Office of Emergency Management is providing federal mitigation funds to support development of the mitigation plan;

WHEREAS a *Hazard Mitigation Plan* has been developed by the Torrance County Mitigation Planning Committee;

WHEREAS the *Hazard Mitigation Plan* includes a prioritized list of mitigation actions including activities that, over time, will help minimize and reduce safety threats and damage to private and public property, and

WHEREAS the draft plan was provided to each participating jurisdiction so as to introduce the planning concept and to solicit questions and comments; and to present the Plan and request comments, as required by law, and

NOW THEREFORE BE IT RESOLVED by the Torrance County Commission:

1. The Torrance County *Hazard Mitigation Plan, as submitted to the Torrance County Office of Emergency Management and the Federal Emergency Management Agency in October 2017* by the Torrance County Office of Emergency Management is hereby adopted as an official plan of Torrance County; minor revisions recommended by the Federal Emergency Management Agency and/or the New Mexico Office of Emergency Management may be incorporated without further action.

2. The participating jurisdictions departments identified in the Plan are hereby directed to pursue implementation of the recommended high priority activities that are assigned to their local municipalities.

3. Any action proposed by the Plan shall be subject to and contingent upon budget approval, if required, which shall be at the discretion of Torrance County, and this resolution shall not be interpreted so as to mandate any such appropriations.

4. The Emergency Management Director is designated to coordinate with other offices and shall periodically report on the activities, accomplishments, and progress, and shall prepare an annual progress report to be submitted to the Torrance County Office of Emergency Management. The status reports shall be submitted within the specification agreed upon by all stakeholders.

BOARD OF COUNTY COMMISSIONERS

OF TORRANCE COUNTY

Javier Sanchez, District 3, Chairman

James Frost, Commissioner, District 1

Julia DuCharme, Commissioner, District 2

ATTEST:

Linda Jaramillo, County Clerk

APPROVED AS TO FORM:

Dennis Wallin, County Attorney

RESOLUTION 2017-08

RESOLUTION ADOPTING THE TORRANCE COUNTY HAZARD MITIGATION PLAN

WHEREAS the County of Torrance, has experienced natural hazards that result in public safety hazards and damage to private and public property;

WHEREAS the hazard mitigation planning process set forth by the State of New Mexico and the Federal Emergency Management Agency offers the opportunity to consider natural hazards and risks, and to identify mitigation actions to reduce future risk;

WHEREAS the New Mexico Office of Emergency Management is providing federal mitigation funds to support development of the mitigation plan;

WHEREAS a *Hazard Mitigation Plan* has been developed by the Torrance County Mitigation Planning Committee;

WHEREAS the *Hazard Mitigation Plan* includes a prioritized list of mitigation actions including activities that, over time, will help minimize and reduce safety threats and damage to private and public property, and

WHEREAS the draft plan was provided to each participating jurisdiction so as to introduce the planning concept and to solicit questions and comments; and to present the Plan and request comments, as required by law, and

NOW THEREFORE BE IT RESOLVED by the Governing Body of the Village of Encino;

1. The Torrance County *Hazard Mitigation Plan, as submitted to the Torrance County Office of Emergency Management and the Federal Emergency Management Agency in October 2017* by the Torrance County Office of Emergency Management is hereby adopted as an official plan of Torrance County; minor revisions recommended by the Federal Emergency Management Agency and/or the New Mexico Office of Emergency Management may be incorporated without further action.

2. The participating jurisdictions departments identified in the Plan are hereby directed to pursue implementation of the recommended high priority activities that are assigned to their local municipalities.

3. Any action proposed by the Plan shall be subject to and contingent upon budget approval, if required, which shall be at the discretion of Torrance County, and this resolution shall not be interpreted so as to mandate any such appropriations.

4. The Emergency Management Director is designated to coordinate with other offices and shall periodically report on the activities, accomplishments, and progress, and shall prepare an annual progress report to be submitted to the Torrance County Office of Emergency Management. The status reports shall be submitted within the specification agreed upon by all stakeholders.

RESOLVED in session at the Regular Board Meeting this **14th day of November 2017.**

Boyd Herrington – Mayor

William Murphy – Mayor Pro-tem

Ernie Garcia – Councilor

Victor Gallegos – Councilor

Absent

Michael Alarid – Councilor

ATTEST:

Loretta Chavez – Clerk/Treasurer

RESOLUTION 2017-15

RESOLUTION ADOPTING THE TOWN OF ESTANCIA HAZARD MITIGATION PLAN

WHEREAS the Town of Estancia, has experienced natural hazards that result in public safety hazards and damage to private and public property;

WHEREAS the hazard mitigation planning process set forth by the State of New Mexico and the Federal Emergency Management Agency offers the opportunity to consider natural hazards and risks, and to identify mitigation actions to reduce future risk;

WHEREAS the New Mexico Office of Emergency Management is providing federal mitigation funds to support development of the mitigation plan;

WHEREAS a *Hazard Mitigation Plan* has been developed by the Torrance County Mitigation Planning Committee;

WHEREAS the *Hazard Mitigation Plan* includes a prioritized list of mitigation actions including activities that, over time, will help minimize and reduce safety threats and damage to private and public property, and

WHEREAS the draft plan was provided to each participating jurisdiction so as to introduce the planning concept and to solicit questions and comments; and to present the Plan and request comments, as required by law, and

NOW THEREFORE BE IT RESOLVED by the Town of Estancia Board of Trustees:

1. The Torrance County *Hazard Mitigation Plan, as submitted to the Torrance County Office of Emergency Management and the Federal Emergency Management Agency in October 2017* by the Torrance County Office of Emergency Management is hereby adopted as an official plan of the Town of Estancia; minor revisions recommended by the Federal Emergency Management Agency and/or the New Mexico Office of Emergency Management may be incorporated without further action.

2. The participating jurisdictions departments identified in the Plan are hereby directed to pursue implementation of the recommended high priority activities that are assigned to their local municipalities.

3. Any action proposed by the Plan shall be subject to and contingent upon budget approval, if required, which shall be at the discretion of Torrance County, and this resolution shall not be interpreted so as to mandate any such appropriations.

4. The Emergency Management Director is designated to coordinate with other offices and shall periodically report on the activities, accomplishments, and progress, and shall prepare an annual progress report to be submitted to the Torrance County Office of Emergency Management. The status reports shall be submitted within the specification agreed upon by all stakeholders.

BOARD OF TRUSTEES

OF THE TOWN OF ESTANCIA, NEW MEXICO

Sylvia Chavez, Mayor 11/20/17

ATTEST:

Michelle Jones - Clerk 11/20/17

RESOLUTION 2017-15

RESOLUTION ADOPTING THE TORRANCE COUNTY HAZARD MITIGATION PLAN

WHEREAS the County of Torrance, has experienced natural hazards that result in public safety hazards and damage to private and public property;

WHEREAS the hazard mitigation planning process set forth by the State of New Mexico and the Federal Emergency Management Agency offers the opportunity to consider natural hazards and risks, and to identify mitigation actions to reduce future risk;

WHEREAS the New Mexico Office of Emergency Management is providing federal mitigation funds to support development of the mitigation plan;

WHEREAS a *Hazard Mitigation Plan* has been developed by the Torrance County Mitigation Planning Committee;

WHEREAS the *Hazard Mitigation Plan* includes a prioritized list of mitigation actions including activities that, over time, will help minimize and reduce safety threats and damage to private and public property, and

WHEREAS the draft plan was provided to each participating jurisdiction so as to introduce the planning concept and to solicit questions and comments; and to present the Plan and request comments, as required by law, and

NOW THEREFORE BE IT RESOLVED:

1. The Torrance County *Hazard Mitigation Plan, as submitted to the Town of Mountainair on November 2017* by the Torrance County Office of Emergency Management is hereby adopted as an official plan of Town of Mountainair; minor revisions recommended by the Federal Emergency Management Agency and/or the New Mexico Office of Emergency Management may be incorporated without further action.

2. The participating jurisdictions departments identified in the Plan are hereby directed to pursue implementation of the recommended high priority activities that are assigned to their local municipalities.

3. Any action proposed by the Plan shall be subject to and contingent upon budget approval, if required, which shall be at the discretion of Town of Mountainair, and this resolution shall not be interpreted so as to mandate any such appropriations.

4. The Emergency Management Director is designated to coordinate with other offices and shall periodically report on the activities, accomplishments, and progress, and shall prepare an annual progress report to be submitted to the Torrance County Office of Emergency Management. The status reports shall be submitted within the specification agreed upon by all stakeholders.

TOWN COUNCIL
TOWN OF MOUNTAINAIR

Larry Zamora, Mayor Pro-Tem

Juanita Carrillo, Councilperson

Peter Nieto, Councilperson

Adrian Padilla, Councilperson

ATTEST:

Dennis Fulfer, Town Clerk

Claunch-Pinto
SOIL & WATER CONSERVATION DISTRICT
PO Box 129, Mountainair, NM 87036 Ph: 505-847-2243 Fax: 505-847-0615

RESOLUTION NO. 08 – 2017
ADOPTION OF THE TORRANCE COUNTY
HAZARD MITIGATION PLAN

WHEREAS the County of Torrance, has experienced natural hazards that result in public safety hazards and damage to private and public property;

WHEREAS the hazard mitigation planning process set forth by the State of New Mexico and the Federal Emergency Management Agency offers the opportunity to consider natural hazards and risks, and to identify mitigation actions to reduce future risk;

WHEREAS the New Mexico Office of Emergency Management is providing federal mitigation funds to support development of the mitigation plan;

WHEREAS a *Hazard Mitigation Plan* has been developed by the Torrance County Mitigation Planning Committee;

WHEREAS the *Hazard Mitigation Plan* includes a prioritized list of mitigation actions including activities that, over time, will help minimize and reduce safety threats and damage to private and public property, and

WHEREAS the draft plan was provided to each participating jurisdiction so as to introduce the planning concept and to solicit questions and comments; and to present the Plan and request comments, as required by law, and

NOW THEREFORE BE IT RESOLVED by the Claunch-Pinto Soil and Water Conservation District:

1. The Torrance County *Hazard Mitigation Plan, as submitted to the Torrance County Office of Emergency Management and the Federal Emergency Management Agency in October 2017* by the Torrance County Office of Emergency Management is hereby adopted as an official plan of Torrance County; minor revisions recommended by the Federal Emergency Management Agency and/or the New Mexico Office of Emergency Management may be incorporated without further action.

2. The participating jurisdictions departments identified in the Plan are hereby directed to pursue implementation of the recommended high priority activities that are assigned to their local municipalities.

3. Any action proposed by the Plan shall be subject to and contingent upon budget approval, if required, which shall be at the discretion of Torrance County, and this resolution shall not be interpreted so as to mandate any such appropriations.

The Emergency Management Director is designated to coordinate with other offices and shall periodically report on the activities, accomplishments, and progress, and shall prepare an annual progress report to be submitted to the Torrance County Office of Emergency Management. The status reports shall be submitted within the specification agreed upon by all stakeholders.

NOW THEREFORE, on this 3rd day of November, 2017 the Board of Supervisors of the Claunch-Pinto Soil & Water Conservation District being in session in accordance with the Open Meetings Act, a quorum being present, and following public discussion does hereby resolve to adopt the Torrance County Hazard Mitigation Plan.

Felipe Lovato, Jr.
Felipe Lovato, Jr., Chairman, Board of Supervisors

This resolution passed on a motion by Dan Williams
and seconded by Jerry Melaragno.

Vote as follows (enter yea or nay):

Felipe Lovato, Jr.	YES	LeRoy Candelaria	YES
William Caster	YES	Jerry Melaragno	YES
Richard J. Shovelin	Absent	Dan Williams	YES
Larry Gomez	YES		

Attest: Dierdre L Tarr
Dierdre L. Tarr, District Manager 11/03/2017

1 Introduction

This section provides a general introduction to the Torrance County Hazard Mitigation Plan Update. The Torrance County Hazard Mitigation Plan was originally completed, adopted and approved in 2007. This document contains the Torrance County's Hazard Mitigation Plan Update incorporating a number of revisions and refinements to the original plan content. It also provides information on hazard events that occurred in Torrance County from 2007 into 2015 including the monsoonal flooding in 2013 that impacted many counties in northern New Mexico as well as wildfire events.

This Plan analyzes the nine natural hazards presenting the greatest threat to the planning area. Five additional hazards identified in the state plan were reviewed but were excluded from additional consideration as they present little to no risk to the planning area. Each of the six participating jurisdictions reviewed the hazards, independently ranking their relevance to the participating municipality. The Plan Update includes a detailed characterization of relevant natural hazards in Torrance County; a risk assessment that describes potential losses to physical assets, people and operations; a set of goals, objectives, and actions that will guide the county and participation jurisdiction's mitigation program in coming years; and a detailed strategy for implementation and monitoring results.

Torrance County is a historically rural and agricultural county with a rich natural and cultural heritage. This heritage, along with beautiful landscapes, and the proximity to Albuquerque has made the County a desirable place to live for centuries. Farming and ranching are the traditional economic activities in the county. The various types of land uses (commercial, residential, agricultural, etc.) make up the character of Torrance County.

This Hazard Mitigation Plan update focuses on the hazards with the highest potential for causing damage to buildings and other physical assets, injuries and fatalities to the residents of Torrance County and disruption of government and business operations in the area. These hazards include floods, high wind, wildland fire, severe thunderstorms (including hail and lightning), drought, severe winter storms, extreme heat, earthquake, and tornadoes.

This section consists of the following subsections:

- Vision and Purpose of the Plan
- Torrance County Community Description and Geography
- Scope
- Authority
- Summary of Plan Contents

1.1 Vision and Purpose of the Plan

The primary purpose of hazard mitigation planning is to organize people and resources to produce long-term and recurring benefits that help break the repetitive cycle of disaster loss. A core assumption of hazard mitigation is that the investments made before a hazard event will significantly reduce the demand for post-event assistance by lessening the need for emergency response, repair, recovery, and reconstruction. Both the localized events that temporarily disrupt normal functioning as well as the larger events that receive Presidential disaster declarations will be addressed. Adopting mitigation practices will enable Torrance County to re-establish itself in the wake of a larger disaster event, becoming more resilient with less disruption to services and businesses.

FEMA Definition of Hazard Mitigation:

"Any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards."

An emphasis was placed on flood, wildfire, severe winter storms, high wind events, and thunderstorms (including lightning and hail), as these are considered to pose the greatest threat to the planning area. Four

other natural hazards that are part of the 2013 State of New Mexico Hazard Mitigation Plan were considered to pose a moderate risk to the planning area are also profiled in this update.

The benefits of mitigation planning go beyond solely reducing hazard vulnerability. Related measures emanating from the mitigation plan such as preserving open space, protecting vital infrastructure, designing sustainable buildings, maintaining environmental health, and protecting critical facilities meet other important community objectives including public safety, natural resource protection, and business development. It is important that any mitigation planning process be integrated with other local planning efforts, like the comprehensive plans of the County and its municipalities, and any proposed mitigation strategies must take into account other existing goals or initiatives that will help complement or hinder their future implementation. All information in this HMP is for planning and risk management information purposes only.

In summary, the purpose of the Torrance County Hazard Mitigation Plan is to:

- Break the cycle of repetitive natural hazards
- Protect life, safety and property by reducing the potential for future damages and economic losses that result from hazards
- Make the county a safer place to work, visit, and live
- Restore and preserve Torrance County's natural and recreational resources
- Help the county thrive economically
- Support preservation of hazard prone natural areas
- Reduce future vulnerability by guiding development and redevelopment
- Avoid interruptions caused by hazards
- Qualify for mitigation grant funding in both the pre-disaster and post-disaster environment
- Document coordination efforts with other stakeholders in the hazard mitigation effort
- Speed recovery following disaster events
- Develop broad based community support for hazard mitigation
- Record successful hazard mitigation projects and programs
- Demonstrate a firm commitment to hazard mitigation principles
- Comply with state and federal legislative requirements for hazard mitigation plans

The Torrance County Mitigation Plan is a living document, and as such will be reviewed and updated as necessary in order to evaluate the progress made on the risk reduction actions identified through the planning process. The Plan will also be reviewed when new hazards are identified or when large hazard events occur that may require new mitigation priorities in the planning area.

1.2 Torrance County Planning Area: History, Demographics, and Geography

Torrance County

Demographics

Population – According to the 2016 U.S. Census, there are an estimated 15,302 people residing in Torrance County. This figure indicates a marginal decrease in population since the 2000 estimate of 16,911. Many counties throughout New Mexico, including Torrance County, have seen stagnate or declining populations over the last decade. The county seat is Estancia, which has a population of just over 1,597. Over 95 percent of the population resides in the western half of the County. Overall population density is slightly below five people per square mile.

Diversity -Torrance County residents are diverse in their ethnic, cultural, and racial makeup. Over a third of Torrance County residents self-identify as Hispanic, and nearly half of these people also selected "other" as the best description of their race. *(*Torrance County Comprehensive Land Use Plan). The towns of Manzano, Tajique, and Torreon are historic Land Grant Communities.

Growth - Farming and ranching have been the traditional economic activities in the county but are diminishing as the population grows in the Estancia Valley. The Torrance County Comprehensive Land Use Plan indicates

non-agricultural business and commerce are growing rapidly and indicates potential Economic Development Zones. Torrance County lies in the "commuter shed" of the Albuquerque metropolitan area. The rural lifestyle of Torrance County has attracted a growing number of new residents who typically commute to Albuquerque.

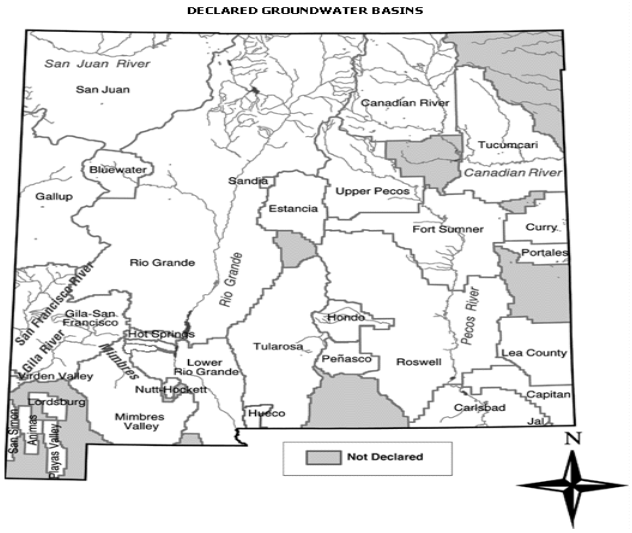
Employment – Median household income for County residents is $31,161. Current U.S. Census data shows the 2013 county poverty rate at 28.6 Percent. Half the County population travel outside the County to work. The largest industry for workers who reside in Torrance County is in the education/health/social services, followed by retail trade, public administration and agriculture. County services include law enforcement, fire protection, emergency medical services, 911 dispatch, road maintenance, property tax assessment and collection, and election and judicial services. The County sheriff's department is supplemented by the New Mexico State Police, who are available to assist residents in the County along with law enforcement officers in neighboring counties.

Housing - According to the 2016 U.S. Census figures, there are 15,768 households in Torrance County with an average of 2 persons per household. The median value of a home in Torrance County is $105,200.

History - Torrance County was established in March of 1903. It is named after the central New Mexico Railroad promoter Francis J. Torrance. Historically, Torrance County has been one of the most productive agricultural counties in the US. The wide-open rural areas of the county continue to be intensively utilized for agriculture and ranching. Crops consist mainly of pinto beans, corn, alfalfa, wheat, and pumpkins.

Physical Features

Land Area – The area can be characterized as a large, open, and sparsely populated rural, small town county, located 60 miles southeast of the Albuquerque metropolitan area. Torrance County lies in Central New Mexico and covers approximately 2,147,200 acres or 3,345 square miles. There are five incorporated municipalities, significant State and Federal public land holdings, and a small portion of Isleta Reservation is in the northwestern corner of the County. (It should be noted that the Isleta Pueblo has a separate Hazard Mitigation Plan.) This includes 207,787 acres of federal lands consisting of 56,017 acres of Bureau of Land management (BLM) owned land, 16,300 acres of Tribal Land, and 151,283 acres of U.S. Forest Service (USFS) land. There are 1,617,308 acres that are privately owned (deeded).



Torrance County is located in about the geographic center of New Mexico, east of the Rio Grande and on the western edge of the High Plains. It is about 65 miles long and 60 miles wide. The Cibola National Forest is located in western and southern portions of the County. The Estancia Lake Basin drains the Estancia Valley, which encompasses Torrance County and the southern part of Santa Fe County to the north (Figure 1.1).

In the early 1800s, the settlers of Spanish descendants settled in villages on the east portion of the Manzano Mountains. The Manzano Land Grant from the Mexican government became the towns of Torreon, Manzano, and Tajique; all of which are entirely in Torrance County. Part of the Chilili Grant land is in neighboring Bernalillo County, but the majority of it lies in Torrance County.[1]

[1] *Comprehensive Land Use Plan for Torrance County, New Mexico*, June 2003

Topographic Features - The vast majority of land in Torrance County is a relatively flat basin completely surrounded by higher land. The average elevation of the County is 6,107 feet above sea level. The peaks of the Manzano Mountains on the western boundary reach between 9,500-10,499 feet in elevation. The Chupadera Mesa is a prominent escarpment on the southeastern part of the county, rising 500 feet above the valley floor. The Pedernal Hills rise on the eastern side of the valley up to 7,500 feet. The Gallinas Mountains in the southern part of the county form a boundary between the Basin and the Great Plains.

Geology - The Estancia Basin aquifer consists of valley fill deposited in the structural trough, which can be conceptualized as a bathtub filled with sand. Beds of sand, gravel, silt, and clay were deposited in the trough in thicknesses of up to 350 feet in the middle of the valley. The formations that either underlie the valley fill or crop out along the margins include the Pennsylvanian Madera Limestone, the Permian Abo Formation, Yeso Formation, Glorieta Sandstone and San Andres Formation, and the Triassic Dockum Group.[2]

Hydrology - The Commission and Office of the State Engineer is in the process of developing detailed studies and databases of watersheds in New Mexico. The Estancia Basin water planning region encompasses Torrance County and parts of Bernalillo and Santa Fe counties. The Estancia Basin is a closed watershed, in which all water runs towards the center. There are no rivers in the basin. At the center of the County is the Laguna del Perro. The principal aquifers are the Valley Fill and the Madera Group. The region is bounded on the north by Santa Fe and San Miguel counties, on the west by Bernalillo and Valencia counties, on the south by Lincoln County, and on the east by Guadalupe County.[3] Parts of the Fort Sumner, Upper Pecos, Roswell, Rio Grande, and an unnamed basin lie within the County boundaries.

Natural Resources -The majority of land cover is grasslands/herbaceous with some shrub land interspersed. Row crops and small grains are grown along the NM 41 corridor. The Cibola National Forest contains evergreen and deciduous forest.

Climate - The terrain and elevations in Torrance County vary greatly and the climate ranges from semiarid in valleys to sub-humid in the western and southern mountains. The mountains to the west and south usually receive the most of winter precipitation, averaging about six feet in the basin and up to twenty feet in the mountains. Snow that falls in the basin usually does not remain more than a few days. Summer rains usually occur in brief showers; however, heavy rain events do occur and may lead to localized flash flooding. Due to the varied topography, the average total for precipitation varies from over 18 inches per year in Tajique to only 12 in Estancia. The average low temperature in January is approximately 10°F to 19°F and average high is 45°F. The average maximum temperature in July is 88°F and the low 45°F. The average first freeze is early October and average last freeze is late May.

Town of Estancia

Estancia is a small town with a fluctuating population of approximately 1,655 according to the 2016 U.S. Census. Amenities in the area include a post office, grocery store, Dollar Store, gas stations, restaurants, hair and barber shops, and Estancia Schools. The community capabilities include fire, police and Emergency Medical Services. A popular attraction of Estancia is Arthur Park with its giant shade trees, a playground, the pond stocked with fish (fishing is restricted to youth under 12 and senior citizens only), picnic areas as well as horseshoe and sand volley ball pits, a pavilion and basketball court. Arthur Park is central to the Torrance County Fairgrounds, the Estancia Library and the Estancia Aquatic Center (swimming pool.)

In the heart of Torrance County, Estancia is surrounded by an agricultural community that has been the foundation of the Town for more than 100 years.

[2] New Mexico Environment Department website, https://www.env.nm.gov/, Accessed August 2015

[3] New Mexico Environment Department website, https://www.env.nm.gov/water.html, Accessed August 2015

Ranching and farming industries are key to the economy of the Estancia Valley. An hour's drive from Albuquerque, the Town offers a rural, homegrown atmosphere with easy access to the city. Located in the heart of Torrance County, Estancia has been the county seat since 1905 and houses the offices of Torrance County including the Torrance County Sheriff's Office and the 7th Judicial District.

Located within Town limits is the Torrance County Detention Facility (TCDF), owned and operated by Corrections Corporation of America (CCA). Originally as a 286-bed facility, in 1997, it was expanded to a 910-bed facility. TCDF currently houses NMCD, United States Marshals Service, Immigration and Naturalization Service, and Torrance County inmates.

Estancia is one of the designated stops on The Salt Missions Scenic Byway, a mapped scenic drive through a variety of beautiful New Mexico landscapes and a range of historic communities. [4]

[4] Town of Estancia website, http://townofestancia.com/, Accessed August 2015

City of Moriarty

The City of Moriarty is a community along I-40 located in central New Mexico in the high desert climate of Estancia Valley. According to the United States Census Bureau, the city has a total area of 4.8 square miles. The 2013 population was 1,836 according to the U.S. Census Bureau. The city is surrounded by the Rocky Mountains.

Route 66 was formed in 1926 by the Federal Highway Act. Originally, Route 66 was located just west of Santa Rosa with a route turning north toward Santa Fe. However, in 1937, Route 66 was re-routed to NM Highway 6 in the Rio Grande valley and passed through Moriarty. In the 1960s, Route 66 was superseded by Interstate 40. Two I-40 interchanges were completed for Moriarty in the 1970s, resulting in greater accessibility and the potential for increased growth.

In 1975, the railroad tracks which had been inactive for many years were removed and the right-of-way was sold. While the railroad origins of the City were diminished, the traditional gridded street pattern remained as evidence of the railroad days of the past. Moriarty continues to prosper as a service community for travelers; however, it now serves visitors as a highway community rather than a railroad community.

The city features the Moriarty Business Park, a planned business and industrial complex adjacent to Interstate 40 near the east end of the City of Moriarty along Camino Oriente, Industrial Loop and Industrial Road. It is zoned for light and heavy industry, and commercial office space.

Industrial land uses make up 0.86 percent of the land in Moriarty. Moriarty has several industrial areas located throughout the City, but the primary industrial lands are located in the City of Moriarty Business Park. Significant economic business operations supporting the city include the Sierra Blanca Brewing Company, Southwest Soaring Museum, Sandia Tobacco Manufacturers, and the NMDOT Park and Ride.[5]

The community services include fire, police and Emergency Medical.

Town of Mountainair

The Town of Mountainair was founded in 1903 by John Corbett, Colonel E. C. Manning, and former U.S. Governor E. S. Stover. Mountainair is located approximately 10 miles from the geographic center of New Mexico, and approximately 75 miles from Albuquerque and 90 miles from Santa Fe. Mountainair is located at the crossroads of U.S. Highway 60 and State Highway 55.

Abó is positioned on a major east-west trade route the Abó Pass, a shallow gap that divides the Manzano and Los Piños Mountains. The community of Abó was still thriving when Spanish explorers came upon it in 1561. Abó was the head of one of the largest missionary operations in New Mexico, known today as the part of the National Monument Salinas Pueblo Missions. The three sites that comprise these ruins—Abó, Quarai and Gran Quivira—attract historians, archeologists, and visitors to Mountainair from all over the world.[6] The main visitor center for Salinas Pueblo Missions National Monument is located in the town.

Mountainair was the first incorporated town in the area, before Torrance was a county and before New Mexico officially became a state. Strategically sited for the railroad at the summit of Abó Pass and named for its cool fresh mountain breezes, passengers first rolled into Mountainair in 1907 and continued to travel through by rail during the 1960s. The train depot still stands today and is listed on the National Register of Historic Places.

The Town is located near the geographic center of New Mexico in the southwest portion of Torrance County, approximately 80 miles southeast of Albuquerque. Mountainair is located in the southern portion of the

[5] City of Moriarty website, http://www.cityofmoriarty.org/index.php?page=home, Accessed August 2015

[6] Mountainair Chamber of Commerce website, http://discovermountainairnm.com/?page_id=29, Accessed August 2015

Estancia Basin, perched in the foothills of the Manzano Mountains at an elevation of 6,495 feet.[7] The community services include fire, police and Emergency Medical Services. The 2013 population was 895 according the U.S. Census Bureau. According to the United States Census Bureau, the town has a total area of 1.05 square miles.

Village of Willard

The Mid-Region Councils of Government (MR-COG) website provides the following description of the Village of Willard:

> Willard is an agricultural community in the southern Estancia Basin. A main east-west line of the Burlington Northern & Santa Fe Railway passes through the village. In addition to some recent growth in the dairy industry, Willard has also received an economic shot in the arm in the wind-power arena. In 2009 the High Lonesome Wind Ranch began operations, with 40 three-bladed wind turbines which produce 100 megawatts of electricity, enough to serve about 25,000 homes. The Laguna del Perro and Salina Lake salt flats and lagoons, a source of salt for centuries, are located just east of Willard. Railroad promoter Willard Samuel Hopewell founded the town when the railroad arrived on the scene in the early 1900s, and named it for his son, Willard Samuel Jr. Until the decline of farming in the 1940s, Willard grew as a rail shipping point for ranchers and Pinto bean farmers. At one time Willard boasted four banks and six mercantile stores[8].

According to the United States Census Bureau, the village has a total area of 0.8 square miles. The 2013 population was 240 according to the U.S. Census Bureau.

Village of Encino

The name Encino, which means "oak" in Spanish, was derived from the scrubby trees that once covered the central plains of New Mexico. Encino's location can be traced back to a spring traditionally used by travelers. In the 1800s, travelers used Encino as a layover as they made their way to the Territorial Capitol in Santa Fe. Near the spring there was a large stone and adobe hacienda, which provided accommodations for travelers. Bonnie Salas was the first to homestead the land that would become Encino and, at that time, the few people in the area were mostly raising sheep or cattle. In 1905, the railroad announced plans to establish a depot in Encino. The Bond family bought 40 acres from Bonnie Salas, some of which they sold to the Atchison, Topeka, and Santa Fe Railway for the depot. That same year they also built the B.G. Bond Mercantile, which doubled as the depot temporarily and remained the only store in Encino until A.R. Cecil established a lumber company in 1908.

Encino's post office opened in 1907 and both a Protestant and Catholic Church were built. In 1910, the Encino Progress newspaper was founded and quickly went out of business. In 1965, Encino's railroad depot closed. The high school closed in 1982 and many of the town's adobe buildings are in disrepair.[9]

The Village of Encino is located in the eastern portion of Torrance County, approximately 46 miles from the county seat of Estancia. The closest municipality is the Town of Vaughn which is about 15 miles to the east. The City of Albuquerque is just over 90 miles away. Encino is located at the crossroads of three highways: U.S. Highway 285, U.S. Highway 60 and NM Highway 3. An east-west track of the BNSF (Burlington Northern Santa Fe) Railway passes through the community.

Encino lies on the eastern fringe of the Estancia Basin which was formed by the evaporation of an ancient lake in what is now the Estancia Valley. Geologically, the Village is located in the Encino Basin southeast of the Pedernal

[7] Town of Mountainair Comprehensive Land Use Plan, 2004

[8] MR-COG website at: http://www.mrcog-nm.gov/region-a-people/regional-profiles/willard, Accessed August 2015

[9] Dixie Boyle. *Highway 60 & the Belen Cutoff, A Brief History*, Colorado Outskirts Press, 2010

Hills; and is situated between the Estancia Valley and the Pecos River watershed. The elevation of the Village is 6,119 feet above sea level.

Encino enjoys a climate of abundant sunshine averaging 270 days of sunshine per year. The Encino area receives an average annual precipitation of 12 inches of rainfall and about 18 inches of snowfall. The average July high temperature is 87 degrees Fahrenheit and the January low temperature is 18 degrees. Spring winds around the Estancia Valley are vigorous and can lead to an excessive loss of soil moisture and dust storms during dry periods.[10]

The community relies on Torrance County for fire, police and Emergency Medical Services. According to the United States Census Bureau, the village has a total area of 2.0 square miles, all of it land. The 2013 population was 80 according the U.S. Census Bureau.

Land Grant Communities

The Spanish king or his representatives conveyed land to individuals, groups and towns through a system of land grants, or *mercedes*, in order to promote settlement on the frontier. Spanish authorities used the system in Florida, Texas, Arizona and California, but the oldest land grants are in New Mexico. There were more than 150 community land grants totaling 9.3 million acres awarded by first the Spanish and then the Mexican governments.

In New Mexico, land grants were issued to encourage settlement, to reward patrons of the Spanish government and military officers, and to create a buffer zone between Indian tribes and populated areas.

Spain also issued land grants to several Indian Pueblo groups who had occupied the areas long before Spanish settlers arrived. In the Albuquerque area the Spanish governor awarded grants to the Pueblo de Sandia and the Pueblo de Isleta. The Spanish also enforced the Four Square League law, which required that the land surrounding an Indian pueblo be allotted to that pueblo for one league in each direction from the pueblo. No grant could cover this land. This set up political and ethnic boundaries for the Pueblo Indians and helped sustain Pueblo cultures.

In New Mexico, there were two types of Spanish and Mexican land grants – community land grants and individual land grants. Community land grants were typically organized around a central plaza, and each settler received an individual allotment for a household and a tract of land to farm; common land was set aside for use by the entire community. Spanish and Mexican law usually authorized the local governor to make such community land grants, and the size of each grant was at the governor's discretion.[11]

Land grant communities in Torrance County include Tajique, Torreon, and Manzano. These land grant communities are profiled under the counties jurisdiction as they are not incorporated.

Manzano Grant

Governor Alberto Maynez had begun the effort to establish the town of Manzano in 1815. Several landowners in the Tomé area were interested in developing the eastern slope of the Manzanos. Among these was the Lucero family, led by Miguel and Juan Lucero. Their efforts met with success; Manzano was an established settlement by 1823, when the petition for the creation of the Casa Colorado grant, supported by the Luceros and other Manzano settlers, specifically mentioned the town. The town of Manzano was as spread out as the surrounding settlements. It consisted of at least two parts. One was called the Plaza de Apodaca, and was apparently the present main plaza of the town. This part of town

[10] Encino Comprehensive Land Use Plan, 2009

[11] Albuquerque Tricentennial website at: http://www.albuqhistsoc.org/SecondSite/pkfiles/pk208landgrants.htm, Accessed November 2015

clustered around the springs, reservoir, and headwaters of the irrigation system that watered the fields. Associated with the Plaza de Apodaca were two apple orchard enclosures owned by the Catholic Church. The second part of the town was the Plaza de Ojitos, where, remarks the petition, most of the citizens of the town reside. Ojitos was approximately one mile southeast down the Arroyo de Manzano, and according to local tradition was on the site of an Indian pueblo. Adolph Bandelier visited Ojitos in 1882-83, looking for the supposed pueblo. He could find no traces of any large occupation. Wesley Hurt apparently saw the surviving traces of the Plaza de Ojitos "at the spring about a mile east of the present village of Manzano" in 1938-40, and was told that it was a very early settlement of the people of Manzano.[12]

Manzano is currently a census-designated place (CDP) in Torrance County. According to the United States Census Bureau, the CDP has a total area of 1.69 square miles, all of it land. The 2010 population was 29 according to the U.S. Census Bureau.

Tajique Grant

Manuel Sanchez, for himself and on behalf of nineteen associates, all residents of the Town of Valencia, petitioned the Acting Governor of New Mexico, Francisco Sarracino, on March 9, 1834, for a grant covering a tract of vacant land which they had discovered at the place known as the Tajique. As justification for the request, Sanchez pointed out that the applicants had only a limited amount of land upon which to grow the crops necessary for the support of their families. They described the tract as being one-half of a league in circumference. Eight days later, Sarracino temporarily granted the premises to the petitioners in order to permit them to proceed with the planting of their crops. However, he expressly provided that the grant was made subject to its subsequent confirmation by the Departmental Assembly. His granting decree concluded with an order to the Alcalde of Valencia, Vicente Otero, to "make the division" asked for, within the boundaries set forth in the petition, provided no injury would result to any third party. In compliance with the governor's directions, Otero, on April 9, 1834, went to the grant and set aside one hundred and seventy-two varas as a town site. Next, he measured a distance of one-half of a league in each of the cardinal directions from the center of the town site. These four terminal points were located as follows:

> On the north, at a pine tree marked with a cross in the Canon de los Migas; on the east, at a lone pine; on the south, at a thicket of cedars a little above the Canon de los Pinos; and on the west, at a pine marked with a cross on the Mesita de la Cueva.

Due to the absence of seven of the grantees, he decided to postpone the allocation of the individual farm tracts and home lots. He authorized the grantees to proceed with the planting but cautioned them that no one would acquire any right to the land he cultivated excepting those to whom it should fall by lot. However, whosoever received a developed tract would have to develop a like quantity for the first occupant. Otero returned to Tajique on December 24, 1834 and subdivided the tillable lands into seventeen tracts measuring 112 varas from east to west and allotted them amongst the seventeen families who were then residing upon the grant. He also reminded each allottee of his obligation to equally improve the tract acquired by the person who had previously resided upon his tract. He notified them that should any allottee fail to so develop his predecessor's tract by April 1, 1835, the predecessor would not be obligated to vacate the premises and could continue using it until his land had been so improved. The proceedings were concluded with Otero giving the grantees a testimonio of the grant.

The inhabitants of the Town of Tajique filed their testimonio with and petitioned Surveyor General William Pelham on February 3, 1857 for the confirmation of the grant. Pelham held a hearing on the claim on May

[12] New Mexico History website at: http://newmexicohistory.org/places/manzano-grant, Accessed November 2015

6, 1859, at which time two witnesses appeared and in their answer to the three questions propounded by Pelham, stated that they had no interest in the grant, that they personally knew that the grant had been settled prior to 1842 and was in existence when the United States took possession of New Mexico in 1846, and that the town had a population of about 420 souls. Based on this record, Pelham, in a discussion dated May 10, 1859, held that title to the grant was complete, and in view of its existence in 1846, it should be recognized by Congress.

The Thirty-sixth Congress considered thirty--three claims which had been passed upon by Pelham. By Act approved June 21, 1860, Congress confirmed thirty-two of these claims, including the Town of Tajique Grant. The grant was surveyed in February, 1877 by Deputy Surveyors Sawyer & McElroy for 7,185.55 acres. However, a patent for the property was not issued until March 18, 1912.[13]

Tajique is currently a census-designated place (CDP) in Torrance County. According to the United States Census Bureau, the CDP has a total area of 2.70 square miles, all of it land. The 2010 population was 130 according to the U.S. Census Bureau.

Torreon Grant

Twenty-seven inhabitants of the Town of Valencia appeared before Acting Alcalde Vicente Otero on February 15, 1841, and advised him that they had appointed Nerio Antonio Montoya as their attorney-in-fact with authority to represent them in soliciting a grant covering a tract of vacant land at the Torreon Spring, Montoya formally accepted the power of attorney and received a testimonio of the proceedings from Otero. Three days later Montoya, for himself and on behalf of his twenty-seven principals, petitioned the Prefect for the Central District of New Mexico, Antonio Sandoval, for a grant.

He advised the Prefect that the petitioners were all "short of tillable land" and needed the requested property for the support of their families. Sandoval referred the petition to the Alcalde of Tome on February 23, 1841, for a full report as to whether the petitioners had any land from which to obtain their subsistence and the nature of the premises. Alcalde Juan de Jesus Chaves, by Report dated March 1, 1841, advised Sandoval the petitioners did not have sufficient land to earn a livelihood and, while the requested lands offered all of the advantages necessary for colonization, it was then vacant. Since the report raised no obstacle, Sandoval directed Chaves to proceed to give the petitioners national and personal possession of the land which he had granted to them. He designated the following natural objects to serve as their landmarks:

> On the north, by the boundary of Tajique; on the east by the junction of the Torreon Canon with that of the Cuero; on the south, by the Cuero Mountains; and on the west by the boundary of the farm of Nerio Montoya.

Next, he allotted each of the grantees one hundred varas of tillable land within the out boundaries of the grant. Montoya presented the testimonio of the grant to and filed a petition with surveyor General William Pelham on January 8, 1856, requesting an early investigation into the validity of the claim. He also introduced oral testimony proving that the town had been in existence in 1846. Based upon a brief inquiry into the background of the grant, Pelham, on May 12, 1859, advised Congress that the claimants' title papers appeared to be genuine. Continuing, he noted that while the claimants had contended that Prefects had authority under the laws of January 4, 1813 and March 20, 1837, to make the grant, he was of the opinion that the laws of January 4, 1813 had no bearing on the case and that he had been unable to ascertain if the Law of March 20, 1837 gave them any such authority. However, he noted that since the witnesses who had appeared before him clearly established the existence of the Town of Torreon prior to

[13] New Mexico History website at: http://newmexicohistory.org/people/town-of-tajique-grant, Accessed November 2015

1846; such existence raised a presumption in favor of the validity of the grant. Since no evidence had been produced indicating that the Mexican Government had disapproved the action of the Prefect, he was of the opinion that the land had been severed from the public domain. As a result of such severance, he believed that under its treaty obligations, the United States was obligated to treat the claim in the same manner. There-fore, he approved the grant and transmitted it to Congress for its further action in the premises.

By Act approved June 21, 1860, Congress confirmed the Town of Torreon Grant. The grant was surveyed in February 1877 by Deputy Surveyors Sawyer & McElroy for 1,414,611 acres. The grant was patented on April 9, 1909.[14]

Torreon is currently a census-designated place (CDP) in Torrance County. According to the United States Census Bureau, the CDP has a total area of 8.25 square miles, all of it land. The 2010 population was 237 according to the U.S. Census Bureau.

Claunch-Pinto Soil and Water Conservation District

The Claunch-Pinto SWCD was later added as a participating jurisdiction. All regulatory details are contained in Appendix C, "Addendum".

Conservation Districts had their beginning in the 1930's when Congress, in response to national concern over mounting erosion, floods and the sky-blackening dust storms that swept across the county, enacted the Soil Conservation Act of 1935. The conservation district concept was developed to enlist the cooperation of landowners and occupiers in carrying out the programs authorized by the act. To encourage local participation in the program, President Roosevelt set all state governors a Standard State Soil and Conservation Districts Law, with a recommendation for enactment of legislation along its lines.

The Claunch-Pinto Soil and Water Conservation District was organized on September 12, 1941. That day the District was issued a Certificate of Organization from the State of New Mexico signed by the Secretary of State, Ms. Jessie Gonzales. Part of the West Torrance District was consolidated with the Claunch-Pinto District in 1967.

The Claunch-Pinto SWCD was adopted into this Hazard Mitigation Planning process after the original plan and draft plans were constructed.

1.3 Plan Scope

The planning process included five major elements (see **Table 1.1**) that were completed over the course of approximately seven months starting in July 2015. The completion of each of these planning elements contributed to the overall Hazard Mitigation Plan. These elements make up several sections of the Plan as described in detail in **Section 1.5: *Summary of Plan Contents***. The overall purpose of mitigation planning is to document the best risk information available so that it can be used to establish a sustainable on-going process that results in actions to lower the risk. The Plan helps the county and participating jurisdictions establish both short-term and long-term goals.

[14] New Mexico History website at: http://newmexicohistory.org/people/town-of-torreon-grant, Accessed November 2015

Table 1.1: Hazard Mitigation Planning Phases
Phase 1. Planning Process including Pre-Kickoff and Kickoff Meetings
Phase 2. Hazard Identification, Analysis and Risk Assessment
Phase 3. Mitigation Strategy including Capability Assessment, Assessment of Alternative Hazard Mitigation Measures, and Implementation Strategy
Phase 4. Plan Monitoring, Evaluation, and Updating
Phase 5. Plan Adoption

In developing this plan, the Planning Team followed the most up-to-date FEMA guidance available, the March 2013 Local Mitigation Planning Handbook, and relied on the most current State Mitigation Plan that was available, the September 2013 State of New Mexico Natural Hazards Mitigation Plan.

1.4 Authority

This Plan has been developed in accordance with current state and federal rules and regulations governing local hazard mitigation plans:

- Section 322, Mitigation Planning, of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as enacted by Section 104 of the Disaster Mitigation Act of 2000 (P.L. 106-390)
- Local Mitigation Planning requirements found in 44 CFR Part 201.6

This Plan shall be routinely monitored and revised to maintain compliance with the above provisions, rules and legislation.

1.5 Summary of Plan Contents

The remaining contents of this Plan are designed and organized to be reader-friendly and functional. **Section 2: *Planning Process*** (Phase 1) provides a complete narrative description of the process used to prepare the Plan. This includes identification of the planning process participants and descriptions of the meetings. Documentation of the process is in **Appendix A,** which includes meeting attendance records, meeting minutes and other results of planning meetings.

The Hazards Identification, Analysis, and Risk Assessment phase (Phase 2) is presented in two sections - **Section 3: *Hazard Identification*** and **Section 4: *Hazards Analysis and Risk Assessment*.** **Section 3** identifies the natural hazards addressed in this Plan. **Section 4** outlines the county's risk from these hazards.

The Risk Assessment provides a record of available historical data from past hazard occurrences and detailed hazard profiles which included general probabilities of recurrence, the spatial extent of the hazard, and its potential impact. The risk assessment serves a critical function as the county and participating jurisdictions seek to determine the most appropriate mitigation actions to pursue and implement – enabling them to prioritize and focus efforts on those hazards of greatest concern and those structures or planning areas facing the greatest risk(s).

The ***Mitigation Strategy*** (Phase 3) consists of two sections – **Section 5**: ***Mitigation Goals, Objectives and Actions***, where mitigation actions to address vulnerabilities identified in **Section 4** are placed, and **Section 6**: ***Implementation Plan***, which includes a capability assessment. The capability assessment describes the regulations and policies in the planning area relevant to addressing the identified hazards. The mitigation actions provide specific implementation mechanisms and target completion dates. The actions are prioritized to help focus future efforts. Together, these sections are designed to make the Plan both strategic (through the identification of long-term goals) but also functional through the identification of short-term and immediate actions that will guide day-to-day decision-making and project implementation.

In addition to the identification and prioritization of possible mitigation projects, emphasis is placed on the use of program, regulatory, and policy mitigation alternatives. These types of actions can also help achieve other economic, social and environmental goals. Each action was evaluated for its appropriateness for the planning area.

Plan Maintenance Procedures (Phase 4); found in **Section 7**, includes the measures that the county and participating jurisdictions will take to ensure the Plan's continuous long-term implementation. These procedures provide a framework to keep the plan current, dynamic, and effective so that over time that becomes integrated into the routine decision making process. The procedures also describe how the Plan will be regularly evaluated and updated to remain a current and meaningful planning document and meet FEMA requirements.

For Phase 5, **Plan Adoption**, a resolution for adoption of this Plan will be placed right after the Table of Contents once the Plan has been 'approved pending adoption' by FEMA and each participating jurisdiction passes a resolution.

2 Planning Process

While the hazard mitigation plan update is the final product, it is the planning process, where community resources are organized to best minimize or manage those risks, which is the true legacy of this effort. This section consists of the following subsections:

- Hazard Mitigation Planning Team
- Data Collection
- Meetings
- Public Involvement and Outreach
- The State Hazard Mitigation Plan
- Agency and Organization Coordination
- Future Development Trends

2.1 Hazard Mitigation Planning Team (HMPT)

In July of 2015, Torrance County entered into a contractual agreement with the consulting firm AECOM for assistance in the preparation of the Torrance County Hazard Mitigation Plan Update. Participating jurisdictions include Torrance County, the Town of Estancia, the City of Moriarty, the Town of Mountainair, the Village of Willard, the Village of Encino, and the Claunch-Pinto Soil and Water Conservation District. The funds for the contract were from a hazard mitigation planning grant approved by the Federal Emergency Management Agency (FEMA) and the State of New Mexico Department of Homeland Security and Emergency Management (DHSEM). The planning lead from Torrance County is the Torrance County Office of Emergency Management.

AECOM was led by an experienced professional hazard mitigation planner, Ms. Rhonda Murphy, a Certified Floodplain Manager (CFM); with assistance from another experience professional mitigation planner, Mr. Lawrence Frank, CFM, and was managed by Mr. Jim DeAngelo, an experienced project manager leading the Albuquerque office Hazard Mitigation Team. AECOM and the participating jurisdictions followed the hazard mitigation planning steps, activities and process outlined in 44 CFR Part 201.6 and FEMA's Local Mitigation Planning Handbook to develop this Plan. The completed Mitigation Plan Review Tool in **Appendix B** provides the location of where each requirement is met within the Plan.

The HMPT consists of the following members from a wide range of departments, representing each participating jurisdiction:

Table 2.1: Torrance County HMPT

Position	Description of Contribution
Torrance County Emergency Management Coordinator	Meeting Planner and Coordinator
Estancia Fire Chief	Planner for Estancia Fire Department
Moriarty Fire Chief	Planner for Moriarty Fire Department
Mountainair Chief of Police	Security Advisor for Mountainair
Road Department	Public works consultant
Estancia Permit & Zoning Officer, CFM	Flood Plains advisor
Torrance County Planning and Zoning Coordinator	Flood Plains advisor
Torrance County Risk Manager	Risk Management advisor
Claunch Pinto SWCD District Manager	Planner for local jurisdiction
Claunch Pinto SWCD Field Tech	Planner for local jurisdiction
Village of Encino	Planner for local jurisdiction
Village of Willard	Planner for local jurisdiction
Village of Willard	Planner for local jurisdiction
Village of Willard	Planner for local jurisdiction
Torrance County Under Sheriff	Security oversight

Table 2.1a: Torrance County Stakeholders

Position	Description of Contribution
President, Tajique Land Grant	Planner for Local Jurisdiction
EMW Gas Association Manager	Pipeline advisor
Edgewood SWCD Admin Assistant	Planner for local jurisdiction
District Fire Management Officer (FMO)	Fire Advisor for Forest Service
Acting AFMO	Fire Advisor for Forest Service
Deer Canyon	Planner for local jurisdiction
Deer Canyon	Planner for local jurisdiction
ETSWCD District Manager	Planner for local jurisdiction
Manzano Land Grant Community	Planner for local jurisdiction
Manzano Land Grant Community	Planner for local jurisdiction
Manzano Land Grant Community	Planner for local jurisdiction

The HMPT is leading the hazard mitigation effort for the planning area. Each team member participated in the planning process through meeting participation, review of draft documents, providing key data and input into the planning process and/or development of specific goals, objectives and unique mitigation actions. The Torrance County Emergency Manager coordinated directly with communities before meetings and provided information and draft plans for comment to all communities, including any that missed meetings. All participating communities were contacted and provided the draft HMP for comment. For Moriarty, the Office of Emergency Management met directly with community leadership to discuss the plan and the community's needs. The Team will continue the planning process past approval into implementation and then a future update.

2.2 Data Collection – Existing Plans and Programs

The HMPT and AECOM were diligent in collecting best available data during the 2015-2016 hazard mitigation planning process. The Soil and Water Conservation District doesn't have published regulatory requirements which were used to evaluate this plan. The following plans, studies and reports were evaluated for opportunities to integrate information related to hazard mitigation and incorporated into this planning process where appropriate:

- ***2003 Torrance County Comprehensive Land Use Plan*** - The Plan provided good information about historic development patterns, existing resources, land uses and development in the county, as well as goals and objectives for future development. The plan includes multiple recommendations to meet the 21 goals and 67 objectives set forth in the plan, many of which were considered for incorporation into this plan.
- ***2009 Village of Encino Comprehensive Land Use Plan*** - The Plan provided good information about existing resources, land uses and development in the Village, as well as 11 goals and 31 objectives adopted by the Village Council. The plan includes 11 recommended actions to meet the established goals, many of which were considered for incorporation into this plan.
- ***2012 Moriarty Comprehensive Plan Update*** - The Plan provided an updated community profile as well as an overview of community facilities and available resources. The plan included a series of recommendations for short medium and long range actions for managing future development. These recommendations were reviewed for potential incorporation into this plan.
- ***2004 Town of Mountainair Comprehensive Land Use Plan*** - The Plan provided good information about existing resources, land uses and development in the area, as well as goals and objectives for future development. The plan includes 19 recommended actions to meet the established goals, many of which were considered for incorporation into this plan.
- ***2008 Torrance County Community Wildfire Protection Plan –*** This plan provides wildfire history and risk information along with suggested mitigation actions to lower the risk.
- ***2013 State of New Mexico Natural Hazard Mitigation Plan Update*** - A summary of the latest update of the State Mitigation Plan was used to inform this Plan is summarized in Section 2.5.
- ***The Village of Willard***- Currently the Village of Willard doesn't have a Comprehensive plan that can be evaluated for Hazardous Mitigation.
- ***The Town of Estancia***-Currently doesn't have a Comprehensive plan that can be evaluated for Hazardous Mitigation.

2.3 Meetings

The members of the HMPT were solicited for their voluntary participation in the development of the plan. An equal opportunity was given to planning area residents, local business owners, local officials, neighboring communities and tribal officials to participate as stakeholders in the process through public announcements /notifications. HMPT meetings were open to the public and all attendees were encouraged to participate in exercises and discussions. Public participants in attendance at the meetings contributed to discussions on hazard rankings, identified potential areas of mitigation interest and helped identify mitigation actions represented in this plan. All meeting materials were available online prior to a scheduled meeting.

It was the goal of this plan to have a committee that represented a broad spectrum of community stakeholders, including representatives from city government, emergency response organizations, health care, private businessmen, and local environmental agencies. Appendix A includes a list of stakeholders invited by email invitation to participate in plan development and the planning process, including non-participating jurisdictions. During the next planning cycle, Torrance County will continue to broaden the scope of stakeholders by inviting additional surrounding counties and communities to participate in the planning process. The approved plan will be made available to the participating local jurisdictions, residents, and neighboring communities on the county website.

The HMPT met several times during the course of preparing this plan. The meetings described below are the formal ones for this planning process. Documentation for these meetings is located in **Appendix A**. A survey was developed for meeting participants to gather information on hazard events since the last planning cycle and to gather information from local officials on potential mitigation actions. A total of 22 surveys were collected during the first two meetings. This data, as well as meeting discussions, informed the hazard ranking for each jurisdiction and provided mitigation actions unique to participating jurisdictions.

July 28, 2015 Kickoff Meeting – The Kickoff Meeting was the first formal planning meeting after Torrance County officially contracted with AECOM to prepare the plan. This meeting was facilitated by AECOM (Jim DeAngelo) and attended by 23 members of the HMPT and stakeholders. Mr. DeAngelo opened the meeting with an overview of the purpose as well as introductions. He discussed the overall planning process including the data collection process, hazard identification, risk assessment and the mitigation strategies. Emphasis was given to linking the risk assessment to the mitigation strategy. The Emergency Manager provided AECOM staff with multiple documents that captured important planning information from the county.

August 25, 2015 Risk Assessment Meeting – The Risk Assessment Meeting was the second formal planning meeting in the planning process. This meeting was facilitated by AECOM (Jim DeAngelo) and attended by members of the HMPT and general public. Mr. DeAngelo opened the presentation with an overview of the meeting purpose and the identified hazards to review. The presentation provided the status of the hazard profiles developed to date, with emphasis on the more significant hazards posing a threat the planning area. The statuses of all mitigation actions identified in the 2007 Plan were reviewed for the update. Actions that were not implemented since the 2007 Plan were discussed and reviewed for relevancy. A range of mitigation actions were discussed for each relevant hazard. The public survey was discussed. Meeting participants were asked to complete a survey form at the end of the presentation. Completed surveys were collected at the end of the meeting. Mr. DeAngelo closed the meeting with a brief review of the project schedule.

December 10, 2015 Final Meeting – The HMPT met to review the draft HMP. The final meeting was open to the public. County officials announced the meeting on the community website as well as in the local paper. The draft HMP was distributed to the team several weeks prior to the final meeting. The final meeting provided an opportunity for local officials to discuss mitigation actions identified throughout the planning process. Hazard rankings and timelines for implementing projects were also reviewed and discussed. The team considered a future meeting schedule, once the plan is approved, for keeping the plan current. Multiple plan revisions and edits were noted for implementation into the final plan. The HMPT was given several additional weeks to submit changes or recommendations to Mr. Sanchez. A copy of the draft plan was also available on the county website for public comments through this period. Comments and edits from all meeting participants and team members were incorporated into the final plan, as appropriate. Mr. DeAngelo closed the meeting with a brief review of the timeline for submitting the final HMP to the state.

2.4 Public Involvement and Outreach

The HMPT pursued a number of avenues for notifying Torrance County residents, neighboring jurisdictions and Pueblos, and other interested stakeholders of this planning initiative. The planning team met several times during the course of preparing this plan, as detailed in the previous section. HMPT meetings were open to the public and all attendees were encouraged to participate in exercises and discussions. Meeting invitations were posted on the county website and advertised in the local paper (**Appendix A**).

A public survey was developed to increase public input. This survey was posted on the county website and was also distributed at public meetings. Although no public surveys were submitted to the planning team, public participants did contribute to the plan development through meeting discussions and influenced hazard rankings and identifying actions. Meeting minutes are located in **Appendix A**.

The standard process for Torrance County to advertise countywide meetings and disseminate information is through the newspaper and the county website. The general public typically relies on the paper for public announcements. The county will consider additional methods for disseminating information, such as additional websites or radio announcements, during the next planning cycle.

2.5 The State Hazard Mitigation Plan and Mitigation Program

The State of New Mexico updated Plan was a critical document to review for this Plan and a valuable resource for risk assessment background information. The plan was reviewed for information on natural hazards and mitigation project ideas so the Torrance County's plan was consistent with State information.

The State Hazard Mitigation Plan states that the goal of mitigation is the following:

> "…is to save lives, reduce injuries, property damage and recovery times. Mitigation can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical facilities, reduce exposure to liability and minimize community disruption. Preparedness, response, and recovery measures support the concept of mitigation and may directly support identified mitigation actions."[15]

The Torrance County plan addressed 10 of the natural hazards covered in the State Plan. Not all hazards in the state plan have a significant impact in the planning area; if a hazard has a very low probability of occurring and/or has negligible impact (and therefore is considered a nuisance) this is noted in **Section 4**.

The Local Plan Integration section of the State Plan lists four hazards as the most significant in the state:

- Floods
- Wildfires
- Drought
- Thunderstorms

The State Plan divides New Mexico into five preparedness areas. Torrance County is included in Preparedness Area #5, along with Sandoval, Bernalillo, Socorro and Valencia Counties. In State Preparedness Area #5, three hazards were ranked as the highest priority:

- Floods/Flash Floods
- Severe Winter Storms
- Wildfire

The State's mitigation goals were also reviewed and are closely aligned with Torrance County's goals:

- Reduce the number of injuries due to natural hazards
- Reduce the number of fatalities from natural hazards
- Reduce the amount of property damage, both public and private, from natural hazards
- Reduce the number of necessary evacuations
- Shorten recovery times for both community function and the natural environment after natural hazard events
- Improve communication, collaboration and integration among State, tribal and local emergency management agencies
- Increase awareness and understanding of risk and opportunities for mitigation among the citizens and elected officials of New Mexico

[15] *New Mexico State Hazard Mitigation Plan*, September 2013, p. 1

The plan was reviewed for mitigation action best practices and types of mitigation actions appropriate for Torrance County. The State has been a valuable partner of Torrance County and provided technical assistance during the development of this plan.

2.6 Future Development Trends

The HMPT examined Torrance County's existing limits, urban services boundary, and capital improvement program to determine areas of future growth and expansion. The team also examined the Torrance County 2003 Comprehensive Land Use Plan, as well as other available plans as noted in Section 2.2.

The U.S. Census Bureau estimated that the county had a population of 15,717 residents in 2013. Since the year 2000 the population for the county has declined slightly from 16,939. Limited, sporadic developed has occurred in the planning area since the last plan update so the overall vulnerability is similar in each jurisdiction.

According to local community officials little to no growth is planned or anticipated in any participating jurisdictions over the next planning cycle. A slowly declining population in the past few years has contributed to an already stagnant or declining real estate market with very limited commercial development over the last five years and no commercial development planned in the near future. The county and communities recognize the hazards of development in the floodplain and Wildland Urban Interface (WUI) zones. Though not anticipated, any future growth during the next planning cycle will be evaluated for potential hazards and mitigation measures will be implemented when necessary.

3 Hazards Identification

In 2013, the NMDHSEM updated its State Hazard Mitigation Plan and identified 14 natural hazards which had the greatest impact on the State:

Table 3.1 Hazards Identified in State Plan

Hazard Category	Hazard Type
Atmospheric	Extreme Heat High Wind Thunderstorm (Hail/Lightning) Tornado Severe Winter Storms
Hydrologic	Drought Flood
Geologic	Earthquake Expansive Soils Land Subsidence Volcano Landslide
Other	Wildland/Urban Interface Fire Dam Failure

The HMPT carefully screened each hazard with the goal of refining the list to reflect the hazards that pose the greatest risk to the jurisdictions represented in this plan. All hazard-specific information and analysis for profiled hazards is provided in **Section 4**. Several hazards listed in the State Hazard Mitigation Plan were excluded from additional consideration as they present little to no risk to the planning area. Hazards that were dropped from further evaluation are summarized as follows:

- **Landslide** - All of Torrance County is mapped in the lowest risk zone where there is a low landslide incident that involves less than 1.5% of the land area. There were no previous occurrences of landslide events reported in Torrance County. Per the 2013 State Plan and other past research, no records of past landslides have been found for the planning area. The probability of an annual chance of a landslide is for the planning area is "**Highly Unlikely**".
- **Land Subsidence -** Based on historic records Torrance County is not vulnerable to subsidence. There is no known history of subsidence leading to damage of structures or infrastructure or occurring in a developed portion of the planning area. The HMPT determined that this hazard does not threaten Torrance county structures or infrastructure. Any impact would be minor because it would likely occur in agricultural areas as a result of agricultural groundwater withdrawal and away from developed areas. Therefore the hazard is considered a nuisance and is not addressed in the rest of the plan.

- **Volcano** - Most volcanism that occurred near Torrance County took place more than 1 million years ago; the youngest volcanic deposits are tens of thousands of years old[16]. The 2013 State Plan shows that there are no estimates of future occurrence of volcanic activity in New Mexico in the near future. New Mexico's numerous volcanoes are considered dormant, but not extinct. The State Plan reports an extremely low probability of a volcano erupting in the next 10 years (.01%) and therefore the probability of volcanic eruption is considered "**Highly Unlikely**". Given the very low probability of occurring and the lack of previous occurrences, this hazard was not deemed a significant threat to the planning area and is not addressed further in the plan.
- **Expansive Soils** - Expansive soils are not known to exist in the planning area and the hazard is therefore considered a nuisance. This hazard is not addressed in the rest of the plan.
- **Dam Failure** – Due to the lack of surface water in Torrance County and the presence of only one dam listed on the National Inventory of Dams (the Mescalero Reservoir Dam which is 186 acre-feet of storage and generally dry as it is a surge detention structure), this hazard will not be addressed in the rest of the plan.

All hazard-specific information and analysis is provided in **Section 4**.

3.1 Major and National Emergency Disaster Declarations

Complementing the Hazards Analysis and Risk Assessment section is a review of the past major disaster declarations that impacted Torrance County and the participating jurisdictions. Major disasters are declared by the President of the United States when the magnitude of a disaster event is of such severity and magnitude that effective response is beyond the capabilities of the State and the local governments. In these situations, eligible applicants may apply for a wide range of federal disaster assistance that include funds for public assistance, individual assistance, and hazard mitigation assistance.[17]

Since 1954, Torrance County received 5 presidential or emergency disaster declarations for severe winter storm, flood and wildfire as listed in **Table 3.2.** Please note that this listing does not include all state or local emergency declarations issued for localized disaster events that did not warrant a presidential or federal emergency declaration.

Table 3.2: Presidential and Emergency Disaster Declarations in Torrance County

(1954 – May 31, 2014)

Event	Declaration Date	Declaration Number
Severe Storms, and Flooding	01/18/1985	FEMA-731-DR
Severe Winter Storms	01/29/1998	FEMA-1202-DR
New Mexico Wildfire	05/13/2000	FEMA-1329-EM

[16] Kues, Barry S., and Callender, John, F., 1986, Geologic History, Contribution to New Mexico in Maps, edited by Jerry L. Williams: University of New Mexico Press.)

[17] For more information on the disaster declaration process and federal disaster assistance, see http://www.fema.gov/disasters Accessed October 2013

Severe Storms and Flooding	08/30/2006	FEMA-1659-DR
Severe Storms, Flooding and Mudslides	10/29/2013	FEMA-4152-DR

Source: Federal Emergency Management Agency

4 Hazards Analysis and Risk Assessment

For this section of the plan, the HMPT reviewed nine of the natural hazards identified in the State HMP (the other 5 are summarized in section 3 above). Each hazard was reviewed for its potential to impact the planning area. These nine hazards were selected based on the historical record and expertise of the HMPT members, as having the greatest potential for significant impact on Torrance County and the participating jurisdictions. These hazards are profiled including a detailed description and analysis of each one.

The land grant communities of Tajique, Torreon, and Manzano were part of the HMP update planning and meeting process. However, for the hazard analysis and risk assessment, these communities were treated as part of Torrance County. The hazard exposure and mitigation actions described for Torrance County include all other unincorporated areas. Furthermore, any grant applications or mitigation activities in the land grant communities will be requested and managed through the Torrance County Emergency Manager.

For each hazard type, the plan describes the locations that can be affected, the potential severity, and previous occurrences of the hazard in Torrance County. Except for those hazards that vary significantly by geography like flood and wildfire, it will be assumed that the hazards impact the entire county planning areas relatively equally. This information is used to estimate the probability of an occurrence of the hazard in any given year. The plan describes the impact of each hazard and the planning areas vulnerability to it.

4.1 Methodology

Seven primary sources of data were used to profile, describe, and analyze the hazards.

1. Experience and knowledge from the HMPT as captured in site visits and meetings
2. Existing local plans and data
3. The National Climactic Data Center (NCDC) information
4. The September 2013 New Mexico State Hazard Mitigation Plan.
5. Studies, data, and reports by USACE and other federal agencies
6. The FEMA 2015 Disaster Declaration database
7. Resources published on the Internet with relevant information. These sources are referenced in footnotes.

Each hazard profile is organized in the following manner:

- *Overview* – General description of the hazard
- *Location and Spatial Extent* – Specific areas in Torrance County that may be affected and the extent. Any available maps displaying risk are shown.
- *Previous Occurrences* – List and description of past events where available
- *Probability and Extent of Future Events* – Establishes the likelihood of the hazard occurring annually and extent of damages if it occurred (severity)
- *Vulnerability and Impact* – The potential level of impact on current and on future development
- *Conclusions* – Includes summary problem statements about the hazard, any mitigation accomplishments, and establishes link to Mitigation Actions in Section 5.

A number of factors were considered in assessing the risk of each hazard event. These factors were assigned a probability risk value as follows:

Extremely High-Could occur within 1 year

High-Could occur between 1-5 years

Medium-Could occur between 5-10 years

Low-Could occur between 10-30 years

Extremely Low-Could occur between 30 years and more

In each hazard profile, hazards are assigned varying degrees of risk in five categories probability, impact, spatial extent, warning time, and duration) as shown in **Table 4.1**.

Table 4.1: Degree of Risk

	Level	Criteria	Index Value	Assigned Weighting Factor
Probability	Highly Unlikely	Probability so remote close to 0% annual probability	0	50%
	Unlikely	Less than 1% annual probability	1	
	Possible	Between 1 and 10% annual probability	2	
	Likely	Between 10 and 50% annual probability	3	
	Highly Likely	Between 50 to 100% annual probability	4	
Impact	Minor	Very few injuries, if any. Only minor property damage and minimal disruption on quality of life. Temporary shutdown of critical facilities.	1	10%
	Limited	Minor injuries only. More than 10% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than one day.	2	
	Critical	Multiple deaths/injuries possible. More than 25% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for more than 1 week.	3	
	Catastrophic	High number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.	4	
Spatial Extent	Negligible	Less than 1% of area affected	1	20%
	Small	Between 1 and 10% of area affected	2	
	Moderate	Between 10 and 50% of area affected	3	
	Large	Between 50 and 100% of area affected	4	
Warning Time	More than 24 hours	Self-explanatory	1	10%
	12 to 24 hours	Self-explanatory	2	
	6 to 12 hours	Self-explanatory	3	
	Less than 6 hours	Self-explanatory	4	
Duration	Less than 6 hours	Self-explanatory	1	10%
	Less than 24 hours	Self-explanatory	2	
	Less than 1 week	Self-explanatory	3	
	More than 1 week	Self-explanatory	4	

At the end of this section is a summary of the vulnerability of Torrance County and the participating jurisdictions to the 9 identified natural hazards using the evaluation of each hazard with the categories from **Table 4.11**. Each jurisdiction independently evaluated the degree of risk posed by each hazard specific to their community.

4.2 Flood

4.2.1 Overview

Four types of flooding appear to be of the most concern in the planning area: flash flooding, storm water drainage, riverine flooding and playas.

Flash flood. A flash flood is a very dynamic event in which a large volume of water moves through an area at high velocity in a very short time. This type of flooding can be very difficult to predict and can occur with little or no warning. In many cases flash floods can move through an area miles from where rain has occurred, thereby increasing the danger to persons within the flood's path.

Flash floods are created as a result of rainfall. As rainwater runs into small channels, it begins to collect. As these channels merge together, the amount of water increases and picks up speed and force. This collection of water becomes a wall of water that can wash vegetation, structures and other debris along with it. This debris then increases the amount of force available and increases its destructive power. In addition to the amount of water that creates a flash flood; other factors also affect the dynamics of this type of flood including slope, width, and vegetation that is in place along the banks of the water course.

The slope that a flash flood traverses has a definite relation to the overall speed in which the water will travel. The steeper the incline, the faster 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 the channel will be created, since the water digs the channel deeper as it flows. When the water flows on a shallower slope, the water tends to spread out more, which can decrease its potential to cause mass damage. However, it must still be 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 that has 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.

Storm drainage. As rain falls on any given area, some of the water will be absorbed into the ground. However, the water that is not absorbed or ponded on site will run off. Depending on the area's flatness and the presence of a storm drainage system, this water can create localized flooding. Since the water will flow to the lowest possible location, these areas become temporary holding ponds. The water then evaporates back into the atmosphere, is absorbed back into the earth, or is physically removed using pumps or other equipment. Depending on the angle of the slope, passing storm waters develop a tremendous amount of force. In such instances these waters can damage structures, push debris in front of them much like a flash flood, and cause soil erosion.

Riverine Flooding. The majority of flood events in the United States involve inundation of floodplains associated with rivers and streams and shoreline inundation along lakes and coastlines. This type of flooding typically results from large-scale weather systems generating prolonged rainfall from locally intense storms or snowmelt. Torrance County is within the Central Closed Basins region of New Mexico and there is very little perennial surface water flow. Flash flooding and storm water drainage in the developed areas is a much greater concern in Torrance County than riverine flooding.

Playas. While there is a large area southeast of Estancia containing many playas and seasonal lakes around the largest lake known as Laguna del Perro, this area is relatively unpopulated and there is not a high flood risk.

In Torrance County, there are seasonal differences in the causes of floods. In the winter and early spring (February to April), major flooding has occurred as a result of heavy rainfall on dense snow pack throughout contributing watersheds. Winter floods also have resulted from runoff produced by intense rainfall events. Summer floods have occurred from intense rainfall on impervious desert soils or previously saturated soils. Summer thunderstorms that deposited large quantities of rainfall over a short period of time have also produced flash flooding. Flash floods peak during the "Southwest Monsoon" season of July and August.

Flash floods are more likely to occur in places with steep slopes and narrow stream valleys and along small tributary streams. In urban areas, parking lots, and other impervious surfaces that shed water rapidly contribute to flash floods. In rugged, hilly, and steep terrain, the high-velocity flows and short warning time make flash floods hazardous and very destructive. In the arid environments of the Southwest, steep

topography, sparse vegetation, and infrequent precipitation in the form of intense thunderstorms typify the flash flood hazard areas.

Erosion can play a large role in flash floods. Extensive erosion damage can occur with major flooding. Erosion results in: access disruption, road closures, driving hazards, drainage facility damage and blockage, and sedimentation. Erosion can occur rapidly during a storm event or can occur over time due to minor storms or breaks in water lines. Accelerated soil erosion has created problems ranging from loss of productive agricultural soil to displacement of human structures to sediment buildup in water reservoirs. Water erosion is one of the most common geologic phenomena. The detachment and transportation of soil particles by water can cause sheet erosion, rill erosion, or gully erosion. Sheet erosion occurs with soil being removed in a uniform manner across the surface but is often accompanied by tiny channels cut into the surface creating rill erosion. Where the volume of runoff water is further concentrated, the formation of larger channels or gullies may occur within the landscape creating gully erosion. Rill and gully erosion can cause serious land use problems. Storm events in New Mexico can result in flash floods and can create serious rill and gully erosion.

Torrance County has several conditions that may contribute to flash floods and exacerbate their effects:

- Steep Slopes: Sections of Torrance County have moderate to steep sloping terrain that can contribute to flash flooding, since runoff reaches the receiving arroyos and rivers more rapidly over steeper terrain.

- Obstructions: During floods, obstructions can block flood flow and trap debris, damming floodwaters and potentially causing increased flooding uphill from the obstructions.

- Soils: Soils throughout much of Torrance County are derived from underlying parent materials rich in carbonate as well as mixed clays. As a result, soils are typically fine-grained, and have low infiltration rates and high runoff potential. Vegetative cover is either mixed shrubs or mixed grasses. Sparse vegetative cover combines with high runoff soil potential to result in significant flooding hazards in ephemeral washes and adjacent areas.

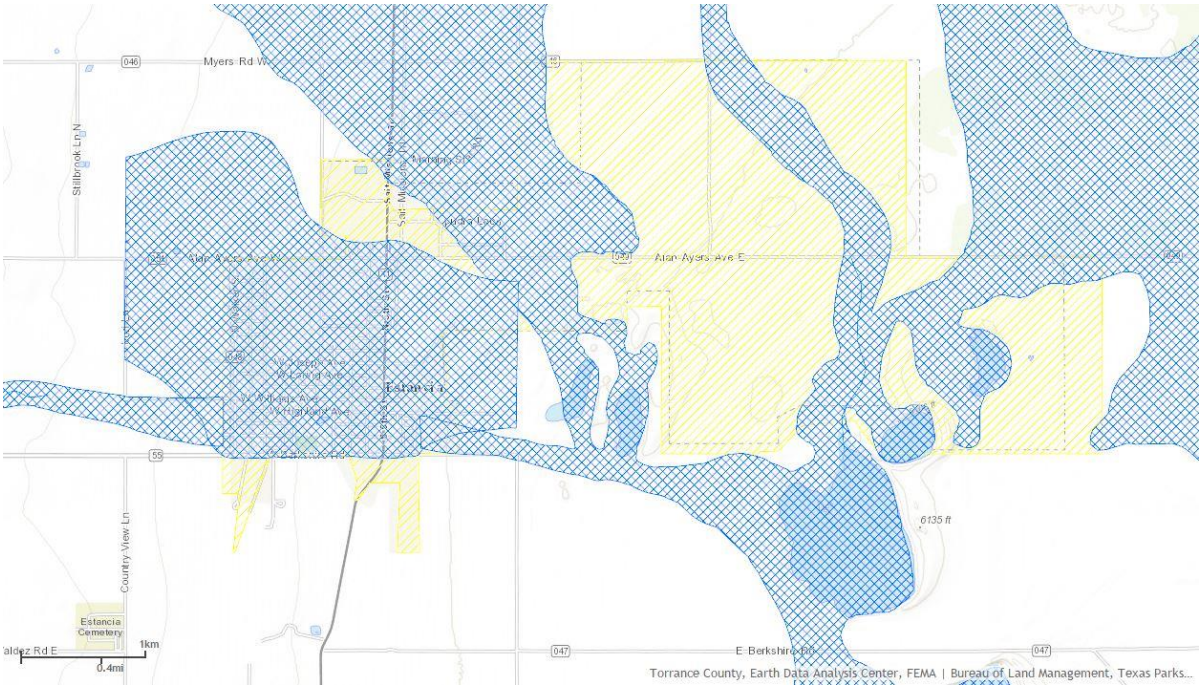
4.2.2 Location and Spatial Extent

“The majority of Torrance County lies within a hydrologically closed basin, meaning the inflow of water is by direct precipitation and there is no surface water outflow”.[18] After the 2013 flooding, Torrance County officials reported extensive damage to county roads and debris fields in excess of 210 feet wide in places. No new Hydrologic or hydraulic studies were completed as part of the 2016 revision, however flooding over 6 inches is dangerous to vehicles and will begin to cause property damage to homes and businesses. Most flood hazard areas throughout the county’s unincorporated area are uninhabited. However shallow flooding can occur almost anywhere in the county. County roads suffer the majority of damages during sever flood events creating impassable roads and requiring emergency response services to detour routes in extreme instances.

[18] *Comprehensive Land Use Plan for Torrance County, New Mexico*, July 2003

The entire Town of Estancia is located in the 100-year floodplain. An “Unnamed Arroyo” begins in the west of the town and travels through the middle of town. The arroyo has been leveled for agricultural use, and graded with the town. There are no flood control structures along the “Unnamed Arroyo,” and a potential flood would cause total inundation of the Town of Estancia (Flood Insurance Study, FEMA, 1990). A flood diversion project for the area has been preliminarily scoped but past efforts to secure funding to implement the project have not been successful. This flood control measure has been included as a potential mitigation action for future implementation. The overall risk level for the Town of Estancia is High.

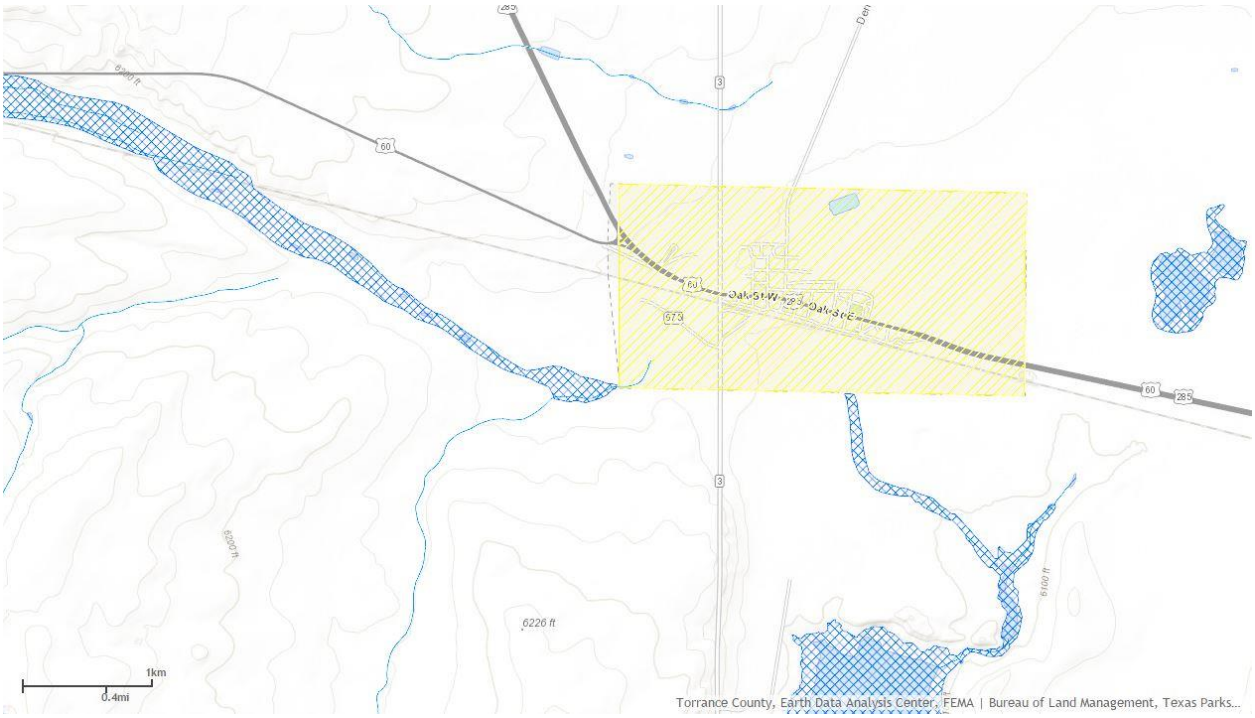
Figure 4.1: Estancia Valley Flood Hazard Areas:



The Village of Encino is not currently mapped. There are two small zones entering the Village limits which are affected. “The effects of climate and topography in the Encino area can generate intensive storm water runoff, affecting travel on roads and the protection of property. Although Encino receives an average annual rainfall of about 12 inches, brief but intense storms can lead to ponding in low areas. Encino is protected by a flood diversion dike north and west of the Village center which diverts storm water around the community and includes a small retention pond north of the village. Encino is not designated as a flood-prone community under the National Flood Insurance Program, but short-term flooding of streets and properties may cause damage to buildings and structures.” “Water management for the Village should also include the possibility of a severe storm directly over the Village that may cause localized flooding. Previous storm water management has resulted in the construction of runoff control structures as evidenced by the retention and diversion system north and west of the Village. However, on-site ponding on the North Side of the Village could lead to property damage from a heavy, direct-precipitation rainfall; and simple efforts to control ponding can be designed for the developed areas of the Village.”[19] The overall risk level for the Village of Encino is Moderate.

Figure 4.2: Flood Hazard Areas at the Municipal Boundaries of Encino:

[19] Village of Encino Comprehensive Land Use Plan, April 2009



"Significant portions of the City of Moriarty are located within the designated 100-year flood plain. The 100-year flood plain areas can be found in three distinct areas of the City (see Figure 4.3). These three flood plains coincide with certain "Draws" found throughout the City. The largest 100-year floodplain area runs along the City Draw, stretching west to east while crossing Holiday Street, Broadway Avenue, Eunice Street, Hazel Street, and Martinez Road. The Crossley Draw, which extends from Hazel Street and Roosevelt Avenue to Martinez Road, is also in this flood plain area. The second area where flood plains are found in the City is along the Duke County Draw which stretches from Debs Street to First Street, and from Katherine Avenue to south of Santa Fe Avenue west. The third 100-year flood area is found north of the City along the Salt Draw, which crosses over I-40 on Moriarty's east side."[20] Each of these zones can reach a depth from 1' to 3'. The overall risk level for the Town of Moriarty is High.

[20] Moriarty Comprehensive Plan Update 2012, Page 15

Figure 4.3: Moriarty Flood Hazard Areas Detail

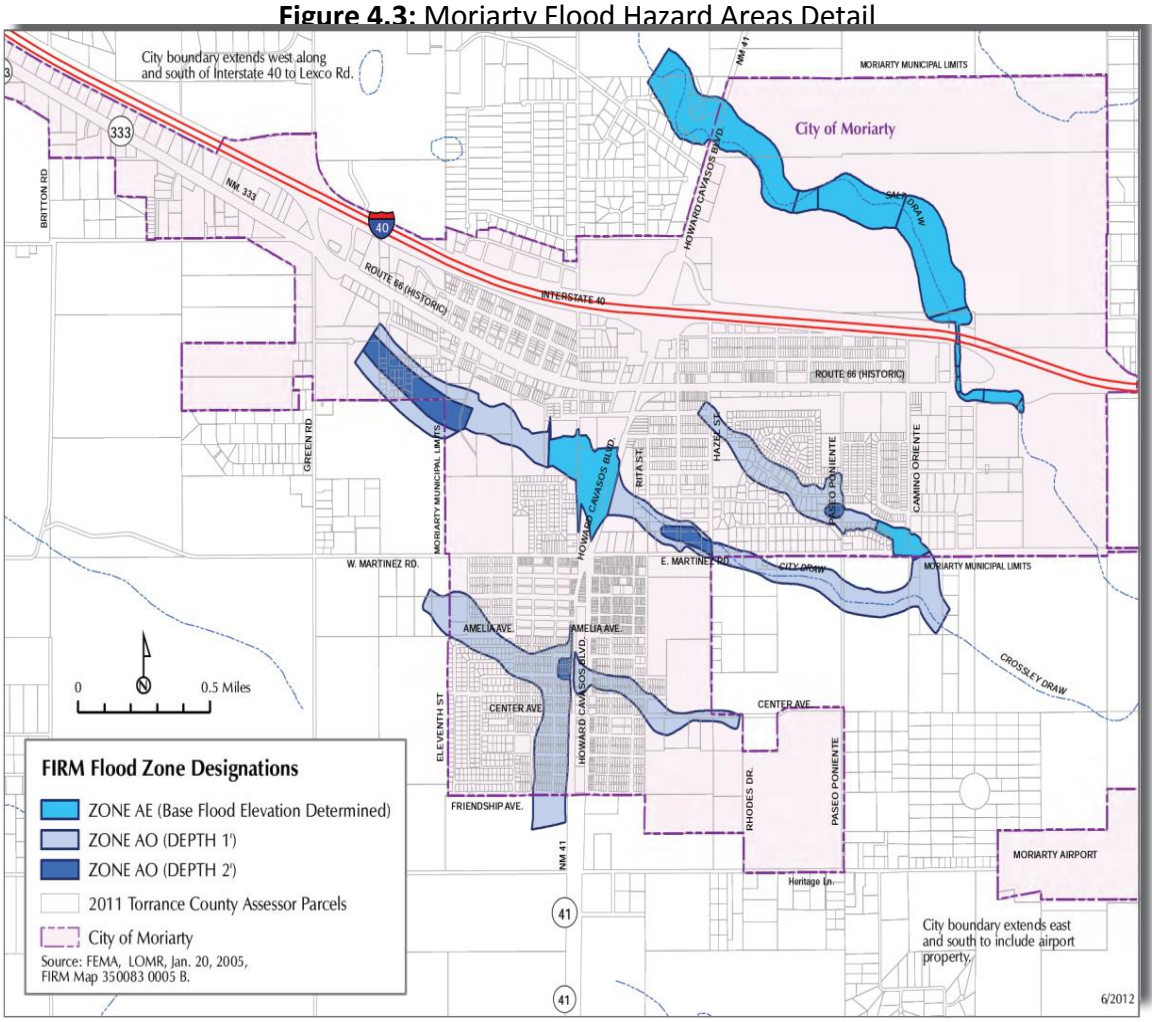
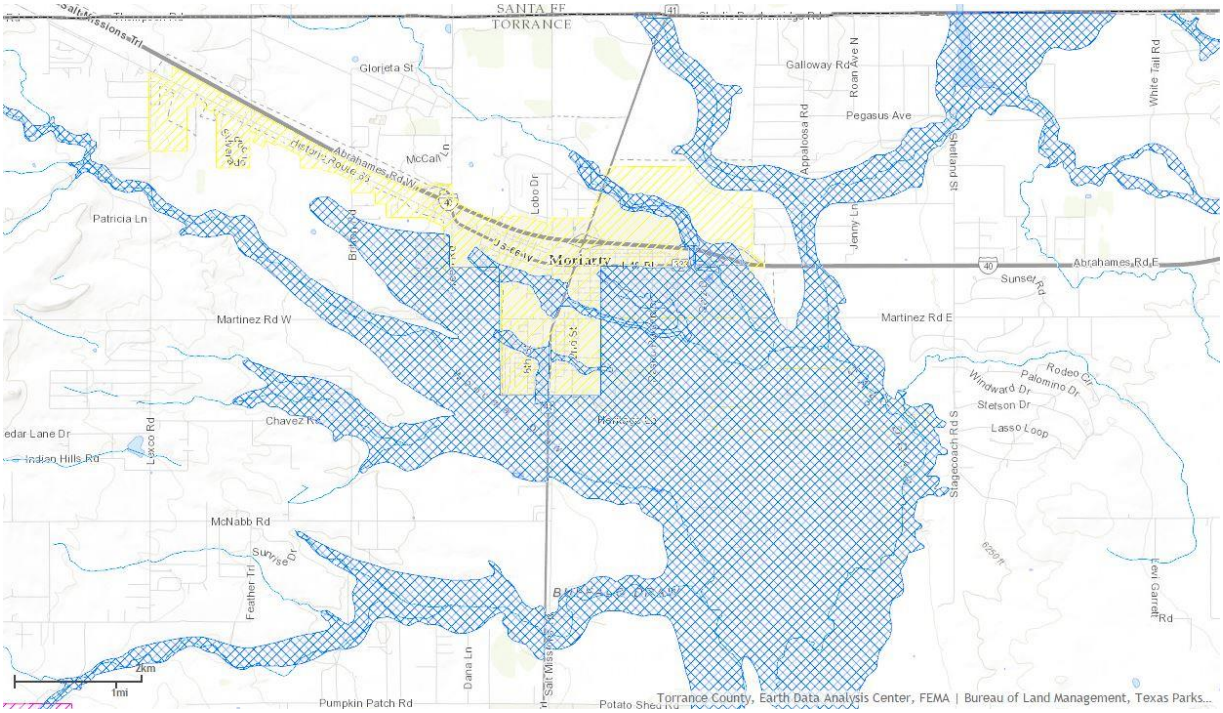


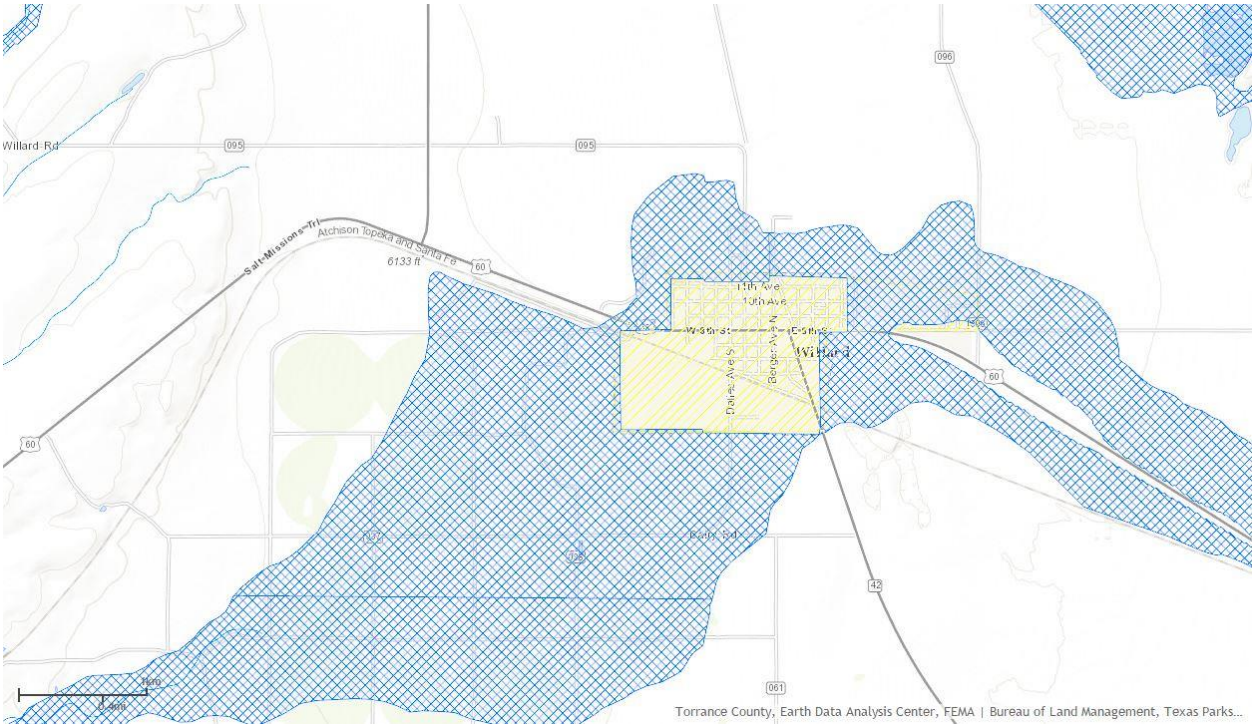
Figure 4.4: Moriarty Flood Hazard Areas Overview:



The Village of Willard does not currently participate in the NFIP and therefore is not currently mapped. The surrounding Torrance County Flood Hazard Boundary Map (FHBM) panels clearly indicate most, if not all, of Willard to be in an area of elevated flood risk . This projection indicates the community is in a Special Flood Hazard Area (SFHA) Zone A with

an undetermined flood depth. Under provisions of Torrance County Ordinance 92-4 and FEMA 44 CFR 60.3.C.7, the estimated Base Flood Elevation (BFE) for areas of shallow flooding within Zone A is 2 feet until such time a Flood Insurance Study (FIS) of the area is conducted and the resulting report is approved by FEMA. The sources of flood risk to Willard include the Manzano Draw, its tributaries, and sheet flow flooding from the surrounding watersheds. The overall risk level for the Village of Willard is Moderate.

Figure 4.5: Flood Hazard Areas at the Municipal Boundaries of Willard:

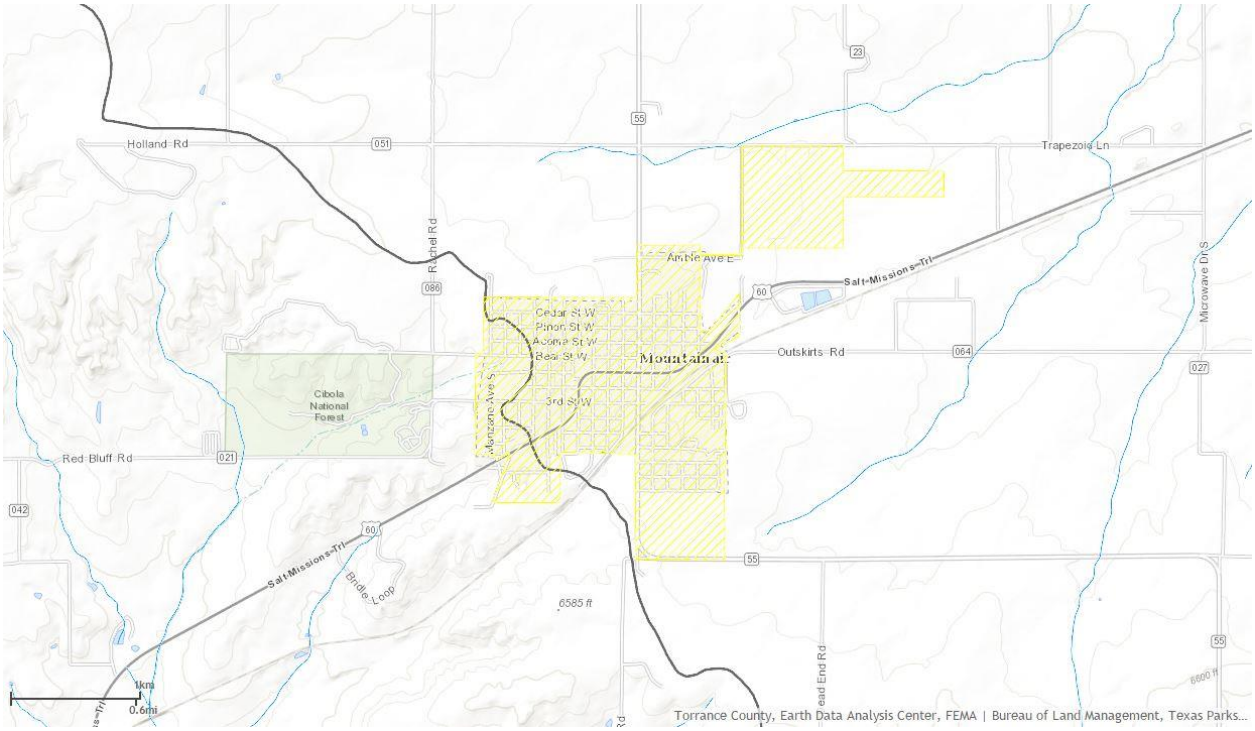


The Town of Mountainair is not currently mapped and has no known identified flood hazard areas. This community does not currently participate in the NFIP. However flood hazards do exist as flooding has been recognized by the community as a risk. Currently there are no documented flood hazard maps or special location for this community.

"The gridded street pattern in Mountainair reveals its origin as a traditional railroad town with blocks of land platted for a quick sale and with easy circulation and access to the depot area. Although this street network is highly efficient for local movement, there was often little attention given to the topography or drainage characteristics of the land. Consequently, Mountainair is occasionally subject to localized street flooding and ponding of storm water."[21] The overall risk level for the Village of Mountainair is Moderate.

[21] Town of Mountainair Comprehensive Land Use Plan, August 2004

Figure 4.6: Flood Hazard Areas at the Municipal Boundaries of Mountainair:



In addition, during storm events arroyos in the Manzano and Gallinas Mountains and throughout the County have potential to overflow their banks.

4.2.3 Previous Occurrences

New Mexico has a long history of flooding and flash flooding problems. Many minor flash flood events occur each year during New Mexico's summer monsoon season. Due to the small scale and localized nature of these events, no consistent records are available. There is no recorded study of amount of damages to Torrance County from localized flash flooding or large scale flooding. However, FEMA flood maps for Torrance County show large areas that are designated as being within 100-year floodplains. While there is no study that recorded damages documented through FEMA or Torrance County insurance agents, personal communication with residents recall a few major flood events in the 1960s and 1980s. A large flood event occurred in the early 1920s and a photo in an Estancia restaurant shows Main Street flooded. According to the Estancia Town Clerk, a flood occurred in 1966 and people were seen using rowboats for transportation on Main Street. In the 1980s several areas flooded including highway 41 which experienced flows 3 feet deep. Local residents used farm equipment to evacuate residences in the areas adjacent to the highway.

According to the National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC), there have been 16 reported flood events in Torrance County from January 1, 1996 (the start date of Storm Events Database) through August 1, 2015. The following **Table 4.2** lists event locations along with damages associated with each:

Table 4.2: Torrance County Previous Flood Events

Location	Date	Event Type	Property Damage
Clines Corners	08/12/1997	Flash Flood	0
Estancia	08/22/1997	Flash Flood	0
Moriarty	06/02/2000	Flash Flood	0

Location	Date	Event Type	Property Damage
Encino	07/03/2002	Flash Flood	0
Encino	06/26/2005	Flash Flood	0
Encino	07/26/2005	Flash Flood	0
Encino	08/05/2005	Flash Flood	0
Encino	07/18/2010	Flash Flood	$1,500
McIntosh	07/28/2010	Flash Flood	$1,000
Clines Corners	07/02/2013	Flash Flood	0
Tajique	07/24/2013	Flash Flood	0
Tajique	08/10/2013	Flash Flood	$15,000
Torreon	08/10/2013	Flash Flood	$5,000
McIntosh	09/11/2013	Flash Flood	$20,000
Willard	09/11/2013	Flood	0
Tajique	08/04/2014	Flash Flood	$5,000

Source: NCDC

The 2013 flooding in New Mexico resulted in a Presidential Disaster Declaration (DR-4152), declared in October 2013, and included Torrance County. Some roads were reported impassable with stranded vehicles. Low lying areas throughout the County were flooded. A barn and building near Estancia were flooded according to local reports. Storm damage and localized flooding was also reported in other portions of Torrance County.

4.2.4 Probability of Future Events

Flooding occurs on a regular basis in Torrance County and can be expected to continue. The impact of these events will depend on their location and the specific circumstances existing at the time. Torrance County, the Town of Estancia, the Village of Willard and the City of Moriarty rank the future probability of floods as "**Highly Likely**". The Town of Mountainair and Encino rank the future probability of floods as "**Possible**". Throughout the county some sources of flooding have been identified and many have not been formally studied or mapped. Flood levels can be expected anywhere between a few inches and several feet depending on the location within the county and the type of flooding. Moriarty has the flood maps with the most detail. However, due to the nature of the flooding risks in Torrance County, communities can expect damages from as little as 6 inches of water which may be caused by flash or Playa flooding as well as riverine or storm water issues. The risks and effects are increased in areas downstream of areas which experienced a recent fire event.

4.2.5 Vulnerability and Impact

The 2016 US Census provides information that Torrance County has 15,302 homes at a median value of $105,200.00. The county has approximately 1,170 structures located in a FEMA designated Special Flood Hazard Area (SFHA). The planning area assets that are at risk from flooding exceeds $123,084,000 in value. This figure includes approximately 178 homes in Moriarty valued at $18,725,600 and approximately 492 homes in Estancia valued at $51,758,400, at risk from flooding. Figures for Mountainair, Encino and Willard have not been included as they are not currently mapped and other reliable data was not available at the time this plan was developed.

Flooding will cause an increase in the demands placed on first response capabilities and increase delays in providing normal service to the community. None of the participating jurisdictions were found to have known repetitive flood loss properties.

4.2.6 Conclusion

Flooding is a significant concern for participating jurisdictions with SFHAs. Heavy rains during the typical monsoon season could result in homes and businesses flooding, damaging the sensitive economy of Torrance County. Flash flooding and impassable egress routes are primary concerns during flood events. The risk levels for the County, Town of Estancia, and City of Moriarty are all High. Encino, Mountainair and the Village of Willard are all moderate.

4.3 Wildland Fire/Wildland-Urban Interface (Wildfire)

4.3.1 Overview

A wildfire is an uncontrolled fire spreading through vegetative fuels, threatening and possibly consuming structures and other community assets. Wildfires can begin unnoticed in wild areas and can spread quickly, creating dense smoke that may be seen for miles. A wildland fire is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities. A wildland urban interface fire is a wildfire in an area where structures and other human development meet or intermingle with wildland or vegetative fuels.

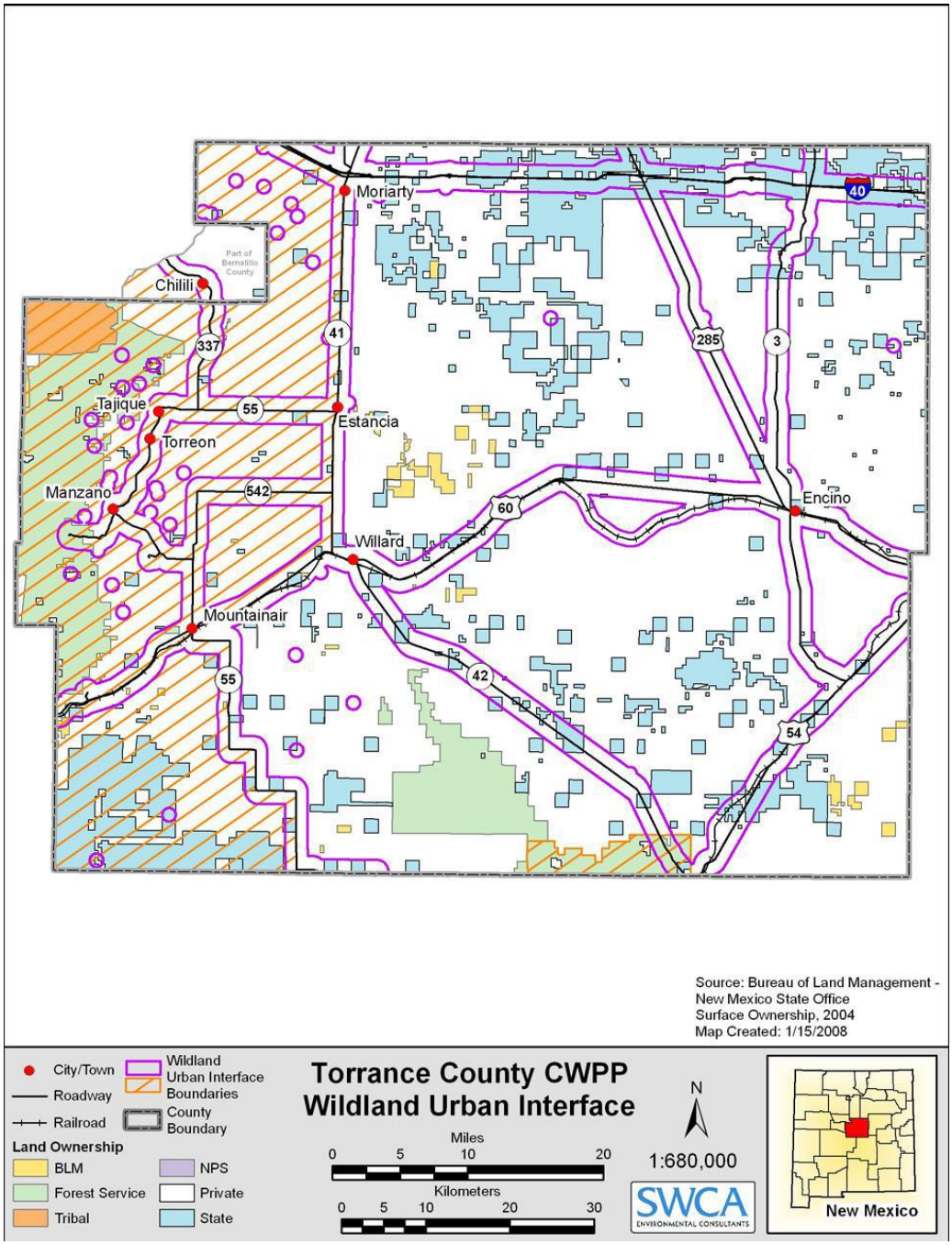
In New Mexico, the probability of wildfire increases as the duration of droughts increases. The dry air and wind typical of New Mexico exacerbate the risk of wildfire. This dry wind creates a hairdryer effect and further dries out vegetation making it more combustible. Many home site and subdivision plans have inadequate fire protection plans.

After a fire starts, it can burn as three different burn types: surface, ground, and crown fire. It can also be a combination of all three. A surface burn consumes the ground cover and is limited to the surface, a ground fire burns roots and plants beneath the soil, and a crown fire burns the tops of trees and vegetation[22].

The most common catastrophic wildfires are usually in forested areas where the fuel load is high. Potential consequences of wildfires include severe erosion and the silting of streambeds and reservoirs, which causes damage to the watershed and flooding due to a loss of ground cover. The following WUI map (**Figure 4.7**) shows the housing density for the planning area:

[22] Cohen, Jerry, 2003. *The Impact of Fire on Ecosystem*, University of Texas

Figure 4.7: Torrance County Wildland Interface Map



Source: Torrance County CWPP

4.3.2 Location and Spatial Extent

The Keetch-Bryam Drought Index (KBDI) was developed specifically for fire potential assessment. It is a number representing the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency in deep duff and upper soil layers. It is a continuous index, relating to the flammability of organic material in the ground.

The KBDI attempts to measure the amount of precipitation necessary to return the soil to full field capacity. It is a closed system ranging from 0 to 800 units and represents a moisture regime from 0 to 8 inches of water through the soil layer. At 8 inches of water, the KBDI assumes saturation. Zero is the point of no moisture deficiency and 800 is the maximum drought that is possible. At any point along the scale, the index number indicates the amount of net rainfall that is required to reduce the index to zero, or saturation.

The inputs for KBDI are weather station latitude, mean annual precipitation, maximum dry bulb temperature, and the last 24 hours of rainfall. KDBI levels and its relationship to expected fire potential are reflected in the following **Table 4.3**:

Table 4.3: Keetch-Byram Drought Index

Keetch-Byram Drought Index Fire Rating System	
0 – 200	Soil and fuel moisture are high. Most fuels will not readily ignite or burn. However, with sufficient sunlight and wind, cured grasses and some light surface fuels will burn in spots and patches.
200 – 400	Fires more readily burn and will carry across an area with no gaps. Heavier fuels will still not readily ignite and burn. Also, expect smoldering and the resulting smoke to carry into and possible through the night.
400 – 600	Fire Intensity begins to significantly increase. Fires will readily burn in all directions exposing mineral soils in some locations. Larger fuels may burn or smolder for several days creating possible smoke and control problems.
600-800	Fires will burn to mineral soils. Stumps will burn to the end of underground roots and spotting will be a major problem. Fires will burn through the night and heavier fuels will actively burn and contribute to fire intensity.

Typical conditions in the planning area from September through December usually centers on the 200-400 rating while January through August are usually drier months and, depending on fuel and moisture, usually will rate in the 400-600 range. During extreme dry and drought times, typically in the months of May, June, and July the county may be rated at 600-800.

The natural environment in Torrance County is diverse from plains grasslands, through savanna piñon juniper woodlands to montane mixed conifer forests. Each of these cover types has its own associated fire hazards. Several factors contribute to the increased risk of catastrophic fires in Torrance County in particular:

- Increased tree density and decreased grass and forb (broad-leaved herbs that grow in fields, prairies, or meadows) cover.
- Past forest fire suppression practices and livestock overgrazing that resulted in the unnaturally heavy accumulation of live and dead vegetation, leading to “doghair” thickets of ponderosa pine trees in the Manzano and Gallinas Mountains.
- Early logging activity in different regions that creates artificial fuel breaks, alters the local microclimate, and modifies forest composition and age structure (Gilmore, 1998).
- The Bark Beetle outbreak in the Southwest is highly visible in the Manzano and Gallinas Mountains, and greatly increases risk of wildfire. However, once a stand of piñon trees has been killed as a result of the bark beetle infestation and the trees drop their needles, the intensity of a potential fire is lessened because there is less fuel to burn.
- Populations of several native bark beetle species are increasing dramatically due to several years of extended drought. Many trees are extremely stressed from the drought and are highly susceptible to bark beetle attack. The resulting outbreak has killed millions of ponderosa pine and piñon trees in Arizona and New Mexico. Due to the continued drought and the widespread extent of the bark beetle outbreak, there is little or nothing that can be done on a large scale to prevent the mortality of these trees.

- According to New Mexico State Forestry, in 2004 the Western pine beetle and the Piñon Ips, another type of bark eating beetle, caused damage to 360 acres of private and State lands. The Western pine

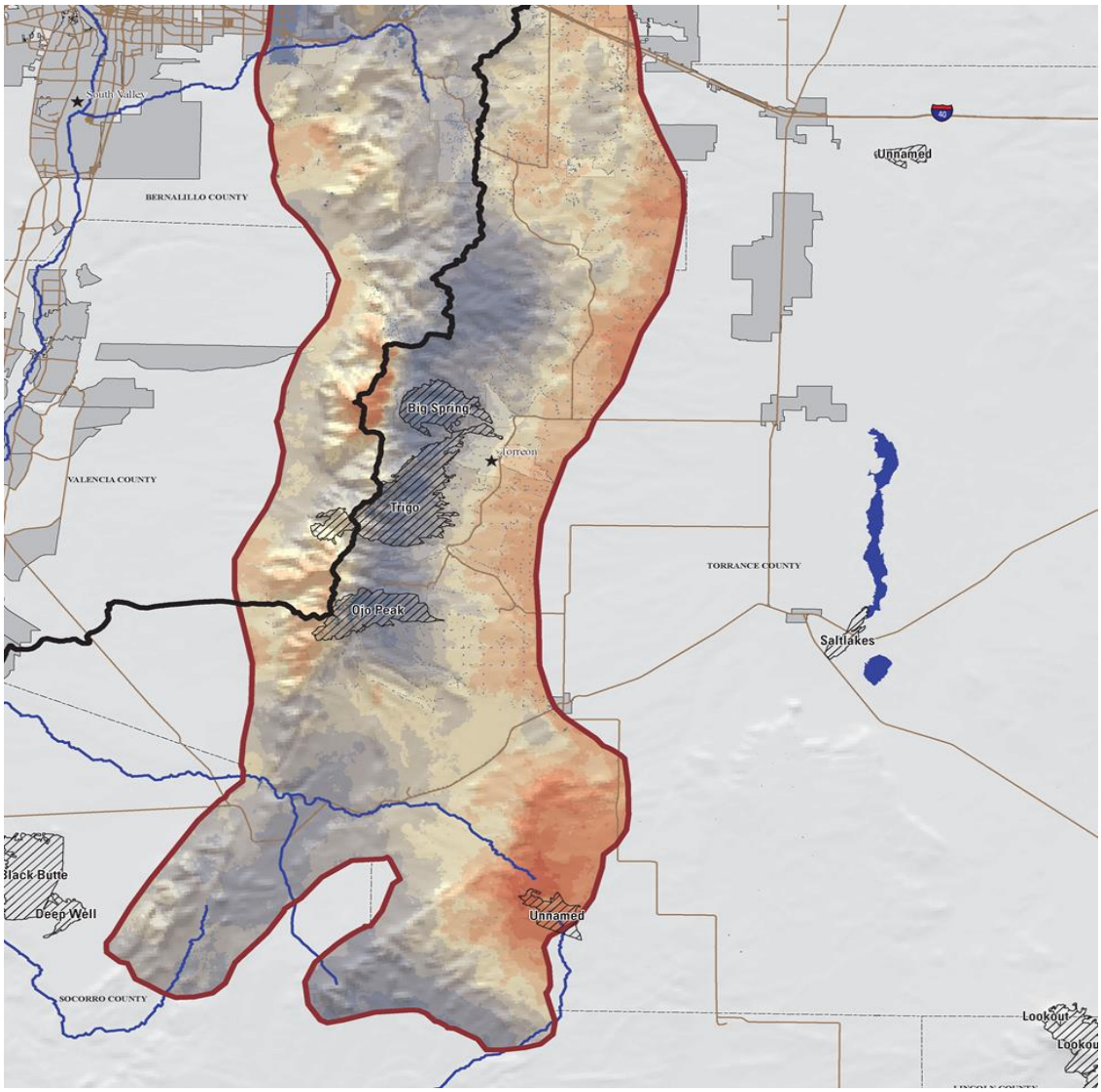
beetle caused twenty-five acres of damage to private land and the Piñon Ips damaged 330 acres of private land and five acres of State land in Torrance County.

- Drought in the Southwest region of the United States has greatly affected vegetation in Torrance County and greatly contributes to the increased risk of wildfire.

Locations in Torrance County at greatest risk for wildfire include:

- The National Forest lands in the Manzano Mountains in the southern portion of the County and the Gallinas Mountains in the southern portion of the County are at risk for Wildland Urban Interface fires.
- Tree mortality is higher in drier, south facing slopes, transition areas between ponderosa pine and piñon–juniper areas and recent construction sites.
- Grasslands throughout the County are also at risk to fast spreading wildfire, especially in areas close to railroad tracks, where sparks have started prairie fires in the past.
- Because Encino is on the Central and East side of the County, it is at lower risk for wildfire.

Figure 4.8: Burn Probability and Historic Fire Perimeters in Manzano Mountains including Torrance County



Source – USGS Publication entitled *Potential Post-wildfire Debris-Flow Hazards – A Pre-wildfire Evaluation for the Sandia and Manzano Mountains and Surrounding Areas, Central New Mexico.* Previous fire burn perimeters shown in cross-hatching. Areas with higher annual burn probability shown in red/orange. Areas with lower annual burn probability shown in dark grey.

4.3.3 Previous Occurrences

According to the 2008 Torrance County CWPP two significant wildfire events have occurred in recent history. During Thanksgiving 2007, an unseasonal wildfire (Ojo Peak fire) surprised many residents of the Manzano Mountains, destroying three homes and burning 7,000 acres of land. Just five months later, the same communities were ravaged by a second wildfire (Trigo fire), this time much larger and intense, destroying 59 homes and burning 13,709 acres of forest.

The NOAA Data Center reported a more recent event in the Estancia Valley in March of 2015. A grass fire started 10 miles south of Moriarty near McIntosh, burning 35 acres with $9,000 in reported damages.

The state HMP highlights additional significant wildfires impacting Torrance County since 2005:

- **June 14, 2016**- As a result of a masticator problem during the Isleta Collaborative Restoration Project a forest fire started. The Dog Head Fire burned over 18,000 acres and burned a dozen homes and 44 minor structures. The area burned 6 miles Northwest of the Tajique Land Grant northward to the Chilili Land Grant.
- **June 23, 2008** - Lightning started a wildfire in heavy timber on the east side of the Manzano Mountains, not far from the area of the Trigo Wildfire, which had burned earlier in the spring. Over 5000 acres were consumed before the fire was contained June 30th. The Big Springs Wildfire consumed 5478 acres on the east slopes of the Manzano Mountains about 3 to 6 miles west northwest of Tajique. Six homes and ten outbuildings were destroyed in the fire in the Apache Canyon area. Property damage was $1 Million.
- **April 30, 2008** – A human caused fire turned into a large wildfire during several days of strong winds. Very dry conditions were present prior to the wildfire due to a lack of precipitation in the preceding weeks. The Trigo Wildfire began on the west slopes of the Manzano Mountains and was initially spread by southwest wind gusts to 35 mph. The fire reached Osha Peak during the evening of April 16th. On the 20th, the fire spread rapidly northeast due to 40 mph winds. It entered flatter terrain on the east side of the Manzanos, and by April 21st, 3750 acres were burned including nine homes, nine outbuildings and two recreational vehicles. The 4800 acre fire was 95 percent contained by April 29th, but was fanned by strong southwest winds of 40 to 50 mph on the 30th, forcing the evacuation of Sufi and Apple Mountain Campgrounds and the Sherwood Forest subdivision, west of Torreon. Over 50 additional homes and one communications tower were damaged or destroyed, mainly in the Sherwood Forest area as the fire grew to more than 11,000 acres. The fire continued to be uncontained into the month of May. Cost was $8.5 Million.
- **November 19, 2007 -** A small human caused wildfire which began in the southern Manzano Mountains early in the morning on the 19th grew to around 7000 acres early on the 21st. Three residences and 4 outbuildings were destroyed. Nearly 100 people were evacuated prior to Thanksgiving Day in the villages of Punta de Agua and Manzano. Cost was $500K

4.3.4 Probability of Future Events

The potential for wildfire is present throughout Torrance County. The location where a wildfire occurs becomes the overriding concern. The major concern caused by wildfires has historically been focused in the Manzano Mountains area. Recently, the County has concerns with grassland fires but these are generally easier to spot and contain.

The probability of another wildfire in the entire planning area of Torrance County and its participating jurisdictions is "**Highly Likely**".

4.3.5 Vulnerability Assessment and Impact

The vulnerability assessment portion of this report uses existing studies to estimate potential losses from wildfire. The Torrance County Wildland Urban Interface Area Inventory Assessment (2003) identified areas of Wildland-urban interface within the county (figure 4.7). Information was gathered for the report by Torrance County government officials, the National Park Service, the USFS, and the State of New Mexico Southwest Areas Wildland Fire Operations Group. Another resource was the East Mountain Interagency Fire Protection Association.

Torrance County covers a land area of 2,150,624 acres in central New Mexico. There are 6,268 acres of High Risk Areas, 32,411 acres of Medium Risk areas, and 13,136 acres of Low Risk Areas, totaling 51,815 acres of Wildland Urban Interface. (Torrance County WUI Area Assessment 2003).

A total of 102 Wildland Urban Interface areas were assessed by the county, resulting in the following ratings: 13 developments qualify for High Hazard Rating and are to be considered for immediate mitigation; 67 areas qualify for a Medium Hazard rating, and education specific mitigation strategies are recommended; and 22 developments are categorized in the Low Hazard Rating.

Each subdivision area was assessed using the Woodland Home Forest Fire Hazard Rating sheet to arrive at the Hazard Ratings. The following hazard rating factors were analyzed for each subdivision:

- Fuel: light, medium, or high–hazards fuels.
- Slope: mid, moderate, steep, or extreme.
- Structure: design characteristics, combustible or non-combustible roof, and siding material.
- Means of Access for Emergency Vehicles: one way, less than 16-feet, grade more that 15%, dead end roads or turnarounds less than 100-ft., and ability of bridge to handle emergency equipment.
- Safety Zone: amount/percent of homes with at least 30 feet of defensible space between homes and fuel.
- Additional factors: none or not clearly visible street name and/or number signs, subdivision entrance not marked, power lines above ground, availability of static water sources, high density of houses and distance from fire department, ease of plowing or raking a fire line in location, steepness, and rockiness.

The WUI Assessment of Torrance County indicates that the availability of water resources is extremely limited. Some sub-divisions have wells with limited storage capacity and a few hydrants. In the event of a fire, it is doubtful that this amount of water would be sufficient to fend off a wildland-urban fire. Other water resources such as lakes, ponds, and dry hydrants do not typically have water available. A reservoir was available in one High Risk area, but had limited capacity. Irrigation wells typically have limited access, and most do not have fire department hose connections. The WUI Assessment has a comprehensive list of wells throughout the County.

The Assessment states that the final and most dependable method of obtaining water is a water shuttle operation. This type of operation would require traveling a significant distance to acquire water. An alternative is to establish a large network of storage relay sites, which would have to be strategically located.

The WUI Assessment lists fire department land hazard area locations. There are no fire departments in the High Hazard areas; however, two fire departments outside the study area may be available for use: four fire departments in the Medium Hazard areas and five fire departments in the Low Hazard areas.

Critical Facilities

According to the Moriarty Fire Chief, critical facilities are differentiated between transportation and buildings. There are no Critical Facilities within Torrance County that have been identified as vulnerable to wildfire. Categories of Critical Facilities include infrastructure and public facilities.

The Town of Estancia, Village of Willard, Town of Mountainair and Village of Encino, doesn't have any critical facilities identified as a being vulnerable to wildfire. This includes all categories of Critical facilities, infrastructure and public facilities.

Infrastructure

- ✓ The Planning Mitigation Team did not identify any major infrastructure threatened by wildfire. There are all types of utilities throughout the County including overhead and underground utilities and propane tanks. There are electrical distribution lines that cross the WUI. However, more detailed information was not available at the time of the WUI report.

- ✓ The location and relative risk of pipelines in the County were assessed in the 2003 WUI Assessment. TransWestern and El Paso pipelines carry natural gas across one-third of a Low Risk WUI survey area. Approximately one-third of the Williams Mid-American LPG and Natural Gas pipelines pass through a Low Risk area. One-tenth of the Texas and New Mexico Crude Oil pipeline passes through a Medium Risk area, and one-fourth of the pipeline is in a Low Risk area. Diamond Shamrock pipelines carry diesel, gas, and jet fuel across the northern portion of Torrance County. Approximately one-tenth of the pipeline passes through the Medium Risk area, and one-third of the pipelines are in a Low Risk area.

- ✓ Interstate 40 (I-40) runs along the northern portion of the County and is considered a high hazard area due to high volumes of hazardous material traveling through the state.

- ✓ A large number of train cars run on Burlington Northern Santa Fe (BNSF) railroad tracks through the County.

Public Facilities

- ✓ Two archeological sites located in Torrance County have been placed in a "Special Concerns" category of the National Park Service and are potentially vulnerable to wildland fire. The Salinas Pueblo Mission National Monument locations are Gran Quivira, Quarai, and Abo (WUI Assessment 2003).

- ✓ Schools and municipal structures are located throughout the County. There are no public structures in High Risk areas. One school, fire station, and police station are in the Low Risk area west of Estancia. In Mountainair, three schools, one fire station, one airport, one police station, and two Tier 2 facilities are in the Low Risk area.

Estimating Potential Loss

The wildland-urban interface analyses discussed above show that future wildfires could cause substantial loss of property, along with direct and indirect economic effects for residents and community businesses. This report uses census data and parcel data from the assessor's office to estimate the number and value of non-municipal structures at risk from wildfire. According to the WUI Assessment, there are over two million acres located in areas vulnerable to fire damages in the County. Virtually all of the vulnerable areas are located in non-incorporated areas of the County.

The wildland urban interface assessment only surveyed non-municipal private land. There are eleven critical facilities in Low Risk areas. The value of critical facilities was not calculated because the available data is a county-wide assessment of non-residential values.

The estimated dollar loss for homes in the WUI areas is based on the median value of homes, $105,200 and the percent damage expected from different hazard ratings. Utilizing 100% destruction for homes in the High hazard area, 50% for Medium hazard, and 20% for Low hazard rating areas in the WUI, dollar amounts are seen in Table 4.4.

Table 4.4: Potential Dollar Losses for Homes in WUI Areas Median home value: $105,200			
Hazard Rating	**Damage**	**Homes***	**Value**
High	100%	357	$37,556,400
Medium	50%	2,508	$131,920,800
Low	20%	376	$7,911,040

Source: Torrance County WUI Area Assessment 2003 and 2010 US Census

**Number of structures taken from 2003 WUI assessment plus estimated increase of 5.25% as determined from housing unit increase for Torrance County from 2000 to 2010 Census data of .75% per year.*

4.3.6 Conclusions

Wildfires can be a significant threat to the citizens, structures, infrastructure, and natural resources within the County. Thirteen of these areas have a High Hazard assessment and should be considered the first priority for wildfire mitigation projects. These areas are all contained within the Claunch-Pinto District concerned the areas where stakeholders reside. The overall risk for all areas within the county for a fire is high.

4.4 Drought

4.4.1 Overview

A drought is a period of prolonged dryness that contributes to depletion of water supplies, both underground and on the surface. Drought is a natural climatic condition caused by an extended period of limited rainfall (less than normal) in a broad geographic area. High temperatures, high winds, and low humidity exacerbate drought conditions. Human demands and actions also exacerbate drought-related impacts.

Droughts are often categorized as meteorologic, hydrologic, agricultural, or socioeconomic:

- A meteorologic drought is defined by a period of less than average or normal precipitation.
- A hydrologic drought occurs when a meteorologic drought begins to affect surface and subsurface water supplies.
- An agricultural drought refers to the effects of a meteorologic or hydrologic drought in terms of soil moisture and its relation to plant life, usually crops.
- A socioeconomic drought is when the water shortages affect public health and economic activity including agriculture.

The National Weather Service (NWS) and the United States Department of Agriculture (USDA)'s collaborate with academic institutions to categorize drought. Taking input from these entities and local sources, the National Drought Mitigation Center (NDMC) through the US Drought Monitor website issues a state by state weekly drought severity assessment using these categories shown in increasing intensity from top to bottom:

- **D0** – Abnormally dry
- **D1** – Drought - Moderate
- **D2** – Drought - Severe
- **D3** – Drought - Extreme
- **D4** – Drought - Exceptional

Droughts do the worst damage when they are prolonged and in New Mexico this is possible over multiple years like the droughts of the 1950s and the multi-year drought still in effect for the western half of the state as of August 2015. While drought is a cyclical process, a growing population in New Mexico and threat from wildfire as a result of dry conditions make it a significant hazard.

4.4.2 Location and Spatial Extent

Geologic features like flooding, wildfires and droughts are common in New Mexico and Torrance County. Drought is generally a broad geographic hazard that is not tied to site specific topographic and geologic features like flooding and affects the entire planning area equally. The climate in Torrance County is semiarid with average annual precipitation that ranges from about 8.7 inches in lower areas to over 16 inches in higher elevations. Snowfall averages about 9.9 inches annually. The uppermost elevations of the Manzano Mountains in the western portion and Gallinas Mountains in the southern area of the County generally receive more snowfall than lower elevations.

Torrance County officials consider any conditions indicating a D2 (severe drought) rating on the drought monitor scale would be a severe threat and appropriate warnings would be issued throughout the planning area.

4.4.3 Previous Occurrences

New Mexico has always known drought which is a product of climate ranges. Archeological records indicate that drought has led to the collapse of early civilizations in New Mexico.

In the last 115 years, New Mexico has suffered four devastating periods of drought; 1900-1910, 1931-1941, 1942-1956, and 1974-1979. Other periods of drought include short-duration droughts in New Mexico in 1996[23] and 2008 (specific to northern New Mexico), and a severe drought that affected the State and the rest of the western US in 2002-2003.

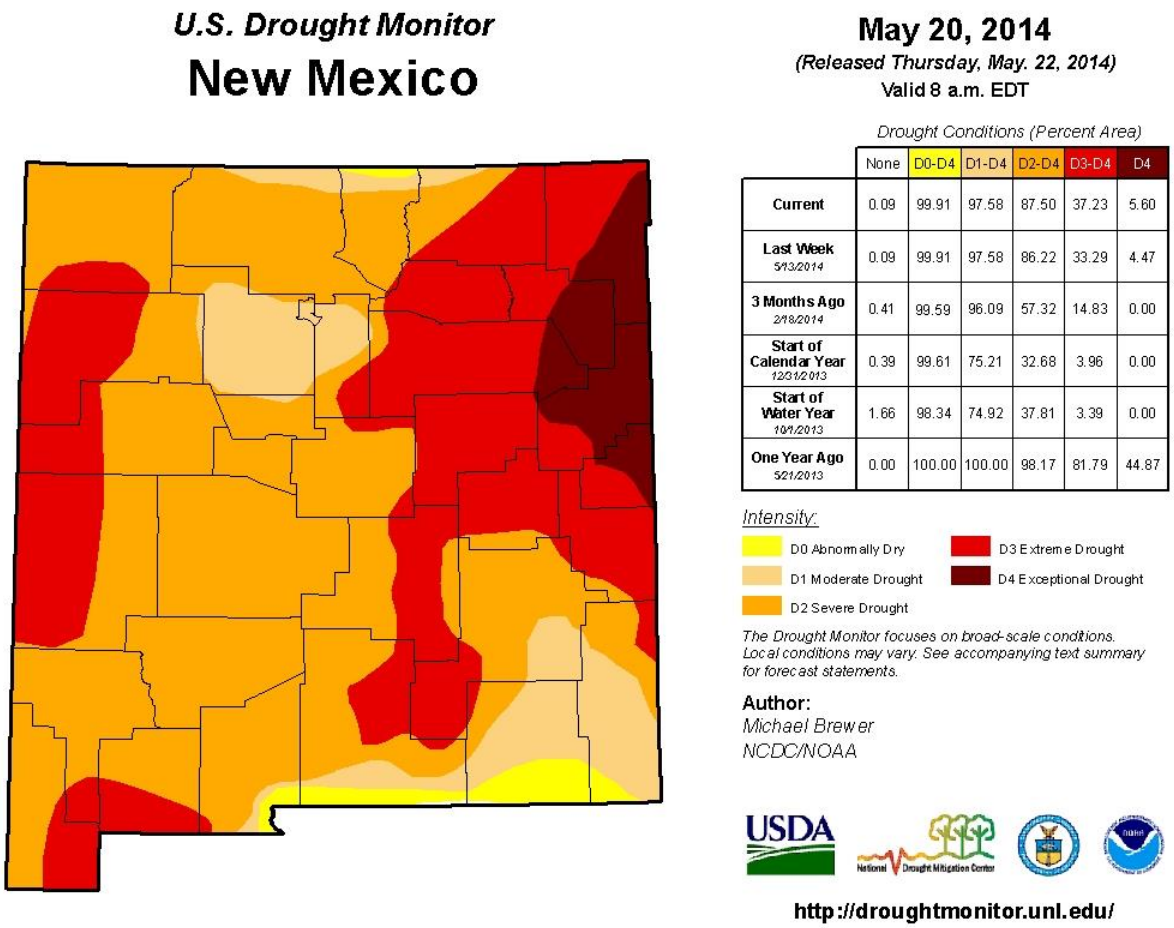
As seen in **Figure 4.9 and 4.10**, as of August 2015, a U.S. Drought Monitor map shows that the western half of New Mexico was in various stages of abnormally dry conditions or moderate drought had lessened considerably from May 2014. This drought had also been in effect in 2012 when the Governor of New Mexico declared a Drought State of Emergency on May 15, 2012. This drought declaration convened the New Mexico Drought Task Force, led by the State Engineer, to determine ways the State can prepare for and mitigate the effects of the drought.

Due to the fact that in May 2013, 44.14% of the state was at the highest level of drought intensity (Exceptional), and 81.68% was either Exceptional or Extreme (the second highest level), the drought that continued in 2013 is considered by some federal meteorologists as the worst one since the 1950s drought[24]. Torrance County, as of January 2016, is partially located within an Abnormally Dry area of drought.

[23] New Mexico Drought Task Force , May 2002

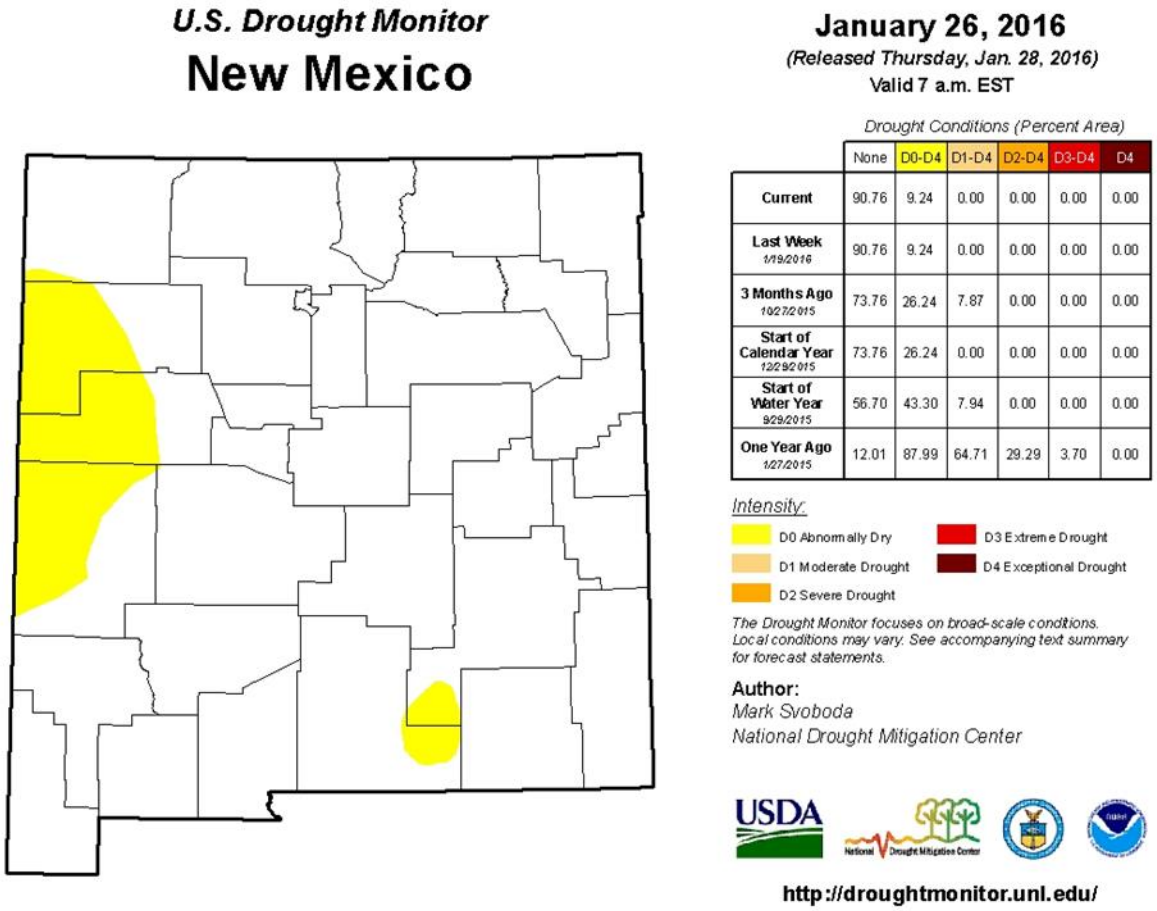
[24] http://www.abqjournal.com/192344/news/drought-is-worst-since-the-1950s.html Accessed September 2013

Figure 4.9: New Mexico Drought Map (as of May 20, 2014)



Source: http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?NM *Accessed May 2014*

***Figure 4.10*:** New Mexico Drought Map (as of January 26, 2016)



Source: http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?NM *Accessed August 2015*

4.4.4 Probability and Extent of Future Events

In an arid region such as Torrance County, the probability of recurring droughts with moderate to exceptional severity is "**Likely**". The drought will affect the entire county. Droughts can last from one season to over 40 years and should be expected at any time. The length of the recovery period is a function of the intensity of the drought, its length, and the quantity of precipitation received as the drought ends. There is scientific evidence suggesting that prolonged periods of drought are increasingly likely in the future in the planning area[25].

4.4.5 Vulnerability and Impact

When severe to exceptional droughts occur, they have significant consequences for water supply (drinking water and agriculture uses), water quality, fighting forest fires, and navigation and recreation. When a drought begins, agriculture is usually first to be affected because of its heavy dependence on stored moisture in the soil. Soil moisture can be rapidly depleted during extended dry periods. Dryland farming and ranching are most at risk from drought. Impact on these activities can be seen during a short-term drought. Water uses depending on in-stream flows, such as irrigated farms; aquatic, wetland, and riparian environmental communities; and recreational uses are at high risk. Urban and agricultural water users who rely on reservoirs and wells that are not dependent on high rates of aquifer recharge are the last to feel the effects[26].

Drought affects the entire county and is a hazard that cannot be eliminated. In addition, drought is cyclic and will always be a potential problem. The effect on the county/city/village government infrastructure is the same as for the general public and poses no specific danger to the normal operation of government.

Drought affects the entire community by placing a higher demand on the present water supply systems. Drought also limits the amount of growth that can be expected for the county and its municipalities due to the lack of recharge of the already finite water supply. Additionally, a higher demand on the water system infrastructure can lead to disruption of service due to line breakage.

It is extremely difficult to estimate the amount of dollar damages from a drought because of the slow-moving nature of droughts and the lack of direct immediate impacts. The 2013 State Plan reports on page 54 that from 2003-2012, the costs of droughts were $500,000, state wide. For the planning area, drought impacts cattle-grazing, other agricultural activities, the tourist economy, and reduced charge to the aquifer. Droughts in Torrance County leaves exposed soils susceptible to erosion, and flash flooding. A particularly long spell of drought could mean water restrictions. Using Table 2.18 found in the 2013 State Plan and applying it to the county's assets, **Table 4.5** of this Plan lists specific potential impacts of drought to the county, including its participating jurisdictions.

Table 4.5: Potential Impacts from the Drought

Subject	Potential Impacts
HEALTH and SAFETY of the PUBLIC	Increased number of wildfires; Health problems related to low water flows and poor water quality; Health problems related to dust
HEALTH and SAFETY of RESPONDERS	Increased wildfire risk coupled with limited water supply makes it more challenging for responders to fight fires and puts responders at greater risk

[25] *Long Term Trends and their Implications for Emergency Management* from http://www.fema.gov/pdf/about/programs/oppa/climate_change_paper.pdf Accessed October 2013

[26] New Mexico Drought Task Force,2002

ENVIRONMENT	Animal habitat and food supply can dwindle causing species die-off; poor soil quality; loss of wetlands; increased soil erosion; migration of wildlife
ECONOMIC CONDITION	Decreased tourism; Crop loss; Decreased land prices; Unemployment from drought-related declines in production; Increased importation of food; Rural population loss
PUBLIC CONFIDENCE	Reduced incomes; Fewer recreational activities; Increase in food costs due to loss of crops and livestock; Loss of aesthetic values; Loss of cultural sites

4.4.6 Conclusions

In New Mexico, drought conditions are often the norm rather than the exception. In most cases, the dry weather conditions that cause droughts will need to persist for months or even years before it becomes clear that drought conditions exist. It is also difficult in an arid state like New Mexico to verify when an affected area has actually recovered from a drought. Many drought events are followed by years of average or slightly below average rainfall that do not restore surface water and/or groundwater levels to pre-drought conditions. More accurate monitoring of groundwater levels in critical aquifers would help to establish base conditions and to assess levels of recovery from a drought. There are also data limitations in determining the available quantity and quality of groundwater.

Mitigation management for drought is a proactive process. The best practices include early assessment, public education, and water conservation programs. Identifying the first phases of the drought and reacting with water conservation at the earliest time will help to mitigate drought later in the disaster. At the State level, the Governor's Drought Task Force Monitoring Working Group monitors the drought situation and can help determine best practices for mitigating the drought effects.

4.5 Earthquake

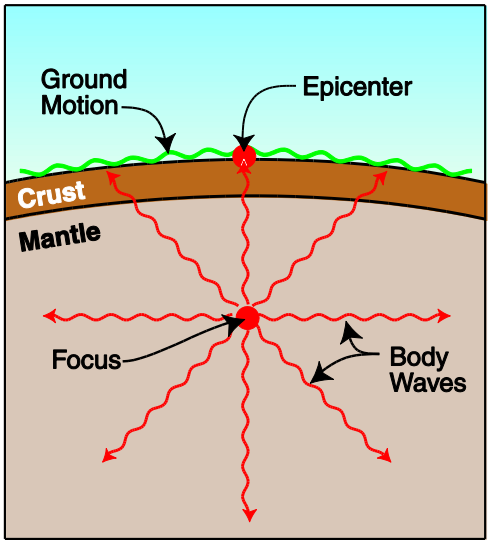
4.5.1 Overview

Earthquakes result from sudden ground motion or trembling caused by a release of strain accumulated within or along the edge of the Earth's crustal plates. Earthquakes occur most frequently in the boundaries between the great crustal plates that form the earth's outer shell. As these plates move, stress accumulates. Eventually, when faults along or near plate boundaries slip abruptly, an earthquake occurs.

The severity of an earthquake depends on the amount of energy released from the fault or epicenter of the earthquake. The severity is described in terms of magnitude and intensity. Magnitude characterizes the total energy released, and intensity subjectively describes effects at a particular place. While an earthquake has only one magnitude, its intensity varies throughout the affected region.

The Richter scale is a logarithmic magnitude scale that defines magnitude in terms of the motion that would be measured by a standard type of seismograph. On the Richter scale, magnitude is expressed in whole numbers and decimals. For every increase of 1.0 on the Richter scale, the energy released by the earthquake increases 10-fold. In more qualitative terms, an earthquake of 5.0 is a moderate event, 6.0 is a strong event, 7.0 is a major earthquake, and 8.0 or higher is catastrophic. The effect of an earthquake on the Earth's surface is called the intensity. In the U.S., the most commonly used intensity scale is the Modified Mercalli Intensity Scale (MMI).

Figure 4.11: Definition Sketch for Earthquake



Source: Understanding Your Risks – FEMA Publication 386-2, page 2-16.

Another way to express earthquake severity is through peak ground acceleration (PGA) which compares the rate at which the ground surface accelerates due to an earthquake's force with the rate of acceleration experienced by a falling object due to gravity. PGA measures the strength of ground movements in this manner. Although the specific damages caused by different magnitudes of earthquakes are listed in **Table 4.6**, generally when the PGA exceeds 15, significant damage will occur. **Table 4.6** also shows the relationship between PGA, magnitude, and intensity (to get the most accurate picture of risk, locational variables such as the distance from the epicenter and depth of the epicenter would need to be factored in as well):

Table 4.6: Earthquake Magnitude/Intensity Comparison

PGA (% g)	Magnitude (Richter)	Intensity (MMI)	Description
<0.17	1.0 - 3.0	I	**I**. Not felt except by a very few under especially favorable conditions.
0.17 - 1.4	3.0 - 3.9	II - III	**II**. Felt only by a few persons at rest, especially on upper floors of buildings. **III**. Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
1.4 - 9.2	4.0 - 4.9	IV - V	**IV**. Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably. **V**. Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
9.2 - 34	5.0 - 5.9	VI - VII	**VI**. Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight. **VII**. Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
34 - 124	6.0 - 6.9	VII - IX	**VIII**. Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. **IX**. Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
>124	7.0 and higher	**VIII** or higher	**X**. Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent. **XI**. Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly

PGA (% g)	Magnitude (Richter)	Intensity (MMI)	Description
			XII. Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Source: Wald, D., et al., 1999, "Relationship between Peak Ground Acceleration, Peak Ground Motion, and Modified Mercalli Intensity in California," *Earthquake Spectra*, v. 15, p. 557 – 564.
USGS Magnitude/Intensity Comparison http://earthquake.usgs.gov/learn/topics/mag_vs_int.php Accessed August 2015.

Although earthquakes in the U.S. have caused less economic loss annually than other hazards like flood, they have the potential to cause great and immediate losses, especially near the epicenter. Within one to two minutes, an earthquake can devastate a city through ground shaking, surface-fault ruptures, and ground failures. Seismic hazards often trigger other devastating events, such as landslides, fires, and damage to dams and levees. Earthquakes can even trigger volcanic eruptions or cause tsunamis in coastal areas.

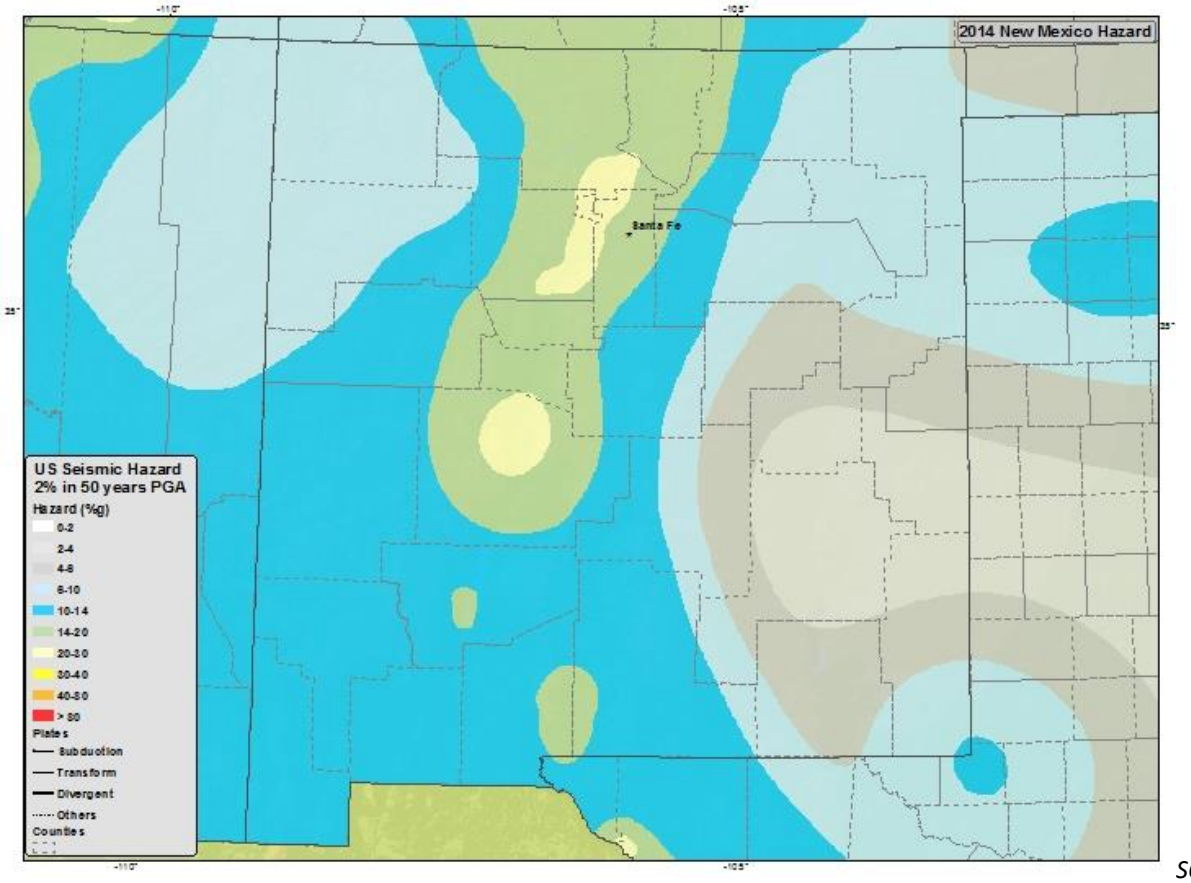
The most significant area of seismic activity in the state is located in the Rio Grande River valley and is centered in Socorro, New Mexico. Eight seismic events have occurred there between 1869 and 1992. The largest recorded seismic event in New Mexico occurred in Socorro in 1906. The effects of this event were felt from El Paso, Texas to Las Vegas, New Mexico; however, little damage was reported and there were no fatalities. Torrance County lies northeast of Socorro and was not affected.

Present structural building code requirements in New Mexico do not consider the possibility of seismic events. Therefor the planning area could be susceptible to damage with even small earthquakes exceeding 3.0. The HMPT will evaluate the benefits of adopting building codes that consider seismic events as a future mitigation action in this plan.

4.5.2 Location and Spatial Extent (Table 4.6)

Though not nearly as intense or as numerous as in some other parts of the world, earthquakes have occurred in New Mexico. In the last 110 years, New Mexico has experienced earthquakes with an estimated magnitude as high as 6.5 (1906). In 1935 and 1966, earthquakes with a magnitude of 5.5 in 1935 and 1966, causing damage to homes and schools. A seismic event would generally have the same magnitude across the County similarly as the effects are wide-spread. **Figure 4.12** below depicts seismic risk across the planning area. It shows a low to moderate risk (blue areas on the map) throughout most of Torrance County with a slight increase in risk on the western portion of the county (green area on the map). The spatial extent of a potential earthquake would be large.

Figure 4.12: Earthquake Risk in Torrance County



SOURCE: AECOM

4.5.3 Previous Occurrences

Torrance County is more vulnerable to earthquakes than many areas of the state. Several of the strongest New Mexico earthquakes recorded in the 2013 State Plan (earthquakes over 4.5 on the Richter Scale) have occurred in close proximity to Torrance County. The closest large New Mexico earthquakes outside of the county were located from 30 to approximately 100 miles away including:

- September 7, 1893; Belen; Magnitude 5.2
- May 28, 1918; Los Cerrillos; Magnitude 5.5
- November 6, 1947; Albuquerque; Magnitude 4.5
- August 3, 1955; Dulce; Magnitude 4.5
- January 23, 1966; Dulce; Magnitude 4.8

While earthquakes are possible in Torrance County, the potential of one occurring is fairly small. Additionally, of the earthquakes that have occurred in New Mexico since 1869, none have produced significant damage to property or injury to the population. Although there will always be the potential of an earthquake occurring in Torrance County, it is not presently anticipated that one of significant magnitude will occur. Historically, no infrastructure of Torrance County, or any of the participating jurisdictions have been impacted by earthquakes.

4.5.4 Probability of Future Events

Given the rare past occurrence and moderate risk in magnitude of earthquakes to the County and its municipalities, the probability of a future event is "**Highly Unlikely**". However, earthquakes are nearly impossible to predict and the consequences can be devastating. Any seismic activity could cause damage and impact the communities of Torrance County because structures have not been built or retrofitted to sustain seismic activity.

4.5.5 Vulnerability and Impact

Earthquakes with epicenters in or near Torrance County have been detected in the past, although they have been small and damage has been relatively minor. The 2013 State of New Mexico Plan includes Torrance County in Preparedness Area #5, the central part of the State comprised of Sandoval, Bernalillo, Valencia, Torrance, and Socorro Counties. The State Plan shows that the maximum probable earthquake in this Area would have a magnitude of 7.5 on the Richter scale and an epicenter in Albuquerque, approximately 20 miles north of the Torrance County line. This type of event would cause significant damage in the planning area.

The potential impact from the State's maximum probable earthquake is critical with most buildings and bridges destroyed. Due to the lack of warning and the peril of falling objects in an earthquake, there would also likely be moderate to severe injuries to Torrance County residents including a few deaths.

The HMPT would need to study the structures in the planning area—their age, condition, and construction type—to rate their relative vulnerability. Unreinforced masonry and adobe structures built before current building codes are more susceptible to damage than other types of structures built to seismic-resistant codes.

4.6 5.5.6. Conclusions

Damage from earthquakes can be mitigated for existing buildings by structural retrofits and non-structural retrofits for interior contents that can be damaged by a fall (e.g., computer) or can cause harm by falling (e.g., bookshelves). Structures erected before standard building codes, such as un-reinforced adobe and masonry buildings, are typically vulnerable to earthquake damage. Structural retrofits are generally very expensive whereas non-structural can be relatively inexpensive.

More detailed information on other structures in Torrance County is required to identify those that are highly vulnerable. New buildings can be built stronger, according to the most recent seismic design specifications found in contemporary building codes, to minimize their vulnerability to earthquake damage.

4.7 Severe Winter Storms

4.7.1 Overview

Winter storms in New Mexico generally begin as low-pressure systems that move through the state following the jet stream. These systems are usually generated in the Pacific Ocean and move eastward across California, Nevada, Arizona and Utah before reaching New Mexico, if strong enough. Severe winter storms may bring bursts of heavy snow accumulating three to six inches in short periods or one to two feet in 12 to 24 hours. Blizzard conditions can develop with winds over 35-mph. Freezing rain and drizzle can create a coating of ice that is hazardous to walk or drive on. Unusually heavy ice accumulations can damage trees, power lines and other utilities, and buildings.

Table 4.7 provides descriptions of the various types and impacts of winter storms that are consistent with NWS approved definitions found in the 2013 State Plan:

Table 4.7: Types of Winter Storms

Storm Type	Description
Heavy Snowstorm / Snowfall	Accumulations of 6 inches or more in a 12-hour period, or 8 inches or more in a 24-hour period. The most common effects are traffic accidents; interruptions in power supply and communications; and the failure of inadequately designed and/or maintained roofing systems.

Storm Type	Description
Sleet / Sleet Storm	Significant accumulations of solid grains or pellets of ice that form from the freezing of raindrops or partially melted snowflakes. While this ice does not cling to surfaces, it causes slippery surfaces, posing hazards to pedestrians and motorists.
Ice Storm	Significant accumulations of rain or drizzle freezing on exposed objects (trees, power lines, roadways), causing slippery surfaces and damage from the weight of ice accumulation.
Blizzard	Wind velocity of 35 mph or more, temperatures below freezing, and considerable blowing snow with visibility frequently below one-quarter mile, prevailing over an extended period of time.
Severe Blizzard	Wind velocity of 45 mph or more, temperatures of 10 degrees Fahrenheit or lower, a high density of blowing snow with visibility frequently measured in inches, prevailing over an extended period of time.
Wind Chill	An apparent temperature that describes the combined effect of wind and low air temperatures on exposed skin
Freezing drizzle/freezing rain	The effect of drizzle or rain freezing upon impact on objects that have a temperature of 32° F or below

The 2013 State Plan lists the likely severe winter storm scenarios for New Mexico:

- 4 or more inches of snowfall below 7,500 feet
- 6 or more inches of snowfall above 7,500 feet in a 12 hour period
- 6 or more inches of snowfall below 7,500 feet
- 9 inches of snowfall above 7,500 feet in a 24-hour period

Severe winter storms can have a significant impact to the citizens of Torrance County. Generally when such a storm hits, it may cause some traffic slow-down, but it rarely causes major transportation routes to be closed for more than a day.

4.7.2 Location and Spatial Extent

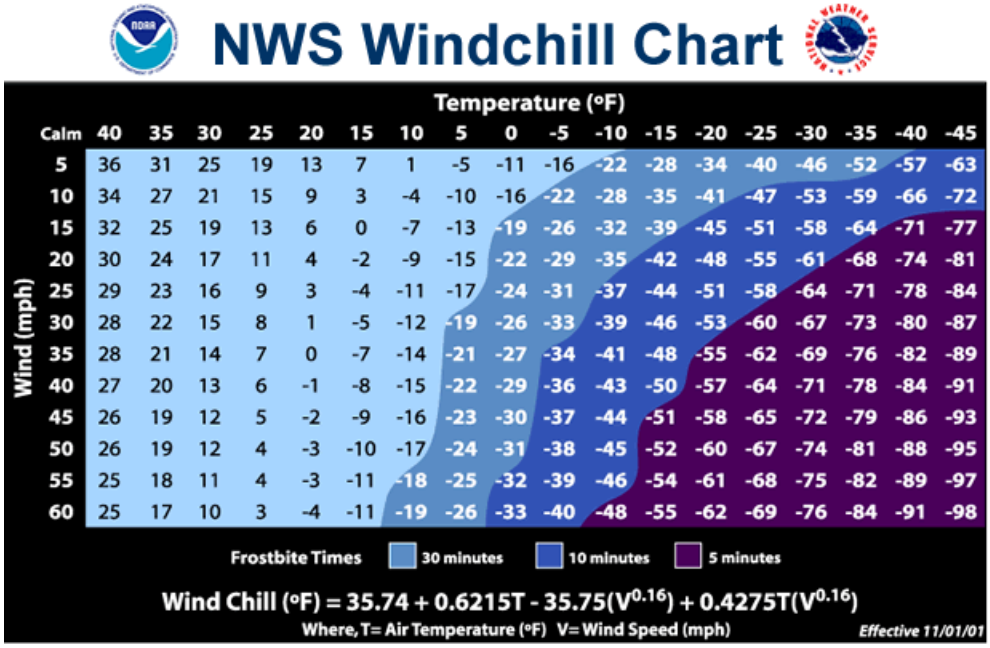
The complex terrain of New Mexico, ranging from the eastern plains, to the high mountains across the northern and western regions, to the Rio Grande Valley, creates weather systems that change quickly over relatively short distances. The weather may be relatively mild and sunny along the Rio Grande Valley with near blizzard conditions found across the high plains east of the central mountain chain.

Severe winter storms are generally large enough to affect the entire planning area. Historically, winter storms in the planning area are rare. The most severe conditions would typically include snowfall of 10 inches or less but would result in extreme wind chills. The areas affected include the participating jurisdictions within the Claunch-Pinto District and the City of Moriarty.

Wind chills play the most significant role in Torrance County's severe winter weather since the welfare of residents is directly related to wind chill. Local officials encourage citizens to heed the warning and take extra precautions. Wind chill is the combination of wind and temperature that serves as an estimate of how cold it

actually feels to exposed human skin. Local officials throughout the planning area consider wind chill values below -10 degrees to be extremely dangerous to the population although hypothermia can occur at higher temperatures and cause death. The following **Table 4.8** gives a range of physical intensities from winter storms along with the potential effect:

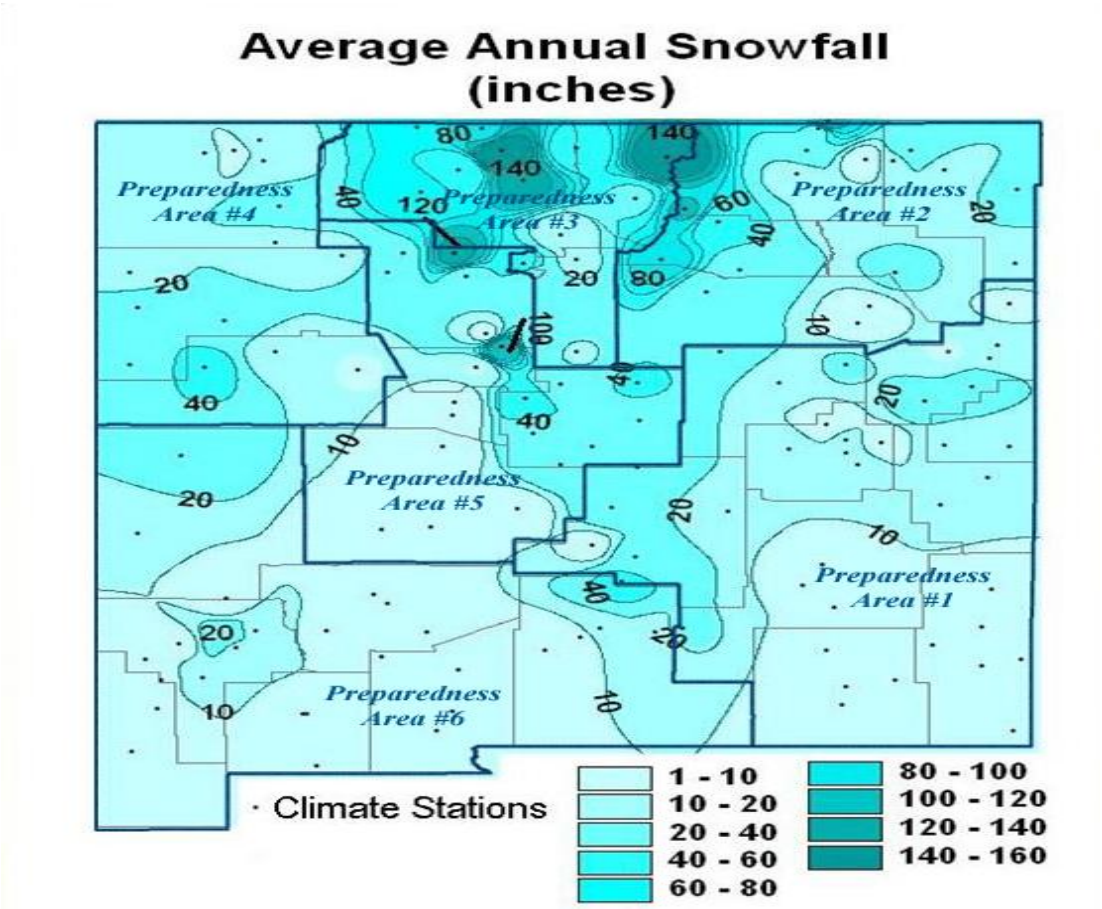
Table 4.8: National Weather Service Wind chill Chart with Impacts



Figures 4.13 and **4.14** from SRH of NOAA show annual snowfall amounts across New Mexico[27]:

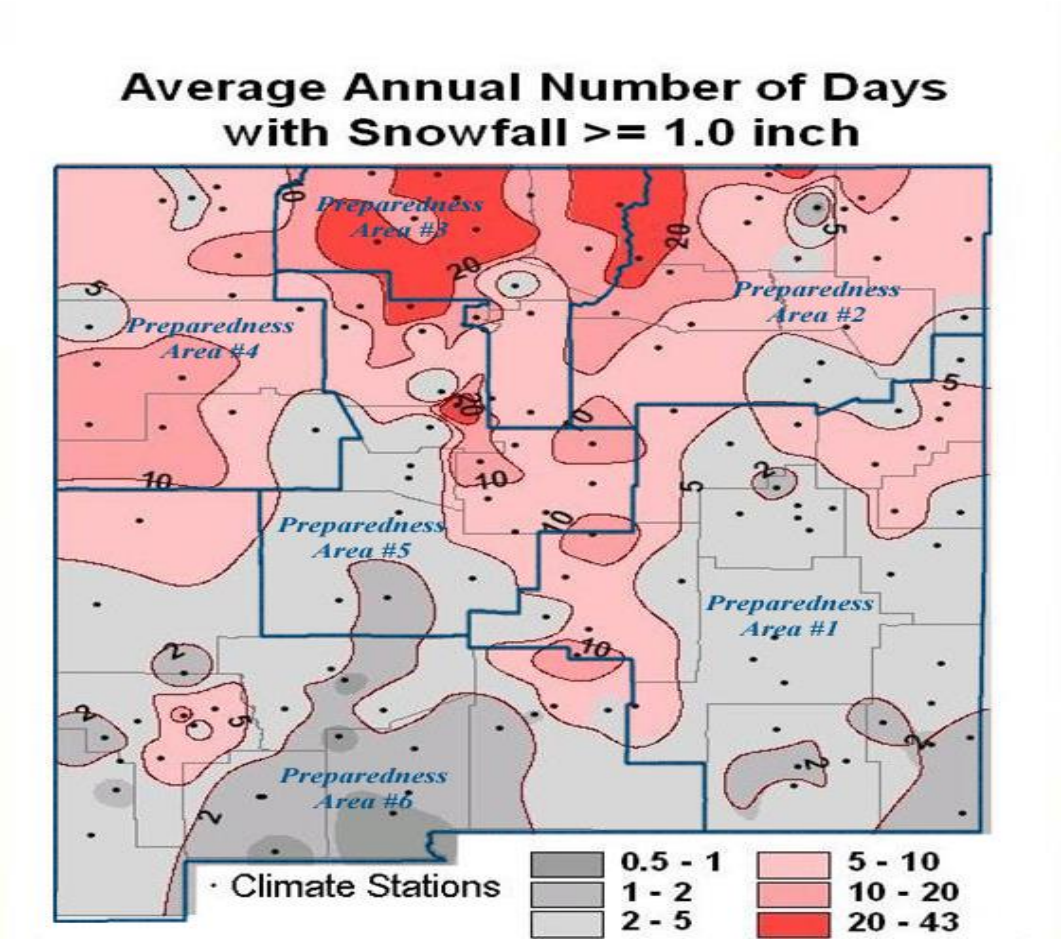
[27] Source: http://www.srh.noaa.gov/abq/?n=prepwinterwxclimo

Figure 4.13: Average Annual Snowfall in New Mexico



Source: NOAA Southern Region Headquarters (SRH)

Figure 4.14: Average Annual Number of Days with Snowfall in New Mexico



Source: NOAA Southern Region Headquarters (SRH)

4.7.3 Previous Occurrences

Only 2 extreme cold/wind chill or blizzard events were reported for Torrance County from January 1, 1996 through December 31, 2013. The following narrative from the NCDC summarizes the events:

- **December 7, 2009 – Blizzard** - Light snow began falling the evening of the 7th, but the heavier snow came in the morning of the 8th as a strong cold front plowed from west to east. Blizzard conditions were noted for about 4 hours as visibilities dropped near one quarter of a mile in blowing and drifting snow with wind gusts estimated near 60 mph. Two to 4 inches of snow was reported across the Estancia Valley.
- **February 2, 2011 – Extreme Gold/Wind Chill -** Temperatures down to -30 degrees and 5 mph winds created wind chill values of -30 to -45 degrees.

The New Mexico State Plan shows a total of 1 Extreme Cold/Wind Chill event for Planning Area 5, with no reported property damage. Three significant heavy snow events were listed for Torrance County as follows:

- **December 24-26, 2015** – Winter Storm Goliath brought a huge swath of snow and ice from the West through a large part of the Plains, Midwest and Northeast. Within that zone, a historic blizzard buried the southern Plains in heavy snow whipped by wind gusts as high as 80 mph. A state declared winter storm affected Torrance County on Interstate 40 leaving many transient residents stranded. The storm brought over two feet of snow leaving many in the county stranded. As a result of the storm, the City of Moriarty and the Torrance County Office of Emergency Management set up a shelter to house over 200 residents.

- **January 1, 2001** - A slow-moving winter storm howled into northern and central New Mexico with gusty winds and heavy snow, which closed state highways and many rural roads and contributed to two deaths from exposure. Tribal police found one body just north of Gallup and another near Bluewater. The storm produced 18 to 36 inches of heavy snow that engulfed snow removal and closed roads from the eastern Sangre de Cristo Mountains south over Las Vegas into the central highlands to Vaughn and Corona and westward over the Estancia Valley and the east slope communities of the Sandia and Manzano Mountains. Some residents remained trapped in their homes for 4-5 days before enough snow removal opened both the major and minor county roads. A state of emergency was declared in several counties including Mora, San Miguel and Torrance.

- **December 22-25, 1997** - The state received a federal declaration (FEMA-1202) for a severe winter storm that affected Chaves, DeBaca, Eddy, Guadalupe, Lincoln, Mora, Quay, Torrance, and Union counties. Interstate 40 was closed for an extended period between Albuquerque and Santa Rosa. Approximately 400 tons of hay was airlifted to livestock, and over 10,000 sheep and cattle were lost. Total losses (property and crop) were valued at $6.5 million, and the cost for clearing and repairing roads and highways was estimated at $4 million.

- **April 1997** - The northern half of the state experienced blizzard conditions with widespread power outages. Utility damages were estimated at $1.5 million, and the three county area of DeBaca, Guadalupe, and Torrance Counties sustained over $1 million dollars in livestock losses, including an estimated 5,000 dead sheep.

4.7.4 Probability of Future Events

The 2013 State Plan reports a probability of 1.2% annual chance that heavy snowfall or extreme cold/wind chill events will occur in Preparedness Area #5. Given this approximate frequency, the probability of a future severe winter storm event to the entire planning area is "**Likely**". Because of the severe winter storm events in Torrance County are typically short-lived resulting in a 5 to 10 inches of snowfall.

4.7.5 Vulnerability and Impact

The entire county and planning areas are vulnerable to severe winter storms with wind and light snow or ice. The severity of winter storms may vary from mild impacts to an extremely dangerous storm that can bring wind, snow and ice that can both create whiteout conditions, hazardous to safety, and impacts to structures and infrastructure. A severe winter storm in Torrance County would have the following types of impacts:

- overwhelm local capabilities to handle disruptions to emergency services, traffic, communications, and electric power when snow and ice-laden branches fall across power lines and interrupt service;
- cause school and business closures, as well as disruptions in transportation systems, electric power, telecommunications, and emergency services;
- Residents potentially running out of basic supplies, including food and fuel;
- livestock suffer from severe cold and lack of feed; and
- in extreme cases, building roof systems fail due to snow loading.

Severe Winter Storms have occurred in the past and will occur again in the future. However, given the infrequent recurrence of the extreme cold events and the relatively minor losses associated with this type of event, the overall vulnerability is considered to be **High**.

4.7.6 Conclusions

Severe winter storms have been and will continue to be a threat to the economic and social well-being of Torrance County. Disruptions of emergency and other essential services are the main threats to the people and property.

One important part of mitigating severe weather is forecasting and warning so people can prepare. Communities can prepare for winter storms by stocking sand and salt to improve road conditions, advising people to stay home or to use caution if they must go out, and recommending that people stock up on food, water, batteries, and other supplies.

Future Development should take into consideration the effects of winter storms, including excessive snow loading on roofs. Interior piping that is not insulated or protected can burst causing damage.

4.8 Thunderstorm (including Lightning/Hail)

4.8.1 Overview

Thunderstorms are generally produced when dry and cool air converges with warm moist air. Large cold fronts moving through areas of warm moist air can produce long lines of thunderstorms cells. Thunderstorms are responsible for much of the severe weather across New Mexico, particularly during the North American Monsoon season in the summer. The thunderstorm season in New Mexico is well defined, from early July to September. Thunderstorms are a frequent occurrence in July and August, especially over the northwest and north central mountains of New Mexico.

Thunderstorms are characterized by high winds, heavy rain, hail, lightning, and, on rare occasions, tornados. The National Weather Service defines a severe thunderstorm as a thunderstorm with any of the following attributes: downbursts with winds of 58 miles (50 knots) per hour or greater (often with gusts of 74 miles per hour or greater), hail 0.75 of an inch in diameter or greater, or a tornado. Due the fact that high rainfall impacts are covered in the "Flood" section (**4.2**) and that both high winds and tornadoes have their own sections in this plan (**4.8** and **4.9** respectively), this section primarily focuses on hail and lightning.

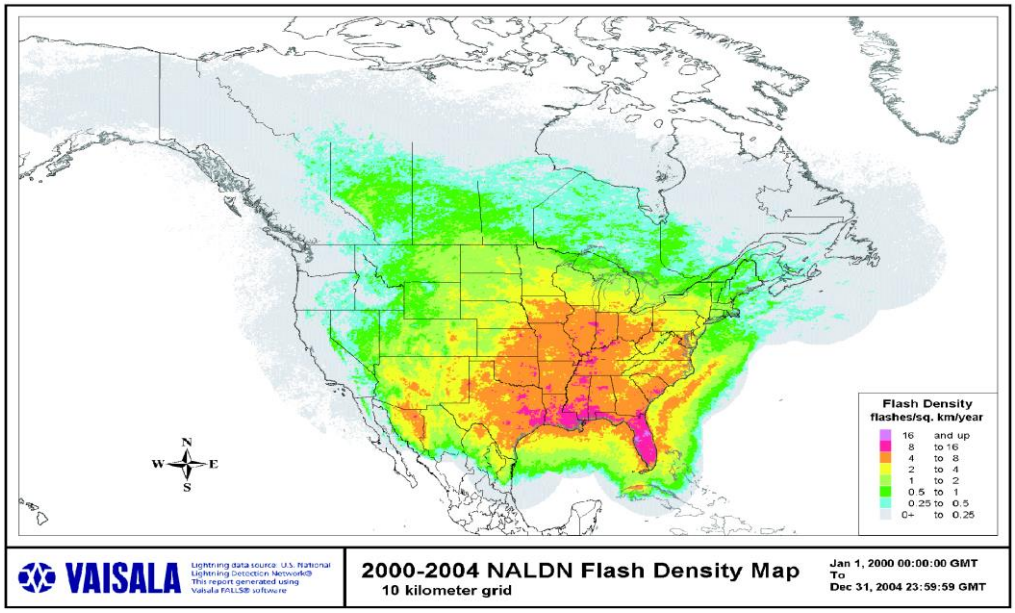
The 2013 State Plan describes lightning as "a sudden and violent discharge of electricity, usually from within a thunderstorm, due to a difference in electrical charges. Lightning is a flow of electrical current from cloud to cloud or cloud to ground." Hail is described as the movement of water droplets up and down inside the cloud, through cold, where the droplets freeze and then warmer temperatures. Layers of ice can be added to the frozen droplets which can become quite large, sometimes round or oval shaped and sometimes irregularly shaped. The frozen droplets of various sizes finally fall to the ground as hail. Hail sizes can range from pea-sized to the size of a softball. The 2013 State Plan states that severe hailstorms most commonly occur in May, followed by June, July and April.

4.8.2 Location and Spatial Extent (Table 4.2)

All areas of Torrance County are susceptible to thunderstorms (including lightning and hail), although local topography, such as elevation and land contours, plays a significant role in how weather affects a particular area. Thunderstorms can be either localized or widespread so their impact can vary depending on the size, strength and speed of the storm. At the time of storm occurrence, one neighborhood may experience severe damage while another, located nearby, escapes with minimal impact. Large-scale thunderstorms with multiple lightning strikes, hail and high wind would create the most impact over a wide area.

The Vaisala map below shows a flash density of 6-9 flashes/square mile/year for the entire planning area. Specific records are not kept at the local level. Officials of each participating jurisdiction consider all thunderstorm events which contain lightning to be severe events and warrant evasive actions.

Figure 4.15: Flash Density Map



Source: Vaisala

The TORRO Hailstorm Intensity Scale in relation to typical damage and hail size is presented below in **Figure 4.16**. H0 to H1 hail intensity could typically be expected for the planning areas.

Figure 4.16: TORRO Hailstorm Intensity Scale

	Intensity Category	Typical Hail Diameter (mm)*	Probable Kinetic Energy, J-m^2	Typical Damage Impacts
H0	Hard Hail	5	0-20	No damage
H1	Potentially Damaging	5-**15**	>20	Slight general damage to plants, crops
H2	Significant	10-**20**	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20-**30**	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-**40**	>500	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-**50**	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-**60**		Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-**75**		Severe roof damage, risk of serious injuries
H8	Destructive	60-**90**		(Severest recorded in the British Isles) Severe damage to aircraft bodywork
H9	Super Hailstorms	75-**100**		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

The complex terrain of New Mexico, ranging from the eastern plains, to the high mountains across the northern and western regions, to the Rio Grande Valley, creates other regimes that change quickly over relatively short distances. Thunderstorms (including lightning and hail) in Torrance County may directly only affect a small portion of it. The spatial extent of thunderstorms (including lightning and hail) is small.

4.8.3 Previous Occurrences

The NOAA Southern Region Headquarters website shows that May (920 events) and June (1,105) have had the most hail events in New Mexico from 1955 to 2014[28]. During this same time period, 62 hail events were reported in Torrance County. While occasional minor lightning occurs throughout the planning area during thunderstorms only two significant events were reported, both in 2013. One on these lightning events caused $10,000 in property damage on July 24, 2013.[29] By comparison, the counties experiencing the highest number of hail events during this timeframe are Eddy (383) and Lea (369).

The 2013 State Plan reports that of the hail events that affected Preparedness Area #5, including Torrance County, $8.8 million of property damage and $20,000 of crop damage occurred.

4.8.4 Probability and Extent of Future Events

Torrance County experiences thunderstorms with hail and/or lightning on a fairly frequent basis. Each of those jurisdictions affected are the Town of Estancia, City of Moriarty, Town of Mountainair, Village of Willard, Village of Encino, and The Claunch-Pinto SWCD. The 2013 State Plan reports that New Mexico ranks sixth in the nation in lightning fatalities with 0.55 deaths per million people annually. The State ranks 22nd in lightning frequency overall. While typical thunderstorms can be expected almost 100% annually, thunderstorms that are capable of producing lightning and hail severe enough to threaten safety and property are considered "**Likely**".

4.8.5 Vulnerability and Impact

Vulnerability to the effects of thunderstorms on buildings is dependent on the age of the building (and what building codes were in effect at the time it was built), type of construction, and condition of the structure (how well the structure has been maintained). All of the planning areas critical facilities are vulnerable to potential disruption of services and transportation systems as well as disruptions to emergency communications capabilities. Electric and telephone services are particularly vulnerable to disruption.

The most probable impact of a thunderstorm in Torrance County is lightning. Other impacts of thunderstorms, flood and wildfire ignition, are addressed in **Sections 4.2** and **4.3** respectively. The potential impacts of hail and lightning to Torrance County are:

- local capabilities to handle disruptions to emergency services, traffic, communications, and electric power are overwhelmed;
- hail causes damage to property (particularly crops, roof systems of building, and vehicles);
- lightning strikes a person or animal causing severe injury or death;
- lightning directly strikes a building causing damage or strikes a tree that falls on a building, person, animal or vehicle.
- lightning strikes ignite a wildfire that threatens the safety of people and destroy property; and,
- lightning causes a power surge in a building's electrical system that damages the system and/or electronic equipment plugged into the system.

[28] http://www.srh.noaa.gov/abq/?n=prephazards Accessed August 2015

[29] http://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Hail&eventType=%28C%29+Lightning&beginDate_mm=01&beginDate_dd=01&beginDate_yyyy=1950&endDate_mm=08&endDate_dd=01&endDate_yyyy=2015&county=TORRANCE%3A57&hailfilter=0.00&tornfilter=0&windfilter=000&sort=DT&submitbutton=Search&statefips=35%2CNEW+MEXICO Accessed August 2015

4.8.6 Conclusions

One important part of mitigating severe weather is forecasting and warning so people can prepare. Communities can be notified of approaching severe thunderstorms and take action to seek shelter or get out of the path of the storm. An example in Torrance County is a lightning detector alarm at the Estancia Fire Department. Important community structures and critical facilities should have their electric and roof systems evaluated for vulnerability to hail and lightning. Electronic systems should be unplugged once warning of a thunderstorm has been issued.

4.9 High Wind

4.9.1 Overview

High winds that damage property and endanger the safety of people and animals come from a variety of sources. High winds in New Mexico are usually generated by severe thunderstorms and severe winter storms. Torrance County is Wind Speed Zone II; experiencing wind speeds up to 160 mph (see **Figure 4.17**).

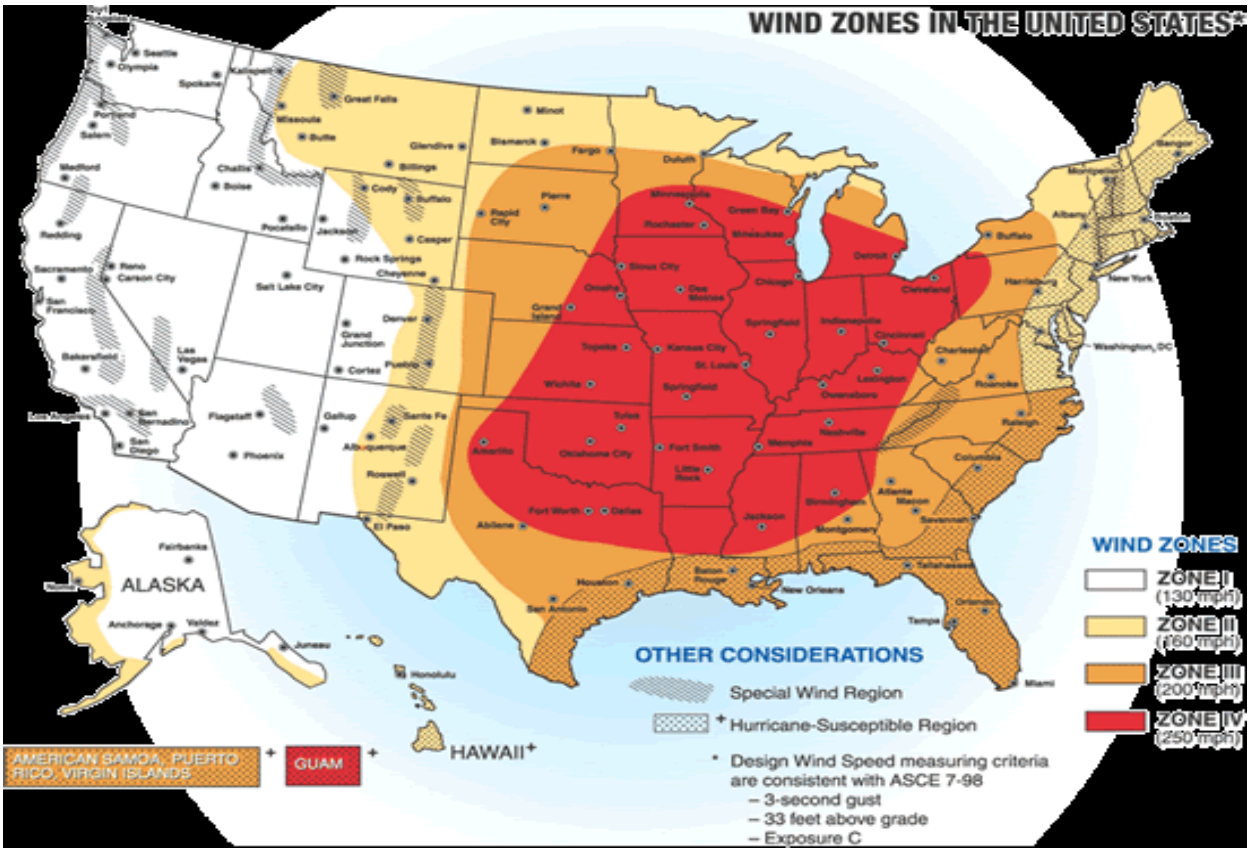
A microburst is a strong, localized thunderstorm downdraft which, when it strikes the surface, produces winds affecting an area less than 2.5 miles across. A microburst according to the US Weather Service "is a small area of rapidly descending air beneath a thunderstorm. When the descending air hits the ground, it quickly spreads out in all directions, causing very strong, strait-line winds." A microburst forms "inside a thunderstorm, [when] water vapor condenses into raindrops, which then fall to the ground. When these raindrops fall through the air, they start to evaporate. The evaporation cools the air, causing it to become denser than the air around it. This rain-cooled air, along with the falling raindrops, accelerates downwards; it is this down-rushing air that eventually hits the ground … causing the damaging straight-line winds."

High winds are considered hazards when the winds cause direct damage to crops, buildings or infrastructure through impacts to the buildings themselves or causing debris or trees to crash into the asset creating damage. Flying debris in high winds can also cause injuries to people and animals.

4.9.2 Location and Spatial Extent

High winds are a hazard that generally has a large geographic impact being caused by larger scale storms, like thunderstorms and winter storms. Torrance County's location in wind speed zone II means a fairly low possibility of extreme wind speeds up to 160 mph. While the entire planning area is susceptible to high wind, areas along the Estancia valley where the incorporated jurisdictions are located are at higher risk.

Figure 4.17: Wind Zones of the United States



Source: 2013 State Plan (originally from ASCE 7-10)

The Beaufort Wind Scale in **Figure 4.18** shows the specific effects that various wind speed has on land.

Figure 4.18: Beaufort Scale

Beaufort number	Mean wind speed (kt / km/h / mph)	*Description*	Land conditions
0	0 / 0 / 0	Calm	Calm. Smoke rises vertically.
1	2 / 4 / 2	Light air	Wind motion visible in smoke.
2	5 / 9 / 6	Light breeze	Wind felt on exposed skin. Leaves rustle.
3	9 / 17 / 11	Gentle breeze	Leaves and smaller twigs in constant motion.
4	13 / 24 / 15	Moderate breeze	Dust and loose paper raised. Small branches begin to move.
5	19 / 35 / 22	Fresh breeze	Smaller trees sway.
6	24 / 44 / 27	Strong breeze	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult.
7	30 / 56 / 35	Near gale	Whole trees in motion. Effort needed to walk against the wind.
8	37 / 68 / 42	Gale	Twigs broken from trees. Cars veer on road.
9	44 / 81 / 50	Strong gale	Light structure damage.
10	52 / 96 / 60	Storm	Trees uprooted. Considerable structural damage.
11	60 / 111 / 69	Violent storm	Widespread structural damage.
12	N/A	Hurricane	Massive and widespread damage to structures

The entire planning area can experience all 12 Beaufort categories.

4.9.3 Previous Occurrences

Between January 1, 1950 and December 31, 2013, the National Climatic Data Center (NCDC) reported 19 Thunderstorm wind events impacting Torrance County with an average estimate of $5,700 in property damage per event. During the same reporting period, and 46 high wind events were reported for the planning area with an average of less than $500 in property damage per event.

4.9.4 Probability of Future Events

Given the fairly frequent occurrence of high wind in Torrance County, the probability of a future event is "**Likely**" for all the planning jurisdictions.

4.9.5 Vulnerability and Impact

Torrance County experiences high wind frequently, based on seasonal meteorological patterns and local topographical conditions. All areas of the County are vulnerable to high winds, although local topography plays a significant role in how wind affects a particular area. Compared to the hurricane-prone southeastern U.S. coast, the vulnerability is not as high.

The likely impacts of high winds in Torrance County and to the participating jurisdictions would be damage to manufactured homes, disruption of power and telephone services, highway closures, and disruptions to emergency communications capabilities. Studies have not been conducted during the HMP planning process. Additional future studies should focus on the vulnerability of key public facilities to high wind.

4.9.6 Conclusions

Mitigation opportunities for high wind in Torrance County include adopting updated building codes. For existing residential structures, the most effective mitigation actions focus on the most vulnerable structures, particularly manufactured and mobile homes. These structures can be inspected for adequate tie-downs and retrofitted if necessary. Torrance County and its participating jurisdictions should examine its critical facilities for wind retrofits first. There have not been subsequent updates to this Plan; once studies are concluded an update to the plan can address those vulnerabilities.

4.10 Tornado

4.10.1 Overview

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes and other tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of the high wind velocity and wind-blown debris, also accompanied by lightning or large hail. According to the National Weather Service, tornado wind speeds normally range from 40 to more than 300 miles per hour. The most violent tornadoes have rotating winds of 250 miles per hour or more and are capable of causing extreme destruction and turning normally harmless objects into deadly missiles.

Each year an average of more than 800 tornadoes are reported nationwide, resulting in an average of 80 deaths and 1,500 injuries.[30] While tornadoes are most likely to occur during the months of March through May and can occur at any time of day, they are more likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touch down briefly. Even small short-lived tornadoes can inflict tremendous damage. Highly destructive tornadoes may carve out a path over a mile wide and several miles long.

The destruction caused by tornadoes ranges from light to incredible depending on the intensity, size, and duration of the storm. Typically, tornadoes cause the greatest damage to structures of light construction such as residential homes (particularly mobile homes). The Enhanced Fujita Scale for Tornadoes was developed to measure tornado strength and associated damages (see **Table 4.9**).

Table 4.9: Enhanced Fujita Scale for Tornadoes

EF-Scale Number	Intensity Phrase	3 Second Gust (MPH)	Type of Damage Done

[30] NOAA, 2007 information

Source:

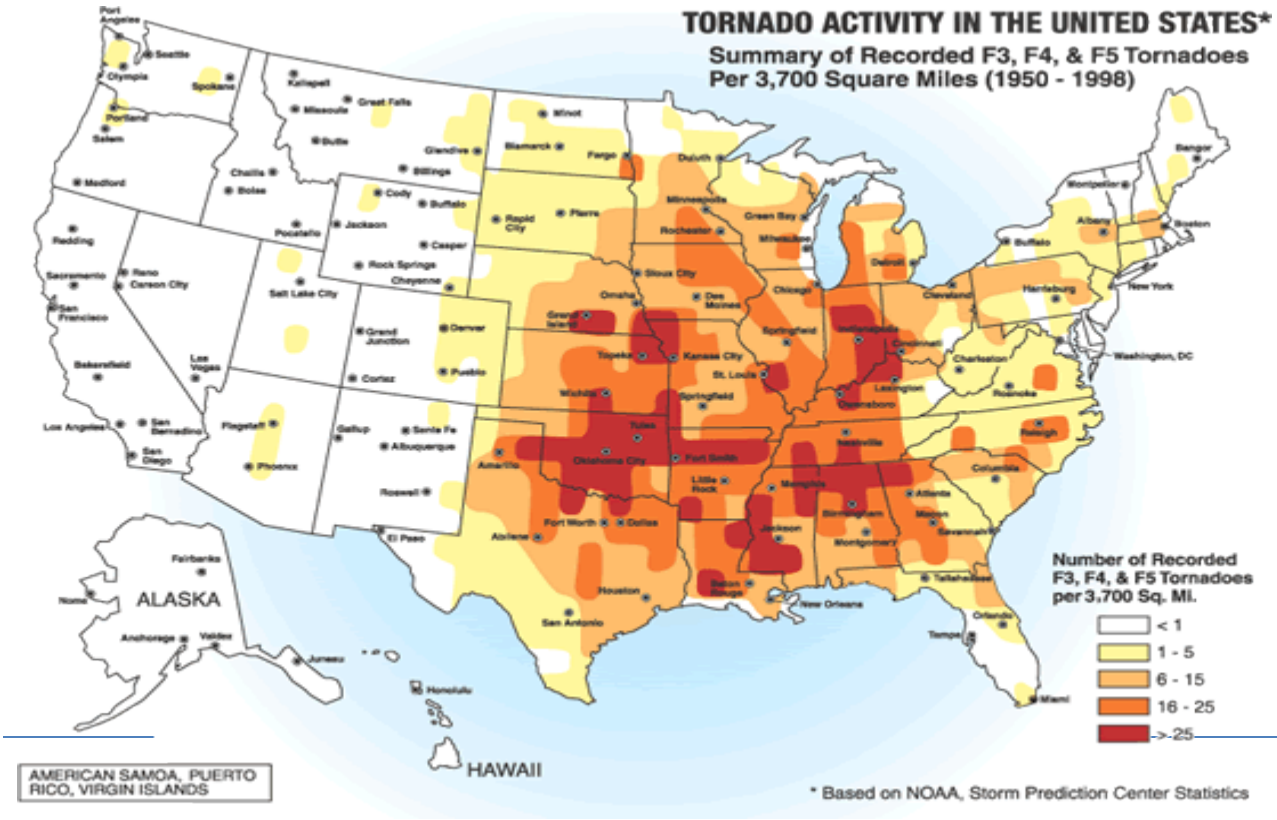
EF0	GALE	65–85	Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees; damages to sign boards.
EF1	MODERATE	86–110	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off the roads; attached garages may be destroyed.
EF2	SIGNIFICANT	111–135	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
EF3	SEVERE	136–165	Roof and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted.
EF4	DEVASTATING	166–200	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
EF5	INCREDIBLE	Over 200	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged.

NOAA

4.10.2 Location and Spatial Extent (Table 4.9)

According to the NOAA Storm Prediction Center (SPC), the highest concentration of tornadoes in the United States has been in Oklahoma, Texas, Kansas, and Florida respectively. The Great Plains region of the Central United States favors the development of the largest and most dangerous tornadoes (earning the designation of "tornado alley"). **Figure 4.19** shows tornado activity in the United States based on the number of recorded tornadoes per 1,000 square miles. Only small parts of eastern New Mexico have more than 1 tornado reported for 1,000 square miles indicating a low risk for the rest of New Mexico (including Torrance County). While the entire planning area is subject to the threat of tornadoes, the planning area's lower elevations are at a slightly greater risk. The spatial extent of a tornado is small.

Figure 4.19: Tornado Activity in the United States



Source: http://www.fema.gov/safe-rooms/tornado-activity-united-states

4.10.3 Previous Occurrences

There were nine reports of tornado activity in Torrance County from January 1955 through August 2015, according to the NOAA. All events were reported as EF0. Damages were reported for **only one** tornado event in 1959, resulting in $25,000 in property damages. No associated property damages or injuries were reported for the remaining 8 events.

4.10.4 Probability and Extent of Future Events

Given the relatively rare occurrence of tornadoes in Torrance County, the probability of a future event is "**Unlikely**". If a tornado did occur, it will most likely be an EF0 or EF1, the weakest types.

4.10.5 Vulnerability and Impact

While the magnitude and location of tornadoes are unpredictable, the only tornadoes to have occurred in the planning area in the past 30 years were classified as low intensity (F0), with no reported damages. However, Torrance County would be vulnerable to a direct strike by even a low intensity tornado. The impact of a future EF-0 or EF-1 tornado in Torrance County would include damage to trees, roofs, chimneys, sign boards, gutters, windows, and siding. Mobile homes may be pushed off foundations or overturned. The entire planning area is equally vulnerable to the impacts of tornadoes. Due to the potential of a stronger tornado, the impact would then be considered critical.

4.10.6 Conclusions

The potentially strong winds of a tornado and random location make it a difficult hazard to mitigate. Tornadoes are unpredictable in extent or severity. The areas impacted by the tornado will experience critical impacts, but those impacts will be limited in extent and will not impact the entire community. If the highest category tornado were to occur it could be critical, based on history the impact is limited. Most tornado mitigation activities across the nation focus on life safety. Safe rooms, both community and individual ones, are common mitigation actions to protect people in a tornado event.

4.11 Extreme Heat

4.11.1 Overview, Previous Occurrences, Location, Probability and Severity

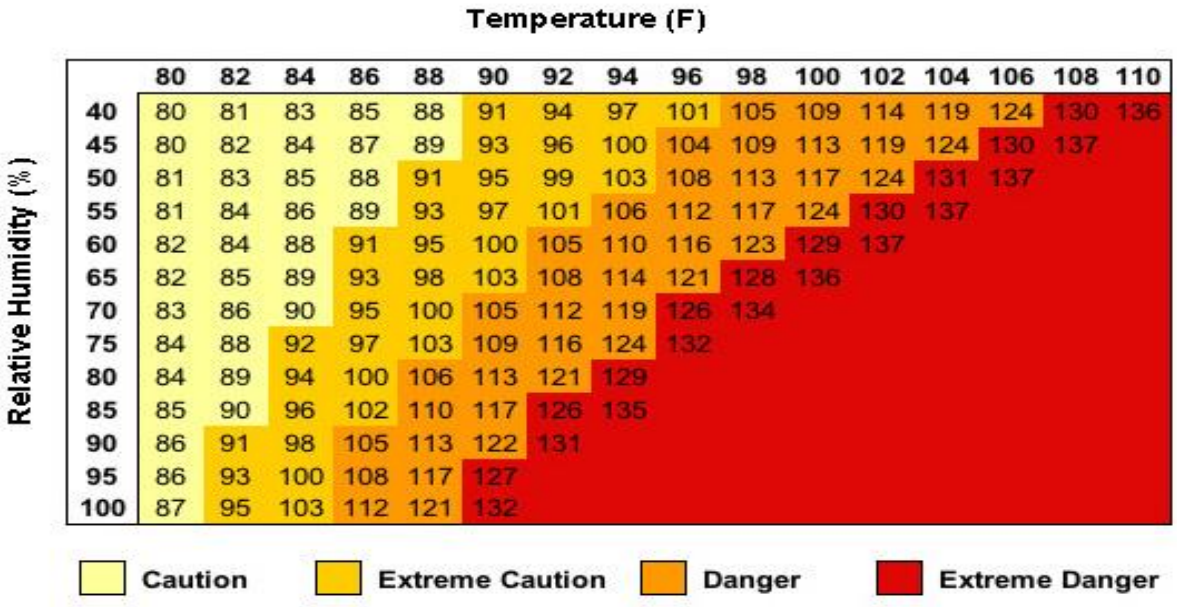
Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and that last for an extended period of time. Humid conditions may also add to the discomfort of high temperatures. Health risks from extreme heat include heat cramps, heat fainting, heat exhaustion, and heat stroke. According to the National Weather Service, heat is one the leading weather-related killer in the United States and kills hundreds of people every year[31]. However, most deaths are attributed to prolonged heat waves in large cities that rarely experience hot weather. It is important to note however that while extreme temperatures threaten human health they typically do not cause significant damage to the built environment. The elderly and the ill are most at-risk, along with those who exercise outdoors in hot, humid weather.

[31] http://www.nws.noaa.gov/os/heat/index.shtml#heatindex Accessed August 2015

The 2013 State Plan reports that that in New Mexico, at elevations below 5,000 feet, individual day-time temperatures often exceed 100°F during the summer months. However, during July, the warmest month, temperatures range from slightly above 90°F in the lower elevations to 70°F in the higher elevations.

The danger of extreme heat is gauged by using the Extreme Heat Index (below). The Heat Index, as seen below, displays the relative danger in regards to Air Temperature and Relative Humidity.

Figure 4.20: Extreme Heat Index



Source: http://www.nc-climate.ncsu.edu/images/climate/heat_index.jpg

The 2013 State Plan reports that there have been 2 extreme heat events in Preparedness Area #5. There have been two reported deaths as a result of these events. Both deaths were young children left unattended in vehicles. Both deaths occurred outside of the planning area in the neighboring county of Bernalillo.

Torrance County considers any extended period with temperatures above 90 degrees to be hazardous and cause for concern. The entire planning area is equally subject to extreme heat. The probability of extreme heat occurring in the future is "**Possible**". The spatial extent of the damage is for the County is **Moderate**.

4.11.2 Vulnerability and Conclusions

While extreme heat events will occur again in the future, Torrance County's existing buildings, infrastructure, and critical facilities are not considered vulnerable and therefore any estimated property losses are anticipated to be minimal across the area. Extreme heat does however present a considerable safety risk to Torrance County's vulnerable populations. Heat casualties are usually caused by lack of adequate air conditioning or heat exhaustion. The most vulnerable population to heat casualties are the elderly or infirmed, who frequently live on low fixed incomes, and cannot afford to run air-conditioning on a regular basis, may experience power outages, and may be isolated, with no immediate family or friends to look out for their well-being. Young children are also extremely vulnerable to heat, particularly when left unattended in the elements.

During extreme heat episodes, the elderly should seek shelter in air-conditioned spaces. Due to the lack of mitigation options for extreme heat, this hazard is considered a nuisance and will not be addressed in the rest of the plan except for an action to designate a cooling center for Torrance County during times of extreme heat and an education program on the dangers of extreme heat and children. There has not been a plan currently in

place to address the vulnerabilities. The future conditions or events will warrant investigation, a future update to this Plan will address it.

4.12 Summary of Vulnerability

The findings presented in **Section 4** were developed using the best available data and methods that provide an approximation of hazard risk. These approximations should be used to understand relative hazard risk. However, uncertainties are inherent in risk assessment methodology, arising in part from incomplete scientific knowledge concerning specific hazards and their effects on the built environment and from generalities that are necessary to provide a comprehensive analysis and overview of hazard risk for large planning areas.

The preparers of this Plan's hazard risk assessment relied heavily on historical data, stakeholder input, and professional and experienced judgment regarding projected hazard impacts. The preparers also considered the findings in other relevant plans, studies, and technical reports.

To draw some meaningful planning conclusions on hazard risk for Torrance County, the results of the combined risk assessment process were used to generate hazard profiles according to a Priority Risk Index (PRI). The purpose of the PRI, described further below, is to categorize and prioritize the 9 identified hazards for Torrance County and the participating jurisdictions as high, moderate, or low risk. There are not critical structures that have been identified throughout the County, or local jurisdictions.

Priority Risk Index

The prioritization and categorization of identified hazards for the planning area is based principally on the PRI, a tool used to measure the degree of risk for identified hazards in a particular planning area. The PRI is used to assist the HMPT in gaining consensus on the determination of those hazards that pose the most significant threat to Torrance County based on a variety of factors. The PRI is by no means scientific, but is rather meant to be utilized as an objective planning tool for classifying and prioritizing hazard risks in Torrance County based on standardized criteria. The hazard profiles developed earlier in this section allows for the prioritization of high hazard risks for mitigation planning purposes.

The numerical PRI results allow identified hazards to be ranked against one another (the higher the PRI value, the greater the hazard risk). PRI values are obtained by assigning varying degrees of risk to five categories for each hazard (probability, impact, spatial extent, warning time, and duration) which occurred in the **Section 4** hazard profiles. Each degree of risk was assigned a value (1 to 4) and a weighting factor, as summarized in **Table 4.1**. To calculate the PRI value for a given hazard, the assigned risk value for each category is multiplied by the weighting factor.

The sum of all five categories is the final PRI value using this example equation:

PRI VALUE = [(PROBABILITY x .40) + (IMPACT x .20) + (SPATIAL EXTENT x .20) + (WARNING TIME x .10) + (DURATION x .10)]

Using the weighting scheme used by Torrance County, the highest possible PRI value is 4.0. **Tables 4.10 – 4.15** summarize the degree of risk assigned to each category for all identified hazards. The PRI Score for each hazard is in the last column on the right.

	Table 4.10 Category/Degree of Risk for Torrance County					
	Probability	**Impact**	**Spatial Extent**	**Warning Time**	**Duration**	***PRI Score***
Flood	Highly Likely	Critical	Moderate	Less than 6 Hours	Less than 24 Hours	**3.5**
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	**3.3**
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	**3.0**
Earthquake	Highly Unlikely	Critical	Large	Less than 6 Hours	Less than 6 Hours	**1.6**
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 week	**3.0**
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	**1.6**
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	**2.1**

	Table 4.11 Category/Degree of Risk for the Town of Estancia					
	Probability	**Impact**	**Spatial Extent**	**Warning Time**	**Duration**	***PRI Score***
Flood	Highly Likely	Critical	Moderate	Less than 6 Hours	Less than 24 Hours	**3.5**
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	**3.3**
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	**3.0**
Earthquake	Highly Unlikely	Critical	Large	Less than 6 Hours	Less than 6 Hours	**1.6**
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 Week	**3.0**
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	**1.6**
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	**2.1**

- ***High*** – PRI score over 2.5
- ***Moderate*** – PRI score between 1.8 and 2.5
- ***Low*** – PRI score 1.7 or below

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	Table 4.12 Category/Degree of Risk for the City of Moriarty					
	Probability	**Impact**	**Spatial Extent**	**Warning Time**	**Duration**	***PRI Score***
Flood	Highly Likely	Critical	Moderate	Less than 6 Hours	Less than 24 Hours	**3.5**
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	**3.3**
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	**3.0**
Earthquake	Highly Unlikely	Critical	Large	Less than Hours	Less than 6 Hours	**1.6**
Severe Winter Storms	Highly Likely	Limited	Large	More than 24 Hours	Less than 1 week	**3.4**

	Table 4.12 Category/Degree of Risk for the City of Moriarty					
	Probability	**Impact**	**Spatial Extent**	**Warning Time**	**Duration**	***PRI Score***
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	**1.6**
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	**2.1**

	Table 4.13 Category/Degree of Risk for the Town of Mountainair					
	Probability	**Impact**	**Spatial Extent**	**Warning Time**	**Duration**	***PRI Score***
Flood	Possible	Limited	Small	Less than 6 Hours	Less than 24 Hours	**2.2**
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	**3.3**
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	**3.0**
Earthquake	Highly Unlikely	Critical	Large	Less than Hours	Less than 6 Hours	**1.6**
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 week	**3.0**
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	**1.6**
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	**2.1**

- ***High*** – PRI score over 2.5
- ***Moderate*** – PRI score between 1.8 and 2.5
- ***Low*** – PRI score 1.7 or below

	Table 4.14 Category/Degree of Risk for the Village of Willard					
	Probability	**Impact**	**Spatial Extent**	**Warning Time**	**Duration**	***PRI Score***
Flood	Highly Likely	Critical	Moderate	Less than 6 Hours	Less than 24 Hours	**3.5**
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	**3.3**
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	**3.0**
Earthquake	Highly Unlikely	Critical	Large	Less than Hours	Less than 6 Hours	**1.6**
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 week	**3.0**
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	**1.6**
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	**2.1**

	Table 4.15 Category/Degree of Risk for the Village of Encino					
	Probability	**Impact**	**Spatial Extent**	**Warning Time**	**Duration**	***PRI Score***
Flood	Possible	Limited	Small	Less than 6 Hours	Less than 24 Hours	**2.2**
Wildfire	Possible	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	**2.1**
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	**3.0**
Earthquake	Highly Unlikely	Critical	Large	Less than Hours	Less than 6 Hours	**1.6**
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 week	**3.0**
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	**2.3**
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	**1.6**
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	**2.1**

- ***High*** – PRI score over 2.5
- ***Moderate*** – PRI score between 1.8 and 2.5
- ***Low*** – PRI score 1.7 or below

5 Mitigation Goals, Measures, and Actions

The preparation of goals, measures and actions to address the risks defined in **Section 4** is the culmination of the mitigation plan. The implementation of these measures will lead to the fulfillment of risk reduction and ultimately, a higher quality of life for the citizens of Torrance County.

5.1 Mitigation Measures

5.1.1 Hazard Mitigation Goals

The mitigation goals reflect the aspirations of the Torrance County HMPT to provide a safe environment in the planning area while preserving cultural sites, the natural environment and a quality of life. The goals formulation process is linked to the risk and vulnerability findings. The resulting mitigation actions are the specific measures needed to meet the goals. These goals from the prior County HMP were reviewed and in acceptance of Torrance county and local jurisdictions. The mitigation goals of Torrance County and participating jurisdictions are:

I. Reduce possibility of damage and loss to existing community assets including structures, critical facilities, infrastructure, and the possibility of injury and death due to **wildfires**.

II. Reduce possibility of injury and death due to severe weather including **tornadoes, high wind, severe winter storms, extreme heat, thunderstorms (lightning and hail)**.

III. Reduce possibility of damage and loss due to **drought**.

IV. Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to **flooding**.

V. Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to **earthquakes**.

VI. Promote disaster-resistant future development.

VII. Promote hazard mitigation as a public value in recognition of its importance to the health, safety, and welfare of the population.

5.1.2 NFIP Participation and Continued Compliance

Flood insurance offered through the National Flood Insurance Program (NFIP) is the best way for home and business owners to protect themselves financially against the ravages of flooding. Torrance County, Moriarty, and Estancia are participating jurisdictions, in the NFIP and are in good standing. None of the participating jurisdictions were found to have NFIP repetitive loss properties. The numbers of NFIP policies in place per participating jurisdiction are as follows:

Torrance County:	56
Estancia:	45
Moriarty:	32
Mountainair:	Does not participate in the NFIP
Willard:	Does not participate in the NFIP
Encino:	Does not participate in the NFIP

Torrance County, Estancia, and Moriarty will continue to ensure compliance in the NFIP. Mountainair, Willard, and Encino will evaluate the benefit of joining the NFIP. No flood insurance claims were reported in Torrance County according to the NFIP website.

5.2 Previous Mitigation Action Plan Update

Torrance County

1) Expand county GIS data to Identify Hazard Prone and Sensitive-Areas for new building codes.

Hazard: Thunderstorm/Lightning/Hail; Winter Storm

Description: Prioritize and implement a GIS sensitive-areas analysis to identify properties within the County and used to adopt new county-wide building codes. Hardware and software can be shared with other County offices.

Status: This project was implemented since the 2007 planning cycle but additional updates are needed. Project is on-going and is forwarded through this planning cycle for additional implementation.

2) Accelerate forest thinning programs on federal, state, and all public and private lands.

Hazard: Wildfire

Description: Utilize federal, state, and local agencies and existing programs (Collaborative Forest Restoration) to work with public and private landowners and land grants to thin overgrown and dead forests to reduce catastrophic wildfire in WUI and Forests in general.

Status: Advance action for additional future implementation.

3) Educate public on Wildland-Urban Interface (WUI) best practices through demonstration site and educational brochures

Hazard: Wildfire

Description: Create educational demonstration site to show fuel breaks, thinned forest and other best practices to encourage residents to utilize these practices to reduce the threat of catastrophic wildfire. Create brochures utilizing demonstration site photographs.

Status: In Progress. Advance action for future implementation with multi-hazard approach.

4) Implement a Reverse 911 Warning System County-wide.

Description: The system is a “reverse 911” system that will call citizens on their phones to warn/evacuate etc. The warning system can be used to alert citizens of impending disasters by location, thereby targeting citizens in danger. Cost effective means for early warning notification to residents. This system can be utilized to warn residents in case of wildfire, human-caused hazards, and severe weather.

Status: System has been implemented, status is complete.

5) Update floodplain and floodway maps in Torrance County and conduct new hydraulic studies where necessary.

Description: Previous flood maps in Torrance County are outdated. County needs to update/create new Flood Insurance Rate Maps (FIRMs). Participate in map modernization program for 2008.

Status: Not implemented due to limited funds. Advance for future implementation. Revise scope to include road inundation mapping updates.

6) Create an agreement between USFS, NM State Forestry, and private landowners to utilize water held in private cisterns during wildfires

Description: This agreement will allow fire fighters to enter private lands to utilize privately held water sources during times of wildfire. The agreement will allow legal access to the property and reduce time needed to eliminate time needed to gain entrance.

Status: Implemented, needs future coordination to further advance in future. Advance action for additional implementation.

7) Prevent Water Transfers out of the Estancia Basin

Description: The Estancia Basin is in a critical management area according the Office of the State Engineer. Fund group to protect and lobby for a ground water study and legislative actions to prevent water transfers out of the Basin to ensure the availability of water in the future for users within the Basin.

Status: Not implemented due to lack of funding. Advance action for future implementation.

8) Create and maintain defensible space around all vulnerable residential structures and critical facilities.

Description: Participation in Firewise Communities can be an effective means to implement defensible space techniques in areas vulnerable to wildfires. Communities are involved in Firewise, advance action for further implementation.

Status: Not implemented due to lack of funding. Advance action for future implementation.

9) Establish county-wide community participation in StormReady, to enable preparedness for the impacts of severe weather through better planning, education, and awareness.

Description: Develop a StormReady Program to increase communication within the County to warn of approaching bad weather.

Status: Not implemented due to lack of funding. Advance action for future implementation.

10) Protect wells from actual and potential sources of contamination during flooding, and wellhead management.

Description: NMED can help implement a wellhead protection program through local associations educate communities about wellhead protection.

Status: Not implemented due to lack of funding. Advance action for future implementation with multi-hazard approach.

11) Increase water storage capacity for fire suppression with new 50,000-gallon storage tanks in central location in East Mountain area and in vulnerable subdivisions

Description: Community water supply is limited by present storage capacity; impacts ability to suppress wildland urban fires.

Status: This project is currently in progress but is advanced for additional implementation as additional tanks build resiliency.

12) Develop and support public safety interagency planning, training, and response to wildfires in Torrance County – Participate in East Mountain Interagency Fire Planning Agency (EMIFPA).

Description: Develop a program to integrate planning and training efforts for local emergency response for wildfire. The group will function as a platform for sharing lessons learned and strategies for an integrated city/county/volunteer response to wildfires.

Status: Not implemented due to lack of funding. Advance action for future implementation.

13) Require city, county, and village officials to participate in creation and implementation of the State Drought Management Plan.

Description: Identify City and County staff to attend meetings and convene a work group of city, county and village officials to participate in the creation and implementation of the State Drought Management Plan by identifying staff to attend meetings.

Status: Not implemented due to lack of funding. Advance action for future implementation.

14) Conduct study to examine and map the vulnerability of critical facilities, manufactured homes, and other structures to hazards.

Description: County has high percentage of manufactured homes and a number of historic critical facilities. Identify specific vulnerabilities and distribute information about how to strengthen their ability to resist high wind events. Input information into GIS.

Status: Not implemented due to lack of funding. Advance action for future implementation.

15) Develop cistern water storage in high wildfire risk areas with limited water supply.

Description: Storm water can provide significant water that can augment existing water supplies. Underground water storage supplies can also be trucked in.

Status: Not implemented due to lack of funding. Advance action for future implementation.

16) Expand Doppler Weather Radar (in partnership with local weather providers).

Description: Currently Torrance County is not adequately covered by Doppler weather radar. Doppler radar coverage would be used for early detection of weather-related hazards, including localized thunderstorms and high wind events.

Status: No longer considered a priority. Project not considered for future implementation.

17) Require participation and provide educational programs to pursue alternative agricultural practices that conserve water use both for large-scale agriculture and residential uses.

Description: New agricultural methods such as hydroponics have potential to save large quantities of water and introduce new crops that provide higher profit margin.

Status: Project in progress. Advance action for further implementation.

18) Develop cistern water storage in new subdivisions with limited water supply.

Description: Storm water can provide significant water that can augment existing water supplies. In the future this supply can be augmented by water delivery. Due to the decreasing water level of the aquifer, and the current drought, alternative sources will be necessary in the future.

Status: Not implemented due to lack of funding. Advance action for future implementation.

19) Increase awareness of potential for earthquakes in Torrance County.

Description: Although earthquakes are rare in Torrance County, earthquakes should be included in other disaster information literature and programs already in place. Information should include what to do before, during, and after an earthquake.

Status: Not implemented due to lack of funding. Advance action for future implementation.

20) Review and update existing building codes for earthquakes.

Description: Building codes are the first line of defense against earthquake damage. Adopt new building codes, as necessary, to ensure adequacy in respect to potential earthquake risk.

Status: No longer considered applicable, do not consider for future implementation**.** Do not advance project.

21) Conduct Technical Assistance Visits to help homeowners implement non-structural earthquake retrofits of their home.

Description: Work with home owners to conduct inexpensive, non-structural retrofitting such as securing appliances, bookcases, cabinet drawers and doors to prevent tipping/opening during an earthquake; securing pictures and framed art to walls; securing hanging fixtures to the ceiling, and applying safety film to glass windows and doors.

Status: Not implemented due to lack of funding. Advance action for future implementation.

22) Increase awareness of potential for land subsidence in Torrance County.

Description: Areas within the Estancia Basin are vulnerable to land subsidence due to ground water pumping. Land subsidence should be included in other disaster information literature and programs already in place.

Status: Hazard not profiled and not considered a threat. No longer considered priority measure for mitigation. Do not advance project.

23) Map areas vulnerable to landslides and land subsidence in Torrance County.

Description: Areas within the Estancia Basin are vulnerable to land subsidence due to ground water pumping. Mapping vulnerable areas will enable planners when developing land-use zoning maps and guide mitigation activities for landslide/land subsidence hazards.

Status: No longer considered priority measure for mitigation. Do not advance project.

24) Anchor slope mesh over areas prone to landslides that threaten infrastructure and critical facilities.

Description: Areas within Torrance County are vulnerable to landslides due to slope erosion.
Anchor heavy-gauge metal slope mesh over areas prone to landslides along transportation routes and near critical facilities in areas of high vulnerability.

Status: No longer considered priority measure for mitigation. Do not advance project.

Village of Willard

1) Prepare evacuation plan for Village of Willard.

Description: The Village of Willard is located on U.S. Highway 60 and on the main line of the BNSF Railroad. An evacuation plan in the case of a Hazardous Materials incident on the railroad or highways is needed to educate residents what to do in the case of an emergency, such as sheltering in place.

Status: Man made hazards not profiled in plan. No longer considered priority measure for mitigation. Do not advance project

2) Require implementation of fuel reduction management plan with BNSF RR along rail lines in Willard.

Description: Sparks from the railroad and railway line activities can cause grassland wildfires making the populated areas of Willard vulnerable to structure fires. Require implementation of fuel reduction management (e.g. fire breaks) along railway near populated areas.

Status: Not implemented due to lack of funding. Advance action for future implementation.

Village of Mountainair

1) Require implementation of fuel reduction management plan with BNSF RR along rail lines in Mountainair.

Description: Sparks from the railroad and railway line activities can cause grassland wildfires making the populated areas of Mountainair vulnerable to structure fires. Major concern is an elementary school that is close to the railroad tracks. Require implementation of fuel reduction management (e.g. fire breaks) along railway near populated areas.

Status: Not implemented due to lack of funding. Advance action for future implementation.

2) Conduct a study to determine the feasibility of re-routing the natural gas distribution line and regulator that crosses the railroad tracks near town.

Description: Sparks from the railroad and railway line activities can cause grassland wildfires creating the potential for damage to the natural gas lines.

Status: Not implemented due to lack of funding. Advance action for future implementation.

Town of Estancia

1) Complete study and construction of flood control structure in Estancia on west side, near 55. Identified in engineering reports.

Description: All of Estancia is in the 100-year floodplain. After the flood structure is built, none of the town will be in the floodplain.

Status: Not implemented due to lack of funding. Advance action for future implementation.

City of Moriarty

1) Adopt and enforce a local nuisance ordinance to address properties with overgrown vegetation.

Description: Town of Moriarty has chronic problem with large lots on edge of town that have potential to create large grasslands wildfire.

Status: Completed for City of Moriarty but action advanced for Village of Willard and Town of Mountainair.

2) Provide training for first responders for hazardous materials.

Description: Town of Moriarty is along Interstate 40 and has most likelihood of hazardous materials incidents from mobile sources.

Status: Man made hazards not profiled in plan. No longer considered priority measure for mitigation. Do not advance project

3) Update flood maps within municipal limits and conduct new hydraulic studies where necessary.

Description: Approximately 20% of Moriarty lies within a designated floodplain.

Status: Not implemented due to lack of funding. Advance action for future implementation.

4) Assess condition and capacity of emergency shelters in Moriarty

Description: Due to proximity to Interstate 40, and mountainous area to the west, Moriarty often impacted by severe storms that shut down Interstate 40. Conduct shelter assessment and retrofit shelters to provide protection from appropriate severe weather (wind, flood, hail, lightning) and to ensure continued power in the face of an outage.
Status: Not implemented due to lack of funding. Advance action for future implementation for all participating jurisdictions.

5) Implement an educational water conservation program.

Description: Provide education materials to encourage water conservation.

Status: Not implemented due to lack of funding. Advance action for future implementation for Moriarty and Torrance County.

1) Educate the public on Wildland-Urban Interface (WUI) best practices through demonstration site and educational brochures.

Description: Create educational demonstration site to show fuel breaks, thinned forest and other best practices to encourage residents to utilize these practices to reduce the threat of catastrophic wildfire. Create brochures utilizing demonstration site photographs.

Status: No longer considered priority measure for mitigation. Do not advance project

2) Purchase NOAA radio for public buildings and businesses.

Description: Increasing early warning of impending severe weather will reduce injury to citizens and livestock and reduce damage to vehicles.

Status: No longer considered priority measure for mitigation. Do not advance project

5.3 Mitigation Action Plan

The mitigation actions and strategies in this section address, to the extent possible, the risk from the hazards described in **Section 4**. The actions and strategies also address areas where additional coordination with other agencies and organizations could benefit Torrance County goals to reduce risk. Since the previous update, Torrance County has remained largely static. The Population is stable and the climate has remained stable. Therefore mitigation priorities remain largely unchanged. The actions and strategies are the specific measures to help meet the goals of **Section 5.1.1** and include estimated timeframes for completion. Where a specific dollar estimate was not available, a range of costs was used:

- **High** – Over $500,000
- **Medium** - $100,000 to $499,000
- **Low** – $5,000 to $100,000
- **Minimal** – Less than $5,000

The actions were prioritized using a basic format to encourage immediate action (see **Table 5.1**). Flood projects originally receiving a "High" prioritization were also reviewed with STAPLEE criteria considerations (See **Section 6.2.1.** for criteria). The results of the STAPLEE evaluation for these types of projects are listed in **Sections 5.3.1** for project undergoing the evaluation.

Table 5.1: Prioritization Categories

Category	Timeframe	Comments
High	Begin within 1 year from plan adoption	Top organizational priority and is generally a well-detailed project idea. Protects population, resource or property at high risk. Uses feasible methods, techniques or technology.
Medium	2-3 years from plan adoption	A good idea that needs more information or is an action that addresses a moderate hazard.
Low	3-5 years from plan adoption	An idea that needs a lot more information or will take a lot of preliminary action to build support.

Multiple funding sources have been identified (see **Section 6.1.**) for suitability. The priority for each action is at the bottom of each action box. When a proposed project mitigates multiple hazards, this is noted.

5.3.1 Mitigation Actions and Projects

1. Install Warning Sirens	
Project Description/Comments:	Install a fixed outdoor warning siren in various locations throughout Torrance County to alert the public of severe weather such as wind, tornado and hail storms. This project would allow of the county to alert the public of potential severe weather including wind, tornado, hail storms or other severe weather.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	High Wind, Tornado, Thunderstorm (including lightning and hail), Flood
Responsible Organization:	Torrance County Office of Emergency Management
Estimated Costs:	Medium
Possible Funding Sources:	Local budgets, FEMA
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Due to relatively low cost and life safety benefits, the overall benefits are anticipated to outweigh costs
STAPLEE+C Review	No concerns raised
Priority	**Medium**

2. Expand county GIS data to Identify Hazard Prone and Sensitive-Areas for new building codes (Previous Plan Mitigation Action #1 – Torrance County)	
Project Description/Comments:	Prioritize and implement a GIS sensitive-areas analysis to identify properties within the County and used to adopt new county-wide building codes. Hardware and software can be shared with other County offices. This project was implemented since the 2007 planning cycle but additional updates are needed. Project is on-going.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Thunderstorm/Lightning/Hail; Winter Storm; Tornado
Responsible Organization:	Torrance County Planning and Zoning Department/Planning & Zoning Coordinator
Estimated Costs:	$75,000 - Low
Possible Funding Sources:	Local budgets, FEMA
Timeline for Implementation:	Within 1 year of plan adoption
Cost-Benefit Review	Due to relatively low cost and life safety benefits, the overall benefits are anticipated to outweigh costs
STAPLEE+C Review	No concerns raised
Priority	**High**

3. Complete study and construction of flood control structure in Estancia on west side, near 55. (Previous Plan Mitigation Action #1 – Estancia)	
Project Description/Comments:	Estancia flood control dam plan/ design/ construct.
Jurisdiction:	Estancia
Hazard(s) Addressed:	Flood, Flash Flood
Responsible Organization:	Estancia/City Planner
Estimated Costs:	$1,700,000 to $5,000,000- High
Possible Funding Sources:	New Mexico Capital Improvement Plan, FEMA, NMOEM, Torrance County, Estancia
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	All homes, businesses and critical structures in Estancia are within the flood plain. Including replacement value, the potential loss is estimated at $70-$100 million. Benefits are anticipated to outweigh costs
STAPLEE+C Review	No concerns raised
Priority	**Medium**

4. Develop and Implement a flood control plan for Willard and Torrance County. Integrate with a water management plan.	
Project Description/Comments:	Develop flood control plan and action items. Integrate into local water management plans.
Jurisdiction:	Willard, Torrance County, CPSWCD
Hazard(s) Addressed:	Flood, Flash Flood
Responsible Organization:	Village and County Planner
Estimated Costs:	Low
Possible Funding Sources:	FEMA, NMOEM, Torrance County, Willard
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Benefits are anticipated to outweigh low costs
STAPLEE+C Review	No concerns raised
Priority	**Medium**

5. Develop and Implement water management plan for Torrance County. Integrate with new flood control plan.	
Project Description/Comments:	Develop water management plan and action items. Integrate into local flood control plan.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Flood, Flash Flood
Responsible Organization:	County Planner/Public Works
Estimated Costs:	Low
Possible Funding Sources:	FEMA, NMOEM, Torrance County
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Benefits are anticipated to outweigh low costs
STAPLEE+C Review	No concerns raised
Priority	**Medium**

6. Adopt and enforce a local nuisance ordinance to address properties with overgrown vegetation.	
Project Description/Comments:	Mountainair and Willard both have chronic problems with large lots on edge of town that have potential to create large grasslands wildfire
Jurisdiction:	Town of Mountainair and Village of Willard
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Town of Mountainair and Village of Willard Planning and Zoning/City Planners
Estimated Costs:	$40,000 - Low
Possible Funding Sources:	General Funds
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Cost to adopt ordinance less than value of one residential structure. Benefits are anticipated to outweigh costs
STAPLEE+C Review	No concerns raised
Priority	**High**

7. Build Regional Fire Training Facility	
Project Description/Comments:	The City of Moriarty would like to build a facility and develop a fire training program for wildfire response. The City has already received a grant to cover a portion of the cost to build the facility. Once completed, the facility will serve as a regional resource for planning and training efforts for local emergency response for wildfire.
Jurisdiction:	All Jurisdictions, CPSWCD
Hazard(s) Addressed:	Wildfire
Responsible Organization:	City of Moriarty Fire Department
Estimated Costs:	High
Possible Funding Sources:	Federal Grant (already awarded), General Budgets, NM State Forestry; New Mexico State Fire Fund
Timeline for Implementation:	Within 2-3 years of plan adoption
Cost-Benefit Review	Value of structures in high–risk WUI: $28 million. Preparation and training can increase response time and decrease damages. Benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	**Medium**

8. Develop and Implement agreements between USFS, NM State Forestry, and private landowners to utilize water held in private cisterns during wildfires. (Previous Plan Mitigation Action #6 – Torrance County)	
Project Description/Comments:	This agreement will allow fire fighters to enter private lands to utilize privately held water sources during times of wildfire. The agreement will allow legal access to the property and reduce time needed to eliminate time needed to gain entrance. This project was partially implemented since the 2007 Plan. Project needs future coordination to further advance in future. Actions Identified in the Plan will lead to future mitigation projects.
Jurisdiction:	All Jurisdictions, CPSWCD
Hazard(s) Addressed:	Fire
Responsible Organization:	Torrance County/County Commissioners, Mountainair Ranger District, East Torrance, Claunch-Pinto and Edgewood Soil and Water Conservation Districts.
Estimated Costs:	Low
Possible Funding Sources:	USFS, NM State Forestry
Timeline for Implementation:	Within 1 year of plan adoption
Cost-Benefit Review	Value of structures in high–risk WUI: $28 million. Benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	**High**

9. Develop and support public safety interagency planning, training, and response to wildfires in Torrance County – Participate in East Mountain Interagency Fire Planning Agency (EMIFPA). (Previous Plan Mitigation Action #12 - Torrance County)	
Project Description/Comments:	Develop a program to integrate planning and training efforts for local emergency response for wildfire. The group will function as a platform for sharing lessons learned and strategies for an integrated city/county/volunteer response to wildfires.
Jurisdiction:	All Jurisdictions, CPSWCD
Hazard(s) Addressed:	Wildfire
Responsible Organization:	Torrance County, Encino, Estancia, Moriarty, Mountainair and Willard Volunteer Fire Departments/Fire Chiefs.
Estimated Costs:	Low
Possible Funding Sources:	General Budget
Timeline for Implementation:	Within 1 year of plan adoption
Cost-Benefit Review	Value of structures in high–risk WUI: $28 million. Preparation can increase response time and decrease damages. Benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	**High**

10. Response	
Project Description/Comments:	Review and improve emergency responders and dispatch communication tool.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	All hazards
Responsible Organization:	Torrance County Fire Departments/Emergency Manager
Estimated Costs:	Low
Possible Funding Sources:	General Budget
Timeline for Implementation:	Within 1 year of plan adoption
Cost-Benefit Review	Improved communication can increase response time and decrease damages. Benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	**High**

11. Update and implement floodplain and floodway maps in Torrance County and conduct new hydraulic studies where necessary. (Previous Plan Mitigation Action #5 – Torrance County)	
Project Description/Comments:	Update and implement/create new Flood Insurance Rate Maps (FIRMs) and create new road inundation mapping. Previous flood maps in Torrance County are outdated.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Flood, Flash Flood
Responsible Organization:	Torrance County Planning and Zoning/Floodplain Manager
Estimated Costs:	$8,500/mile - High
Possible Funding Sources:	FEMA, NMOEM, w/ participating contributions from Torrance County, Estancia, Moriarty, Mountainair
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Values of homes within floodplains exceed $25 million. Updated maps will also enable homeowners that are designated out of the floodplain to drop flood insurance premiums. Benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	**Medium**

12. Update flood maps within municipal limits and conduct new hydraulic studies where necessary. (Previous Plan Mitigation Action #3 – Moriarty)	
Project Description/Comments:	Approximately 20% of Moriarty lies within a designated floodplain. Update local maps.
Jurisdiction:	Moriarty
Hazard(s) Addressed:	Flood, Flash Flood
Responsible Organization:	Town of Moriarty/City Planner
Estimated Costs:	$8,500/mile - Medium
Possible Funding Sources:	FEMA, NMOEM, w/ participating contributions from Torrance County, Estancia, Moriarty, Mountainair
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Home and businesses in Moriarty within the flood plain have estimated value exceeds 6 million dollars Benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	**Medium**

13. Assess condition and capacity of emergency shelters in all jurisdiction (Previous Plan Mitigation Action #4 – Moriarty)	
Project Description/Comments:	Conduct shelter assessment and retrofit shelters to provide protection from severe weather (wind, flood, hail, and lightning) and to ensure continued power in the face of an outage.
Jurisdiction:	All Participating Jurisdictions, CPSWCD
Hazard(s) Addressed:	Flood, Flash Flood, Extreme Heat, Severe Winter Storms, Thunder Storms
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low
Possible Funding Sources:	FEMA, NMOEM, Red Cross, Pre-Disaster Mitigation Assistance funds administered by NMOEM, Hazard Mitigation
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Life safety benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	**Medium**

14. Prevent water transfers out of the Estancia Basin. (Previous Plan Mitigation Action #7 – Torrance County)	
Project Description/Comments:	Study the Estancia Basin ground water and usage to model uses and ensure the availability of water within the Basin. Create water use agreement.
Jurisdiction:	All Participating Jurisdictions, CPSWCD
Hazard(s) Addressed:	Drought
Responsible Organization:	Estancia Basin Resource Association Project/Project Leader
Estimated Costs:	$250,000 - Medium
Possible Funding Sources:	Pre-Disaster Mitigation Assistance funds administered by NMOEM, Hazard Mitigation Grant Program Technical Assistance funds administered by NMOEM. (HMGP)
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Agriculture is a mainstay of Torrance County economy, with annual revenue of over $30 million. Water transfers would threaten this sector of the economy. Benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	**Medium**

15. Require participation and provide educational programs to pursue alternative agricultural practices that conserve water use both for large-scale agriculture and residential uses. (Previous Plan Mitigation Action #17 – Torrance County)	
Project Description/Comments:	New agricultural methods such as hydroponics have potential to save large quantities of water and introduce new crops that provide higher profit margin.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Drought
Responsible Organization:	USDA, NRCS, NMSU Agricultural Extension Agents
Estimated Costs:	$25,000 - Low
Possible Funding Sources:	NMSU, USDA
Timeline for Implementation:	Within 4 to 5 years of plan adoption
Cost-Benefit Review	Agriculture is a mainstay of Torrance County economy, with annual revenue of over $30 million. Water conservation will ensure that agriculture can continue to thrive in County. Benefits expected to outweigh low costs.
STAPLEE+C Review	No concerns raised
Priority	**Low**

16. Develop cistern water storage in new subdivisions with limited water supply. (Previous Plan Mitigation Action #18 – Torrance County)	
Project Description/Comments:	Storm water can provide significant water that can augment existing water supplies. In the future this supply can be augmented by water delivery. Due to the decreasing water level of the aquifer, and the current drought, alternative sources will be necessary in the future.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Drought
Responsible Organization:	Torrance County Planning and Zoning/Coordinator
Estimated Costs:	$1,500/per new home - Low
Possible Funding Sources:	Torrance County, Pre-Disaster Mitigation Assistance funds administered by NMOEM, Hazard Mitigation Grant Program Technical Assistance funds administered by NMOEM
Timeline for Implementation:	Within 3 years of plan adoption
Cost-Benefit Review	Cost of extending new water lines to low density subdivisions is more than $100,000/mile and places additional burden on the County to operate and maintain. Benefits expected to outweigh low costs.
STAPLEE+C Review	No concerns raised
Priority	**Low**

17. Install Generators at Critical Facilities	
Project Description/Comments:	This project would allow for fixed diesel powered generators be installed at critical facilities to ensure continuity of emergency services to the public during high hazard events. In drought conditions the generators can be used to power wells and water transmission system to relive farmers and families
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino , land grant communities, CPSWCD
Hazard(s) Addressed:	Flood, Severe Winter Storms, High Wind, Thunderstorm (including lightning and hail), Earthquake, Tornado
Responsible Organization:	Local Emergency Management Divisions
Estimated Costs:	Medium
Possible Funding Sources:	Local budgets, New Mexico Department of Transportation, FEMA
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Life safety benefits expected to outweigh the relatively low costs
STAPLEE+C Review	No concerns raised
Priority	**Medium**

18. Multi-hazard Public Education Program	
Project Description/Comments:	Educate residents on natural hazard threats, impacts, mitigation opportunities, and advanced preparations to make in advance of events. Print materials will be developed and distributed at local government buildings and public libraries.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino , land grant communities, CPSWCD
Hazard(s) Addressed:	Flood, Wildland Fire, Drought, Severe Winter Storms, High Wind, Thunderstorm (including lightning and hail), Earthquake, Extreme Heat, Tornado
Responsible Organization:	Local Emergency Management Divisions
Estimated Costs:	Low
Possible Funding Sources:	Local budgets, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety benefits expected to outweigh the low costs
STAPLEE+C Review	No concerns raised
Priority	**High**

19. Moriarty Storm water Pollution Plan and Project	
Project Description/Comments:	Moriarty will develop an area wide storm water pollution plan to protect the community from hazardous and toxic chemicals picked up and carried by storm water. The preparation of storm water pollution plans for all major construction sites will help bring compliance with EPA requirements. The City's water supply should be protected from storm water pollutants that can leach into ground water or infiltrate the water supply infrastructure. Storm water runoff is intensified by impervious surface areas such as paved streets, parking lots, and building rooftops.
Jurisdiction:	Moriarty
Hazard(s) Addressed:	Flood
Responsible Organization:	Moriarty Public Works
Estimated Costs:	High
Possible Funding Sources:	USACE, General Funds, New Mexico State Legislature, State Department of Transportation, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety, environmental, and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	**High**

20. Moriarty Wellhead Project	
Project Description/Comments:	Update zoning and construction regulations to protect groundwater by preventing specific land use activities that may contaminate the groundwater. Regulate development in flood prone areas and wellhead protection zones through the zoning ordinance.
Jurisdiction:	Moriarty
Hazard(s) Addressed:	Flood
Responsible Organization:	Moriarty Public Works
Estimated Costs:	High
Possible Funding Sources:	USACE, General Funds, New Mexico State Legislature, State Department of Transportation, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety, environmental, and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	**High**

21. Develop and Implement Moriarty Master Drainage Plan and Program	
Project Description/Comments:	Develop and implement a master drainage plan and program for the City planning and platting jurisdiction. The planning and platting jurisdiction extends up to three miles outside the City limits and is established by State law for subdivision review and approval. One of the requirements for subdividing land is to ensure proper drainage for storm water when the development is built out. A master plan for drainage is crucial for the protection of land and property from the effects of storm water runoff such as flooding and erosion.
Jurisdiction:	Moriarty
Hazard(s) Addressed:	Flood
Responsible Organization:	Moriarty Public Works
Estimated Costs:	High
Possible Funding Sources:	USACE, General Funds, New Mexico State Legislature, State Department of Transportation, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety, environmental, and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	**High**

22. Mountainair Storm water Master Drainage Plan	
Project Description/Comments:	The Town will develop a master drainage plan to address drainage, flooding, ponding, and storm water pollution. Mountainair is occasionally subject to localized street flooding and ponding of storm water.
Jurisdiction:	Mountainair
Hazard(s) Addressed:	Flood
Responsible Organization:	Mountainair Maintenance
Estimated Costs:	High
Possible Funding Sources:	USACE, General Funds, New Mexico State Legislature, State Department of Transportation, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety, environmental, and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	**High**

23. Encino Storm water Drainage Project (implement)	
Project Description/Comments:	Mitigate the impacts of on-site ponding from heavy, direct-precipitation rainfall using road and impacted area construction. Conduct a Hydrology study to determine the impacted areas with a Engineered plan to ensure life of project.
Jurisdiction:	Encino
Hazard(s) Addressed:	Flood
Responsible Organization:	Village of Encino, Torrance County Road Department
Estimated Costs:	High
Possible Funding Sources:	New Mexico State Legislature, State Department of Transportation, General, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	**High**

24. Torrance County Wellhead Protection Project	
Project Description/Comments:	Update zoning and construction regulations to protect groundwater by preventing specific land use activities that may contaminate the groundwater. Regulate development in flood prone, recharge, and wellhead areas and wellhead protection zones through the zoning ordinance.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Flood
Responsible Organization:	Torrance County Road Department
Estimated Costs:	High
Possible Funding Sources:	New Mexico State Legislature, State Department of Transportation, General, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	**High**

25. Torrance County Culvert Ordinance	
Project Description/Comments:	Prepare an ordinance for installation of culverts at junction of private roads and county roads. The ordinance will define engineering specifications for private road connections to County roads. The specification will specifically address drainage to mitigate flooding and road damage due to flooding.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Flood
Responsible Organization:	Torrance County Road Department
Estimated Costs:	High
Possible Funding Sources:	New Mexico State Legislature, State Department of Transportation, General, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	**High**

26. Torrance County Watershed Management Program	
Project Description/Comments:	Review and Update zoning and subdivision ordinances to require consideration of watershed best practices management. The majority of Torrance County lies within a hydrologically closed basin, meaning the inflow of water is by direct precipitation and there is no surface water outflow. A watershed management approach would seek to preserve the quality and quantity of water available to the basin. A watershed management program typically includes measures to increase infiltration of rainwater, reduce soil erosion caused by storm water, and lower evapotranspiration rates through vegetation management. Flood control structures and non-structural techniques will be applied to minimize the damage caused by flooding and ponding as well as pollution deposited by storm waters. Coordination with other governmental agencies is crucial to an effective watershed management program.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Flood
Responsible Organization:	Torrance County Road Department
Estimated Costs:	High
Possible Funding Sources:	New Mexico State Legislature, State Department of Transportation, General, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	**High**

27. Torrance County Storm water Pollution Control Plan and Program	
Project Description/Comments:	Design and implement a storm water pollution plan to protect the water quality of the basin aquifer. Storm water quality is affected by land use activities that involve handling, storage, or transport of hazardous or toxic materials, which can lead to uncontained spills and the seeping of hazardous chemicals into the ground, thus contaminating and adversely affecting water resources. The County will impose land use regulations on waste handling and will require flood control structures and non-structural techniques to minimize pollutants that might be picked up and deposited by storm waters. Flood control techniques will be applied to include the construction of grassy swales, terraces and retention structures, and landscape/vegetation management to “filter” polluted storm waters.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Flood
Responsible Organization:	Torrance County Road Department
Estimated Costs:	High
Possible Funding Sources:	New Mexico State Legislature, State Department of Transportation, General, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	**High**

28. Flood Insurance Awareness Program	
Project Description/Comments:	A public awareness program will provide the unprotected property owners throughout the County, Estancia and Moriarty with information concerning their risk and available insurance. Mountainair, Willard, and Encino will evaluate the benefit of joining the NFIP.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, and Encino , land grant communities, CPSWCD
Hazard(s) Addressed:	Flood
Responsible Organization:	County and local Floodplain Managers
Estimated Costs:	Low
Possible Funding Sources:	Local budgets
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Due to low cost, the benefits are anticipated to outweigh costs
STAPLEE+C Review	No concerns raised
Priority	**High**

29. Multi-Jurisdiction Storm Water Management Plans	
Project Description/Comments:	Establish committee and coordinate with neighboring communities to establish regional water management planning.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Flood
Responsible Organization:	County and local public works and planning departments
Estimated Costs:	Low
Possible Funding Sources:	Local municipal funds, New Mexico State Grants
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Due to low cost, the benefits are anticipated to outweigh costs
STAPLEE+C Review	No concerns raised
Priority	**High**

30. Drainage Ditch Improvements	
Project Description/Comments:	Improve drainage ditches and culverts to increase capacity. Develop and implement a ditch maintenance plan.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino , land grant communities, CPSWCD
Hazard(s) Addressed:	Flood
Responsible Organization:	Local and county public works departments
Estimated Costs:	Medium
Possible Funding Sources:	FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Due to the repetitive losses, the benefits are anticipated to outweigh costs
STAPLEE+C Review	No concerns raised
Priority	**High**

31. Personal Water Use Reduction Education Program (Previous Plan Mitigation Action #5 – Moriarty)	
Project Description/Comments:	Municipalities will work with the New Mexico State Engineer's Office to provide the citizens of Torrance County with methods they can use in reducing their water use. This education will concern the benefits of installing low flow toilets and low flow shower heads in their homes.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino , land grant communities, CPSWCD
Hazard(s) Addressed:	Drought
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low
Possible Funding Sources:	Local municipal funds
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Due to low cost, the benefits are anticipated to outweigh costs
Priority	**High**

32. Gray Water Education Program	
Project Description/Comments:	Information concerning the use of gray water, installation of gray water recovery systems, and the benefits gained will be provided to the general public.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Drought
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low
Possible Funding Sources:	Local municipal funds
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Due to low cost, the benefits are anticipated to outweigh costs
Priority	**High**

33. Protect wells from actual and potential sources of contamination during flooding, and wellhead management. (Previous Plan Mitigation Action #10 – Torrance County)	
Project Description/Comments:	NMED can help implement a wellhead protection program through local associations educate communities about wellhead protection.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Flood, Flash Flood
Responsible Organization:	New Mexico Environment Department Wellhead Protection Program
Estimated Costs:	Low
Possible Funding Sources:	EPA
Timeline for Implementation:	Within two to three years of plan adoption
Cost-Benefit Review	Due to low cost, the benefits are anticipated to outweigh costs
Priority	**Medium**

34. Require city, county and village officials to participate in creation and implementation of the State Drought Management Plan. (Previous Plan Mitigation Action #13 – Torrance County)	
Project Description/Comments:	Initiate and Require officials to participate in the planning and implementation of an area wide drought management plan.
Jurisdiction:	Torrance County, Encino, Estancia, Moriarty, Mountainair, Willard, land grant communities and new subdivisions, CPSWCD
Hazard(s) Addressed:	Drought
Responsible Organization:	Torrance County/County Commission's representative; City and Village government representatives
Estimated Costs:	Low
Possible Funding Sources:	General County operating funds and additional funding from State
Timeline for Implementation:	Within three years of plan adoption
Cost-Benefit Review	Due to low cost, the benefits are anticipated to outweigh costs
Priority	**Low**

35. Increase water storage capacity for fire suppression with new 50,000-gallon storage tanks in central location in East Mountain area, Deer Canyon, Torreon, and in other vulnerable subdivisions. (Previous Plan Mitigation Action #11 – Torrance County)	
Project Description/Comments:	Community water supply is limited by present storage capacity; impacts ability to suppress wildland urban fires. Improve cistern in Torreon or add additional storage tanks. This project is currently in progress but is advanced for additional implementation as additional tanks build resiliency.
Jurisdiction:	Torrance County. CPSWCD
Hazard(s) Addressed:	Drought, Wildfire
Responsible Organization:	Torrance County Fire Department/Fire Chief
Estimated Costs:	$40,000/per tank - Low
Possible Funding Sources:	Pre-Disaster Mitigation Assistance funds administered by NMOEM, Hazard Mitigation Grant Program Technical Assistance funds administered by NMOEM.
Timeline for Implementation:	Within two years of plan adoption
Cost-Benefit Review	Due to low cost, the benefits are anticipated to outweigh costs
Priority	**Medium**

36. Develop and Implement Hazardous Fuels Reduction Program	
Project Description/Comments:	Implement/Enforce a program to mow vegetation that can contribute to wildfires. These mowing operations can be implemented by both the property owners and local jurisdictions.
Jurisdiction:	Torrance County, Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Local emergency managers
Estimated Costs:	Low
Possible Funding Sources:	Municipal Budgets
Timeline for Implementation:	Some planning efforts on-going. Implement within one year of plan adoption.
Cost-Benefit Review	Due to risk of wildfire in the area, and the low cost, the benefits are anticipated to outweigh costs
Priority	**High**

37. Develop cistern water storage in high wildfire risk areas with limited water supply. (Previous Plan Mitigation Action #15 – Torrance County)	
Project Description/Comments:	Storm water can provide significant water that can augment existing water supplies. Underground water storage supplies can also be trucked in.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Torrance County Planning and Zoning/Coordinator
Estimated Costs:	$50,000 - Low
Possible Funding Sources:	Torrance County, Pre-Disaster Mitigation Assistance funds administered by NMOEM, Hazard Mitigation Grant Program Technical Assistance funds administered by NMOEM.
Timeline for Implementation:	Implement within three years of plan adoption.
Cost-Benefit Review	Due to risk of wildfire in the area, and the low cost, the benefits are anticipated to outweigh costs
Priority	**Low**

38. Accelerate forest thinning programs on federal, state, and all public and private Lands (Previous Plan Mitigation Action #2 – Torrance County)	
Project Description/Comments:	Utilize federal, state, and local agencies and existing programs (Collaborative Forest Restoration) to work with public and private landowners and land grants to thin overgrown and dead forest to reduce catastrophic wildfire in WUI and Forest in general.
Jurisdiction:	Cibola National Forest; Torrance County; NM State Land Office; SFS; Mountainair Ranger District; East Torrance; Claunch-Pinto and Edgewood Soil and Water Conservation Districts all jurisdictions in the county
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	USFS; Mountainair Ranger District; East Torrance; Claunch-Pinto and Edgewood Soil and Water Conservation Districts
Estimated Costs:	$1,500 -3,000/Acre - High
Possible Funding Sources:	USFS Grant for Collaborative Forest Restoration program – up to $300,000; NM State Forestry; New Mexico State Fire Fund
Timeline for Implementation:	This is an on-going effort since the last planning cycle. Additional implementation within one year of plan adoption.
Cost-Benefit Review	Due to risk of wildfire in the area, and the value of structures in high risk WUI, the benefits are anticipated to outweigh costs
Priority	**High**

39. Design and implementation fuel reduction management plan with BNSF RR along rail lines in Willard. (Previous Plan Mitigation Action #2 – Willard)	
Project Description/Comments:	Sparks from the railroad and railway line activities can cause grassland wildfires making the populated areas of Willard vulnerable to structure fires. Require implementation of fuel reduction management (e.g. fire breaks) along railway near populated areas.
Jurisdiction:	Village of Willard
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Village of Willard/City Planner
Estimated Costs:	$1,500/Mile - Low
Possible Funding Sources:	BNSF, USDA, Pre-Disaster Mitigation Assistance funds administered by NMOEM, Hazard Mitigation Grant Program Technical Assistance funds administered by NMOEM.
Timeline for Implementation:	Implementation within two to three years of plan adoption.
Cost-Benefit Review	Due to risk of wildfire in the area, and the value of structures in high risk WUI, the benefits are anticipated to outweigh costs
Priority	**Medium**

40. Educate public on Wildland-Urban Interface (WUI) best practices through demonstration site and educational brochures (Previous Plan Mitigation Action #3 – Torrance County and #1 - Encino)	
Project Description/Comments:	Develop comprehensive multi-hazard education process that includes Fire safety education/prevention and organize community cleanups in high fuel areas. Create educational demonstration site to show fuel breaks, thinned forest and other best practices to encourage residents to utilize these practices to reduce the threat of catastrophic wildfire. Create brochures utilizing demonstration site photographs.
Jurisdiction:	Unincorporated areas of Torrance County. Encino, Estancia, Moriarty, Mountainair and Willard. Land grant communities, CPSWCD
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	USFS, Mountainair Ranger District, East Torrance, Claunch-Pinto and Edgewood Soil and Water Conservation Districts, Torrance County Fire Department, and local volunteer Fire Departments.
Estimated Costs:	Low
Possible Funding Sources:	NM Fire Fund, USFS, NM State Forestry, Soil and Water Conservation Districts
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Due to low cost of awareness programs, the benefits are anticipated to outweigh costs
Priority	**Medium**

41. Establish county-wide community participation in Storm Ready, with Public Outreach to improve communication and planning for the impacts of severe weather through better planning, education, and awareness. (Previous Plan Mitigation Action #9 – Torrance County)	
Project Description/Comments:	Develop a Storm Ready Public Outreach Program to increase communication within the County to warn of approaching bad weather.
Jurisdiction:	Communities within Torrance County, specifically Encino, Estancia, Moriarty, Mountainair, Willard, land grant communities and new subdivisions in the Gallinas Mountains, CPSWCD
Hazard(s) Addressed:	Severe Weather (Thunderstorm/Lightning/Hail; Tornado/Wind Storm)
Responsible Organization:	Torrance County and Emergency Services/Emergency Manager
Estimated Costs:	$50,000 - Low
Possible Funding Sources:	Pre-Disaster Mitigation Assistance funds administered by NMOEM, Hazard Mitigation Grant Program Technical Assistance funds administered by NMOEM. (HMGP)
Timeline for Implementation:	Within 3 years of plan adoption
Cost-Benefit Review	Due to low cost of awareness programs, the benefits are anticipated to outweigh costs
Priority	**Low**

42. Create and maintain defensible space around all vulnerable residential structures and critical facilities. (Previous Plan Mitigation Action #8 – Torrance County)	
Project Description/Comments:	Participation in Firewise Communities can be effective means to implement defensible space techniques in areas vulnerable to wildfires. This project is on-going throughout the planning area since the 2007 plan. Action will continue to be advanced through the next planning cycle.
Jurisdiction:	All Participating Jurisdictions
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Torrance County Road Department/Administrator; Local government/City Administrators.
Estimated Costs:	Medium
Possible Funding Sources:	USFS, NM State Forestry, New Mexico State Fire Fund
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Due to the value of structures in high-risk WUI, the benefits are anticipated to outweigh costs
Priority	**Medium**

43. Identify and map defensible space around all vulnerable residential structures and critical facilities. Develop detailed mapping for fire breaks and other treatment areas. To create hazardous fuel reduction plan, and update.	
Project Description/Comments:	Utilize mapping to assist in wildfire mitigation.
Jurisdiction:	All Participating Jurisdictions
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Torrance County Road Department/Administrator; Local government/City Administrators.
Estimated Costs:	Medium
Possible Funding Sources:	USFS, NM State Forestry, New Mexico State Fire Fund
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Due to the value of structures in high-risk WUI, the benefits are anticipated to outweigh costs
Priority	**Medium**

44. Design and install wider road shoulders to reduce fire risk.	
Project Description/Comments:	Employ FireWise recommendations to reduce wildfire risk and improve emergency response. Wider road shoulders reduce the risk of fire caused by vehicle sparks.
Jurisdiction:	All Participating Jurisdictions
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Torrance County Road Department/Administrator; Local government/City Administrators.
Estimated Costs:	Medium
Possible Funding Sources:	USFS, NM State Forestry, New Mexico State Fire Fund
Timeline for Implementation:	Within 3 to 4 years of plan adoption
Cost-Benefit Review	Due to the value of structures in high-risk WUI, the benefits are anticipated to outweigh costs
Priority	**Low**

45. Create centralized water supply / storage for communities.	
Project Description/Comments:	Construction of Fire Hydrant or Water source for 18 communities around Mountainair that have no water supply for fighting wildfires, add to mitigate fire and drought
Jurisdiction:	Mountainair
Hazard(s) Addressed:	Drought Wildland Fire
Responsible Organization:	Town of Mountainair Fire Department
Estimated Costs:	Medium
Possible Funding Sources:	USFS, NM State Forestry, New Mexico State Fire Fund
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Due to the value of structures in high-risk WUI, the benefits are anticipated to outweigh costs
Priority	**Medium**

46. Fire Hydrant Installation	
Project Description/Comments:	Connect dry fire hydrants to a water supply for Walker Street. Project includes installation of pipe and connection to the main water supply. This will allow water from the supply to be used to fight fires, rather than haul water.
Jurisdiction:	Estancia
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Estancia Fire Department/Public Works
Estimated Costs:	Low
Possible Funding Sources:	USFS, New Mexico State Fire Fund, FEMA, Local budgets
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Due to the value of structures along Walker Street, the benefits are anticipated to outweigh costs
Priority	**Medium**

47. Emergency Access Roads	
Project Description/Comments:	Improve the only current ingress/egress road to Deer Canyon, BO16 which washes out in rain and snow. Improve Torreon Route 337 and Riley Road, major transportation routes, which experiences floods, require water crossing signs, drainage, and repairs. Develop and implement mitigation efforts to ensure access and prevention of further damages. Also Create a road from Highway 60 into Deer Canyon Preserve for emergency access and exit.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Severe winter weather, Thunderstorms, Flood
Responsible Organization:	Torrance County Public Works
Estimated Costs:	High
Possible Funding Sources:	New Mexico State Legislature, State Department of Transportation, General
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Life safety benefits are anticipated to outweigh costs
Priority	**Medium**

48. Road Improvement project - County wide	
Project Description/Comments:	The County has identified multiple roads throughout Torrance County are subject to sheet flooding or flash flooding. After studies have been concluded, the project includes identification of sound mitigation improvements that will protect key access routes. The project will prioritize projects on a cost benefit basis. Upon completion of prioritization, improvements will be implemented.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Flood
Responsible Organization:	Torrance County Public Works
Estimated Costs:	High
Possible Funding Sources:	New Mexico State Legislature, State Department of Transportation, General, FEMA
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Life safety benefits are anticipated to outweigh costs
Priority	**Medium**

49. Low Water Crossings	
Project Description/Comments:	Identify low water crossings and repetitive flood damaged roads for potential mitigation such as low water crossing signs, TADD signs, remedial design, and culvert improvements.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Flood
Responsible Organization:	Torrance County Public Works
Estimated Costs:	High
Possible Funding Sources:	New Mexico State Legislature, State Department of Transportation, General, FEMA
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Additional benefit cost analysis required to determine
Priority	**Medium**

50. Design and Implementation fuel reduction management plan with BNSF RR along rail lines in Mountainair. (Previous Plan Mitigation Action #1 – Mountainair)	
Project Description/Comments:	Sparks from the railroad and railway line activities can cause grassland wildfires making the populated areas of Mountainair vulnerable to structure fires. Major concern is an elementary school that is close to the railroad tracks. Require implementation of fuel reduction management (e.g. fire breaks) along railway near populated areas
Jurisdiction:	Town of Mountainair, CPSWCD
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Town of Mountainair/City Planner
Estimated Costs:	$1,500/Mile - Low
Possible Funding Sources:	BNSF, USDA, Pre-Disaster Mitigation Assistance funds administered by NMOEM, Hazard Mitigation Grant Program Technical Assistance funds administered by NMOEM.
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Due to the value of structures in high-risk WUI, the benefits are anticipated to outweigh costs
Priority	**Medium**

51. Conduct a study to determine the feasibility of re-routing the natural gas distribution line and regulator that crosses the railroad tracks near town (Previous Plan Mitigation Action #2 – Mountainair)	
Project Description/Comments:	Sparks from the railroad and railway line activities can cause grassland wildfires creating the potential for damage to the natural gas lines
Jurisdiction:	Town of Mountainair
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Town of Mountainair/City Planner
Estimated Costs:	$20,000 - Low
Possible Funding Sources:	BNSF, USDA, Pre-Disaster Mitigation Assistance funds administered by NMOEM, Hazard Mitigation Grant Program Technical Assistance funds administered by NMOEM.
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Due to the value of structures in high-risk WUI, the benefits are anticipated to outweigh costs
Priority	**Medium**

52. Torrance County will adopt the International Wildland Urban Interface Code of the International Code Council (ICC)	
Project Description/Comments:	The County will adopt the code to learn more about its potential application for planning in the WUI and to help increase enforcement of building ordinances in the WUI. Neighboring Bernalillo County has already adopted this code and could act as a model for the County.
Jurisdiction:	Torrance County
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Torrance County Planning and Zoning; Fire Marshal
Estimated Costs:	Low
Possible Funding Sources:	USFS; Municipal Budgets
Timeline for Implementation:	Within two to three years of plan adoption
Cost-Benefit Review	Due to low cost of awareness programs, the benefits are anticipated to outweigh costs
Priority	**Medium**

53. Bury Power Lines	
Project Description/Comments:	Bury all power lines in Torrance County to reduce the incident of a downed tree hitting a power line
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Wildland Fire, Severe winter storms, thunderstorms (including lightning and hail), high wind, earthquake, tornado
Responsible Organization:	Municipal utilities
Estimated Costs:	High
Possible Funding Sources:	Work with utility companies and Incorporate into capital improvements plans
Timeline for Implementation:	Within three to five years of plan adoption
Cost-Benefit Review	Costs are high; individual BCA would need to be run
Priority	**Low**

54. Conduct Earthquake Safety Awareness Program/ Increase awareness of potential for earthquakes in Torrance County. (Previous Plan Mitigation Action #19 – Torrance County)	
Project Description/Comments:	Although earthquakes are rare in Torrance County, earthquakes should be included in other disaster information literature and programs already in place. Information should include what to do before, during, and after an earthquake. Provide educational materials (prepared ones where available) to residents to raise awareness of the risk to earthquakes and to learn basic safety techniques during and after an earthquake.
Jurisdiction:	All participating jurisdictions, CPSWCD
Hazard(s) Addressed:	Earthquake
Responsible Organization:	Torrance County Office of Emergency Management
Estimated Costs:	Minimal
Possible Funding Sources:	FEMA Earthquake Program, Local Budgets, General Funds
Timeline for Implementation:	Within 2 to 3 years of plan adoption
Cost-Benefit Review	Due to low cost of awareness programs, the benefits are anticipated to outweigh costs
Priority	**Medium**

55. Retrofit to Critical Facilities and Infrastructures	
Project Description/Comments:	Retrofit critical facilities to meet seismic building codes
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Earthquake
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low (non-structural) to High (structural)
Possible Funding Sources:	HUD funds, FEMA
Timeline for Implementation:	Within three to five years of plan adoption
Cost-Benefit Review	Benefits relative to costs would have to be explored in greater detail
Priority	**Low**

56. To adopt and enforce Seismic Building Codes into current Building Codes	
Project Description/Comments:	Adopt stricter building codes to include seismic considerations.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Earthquake
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low
Possible Funding Sources:	FEMA Earthquake Program, Local Budgets, General Funds
Timeline for Implementation:	Within three to five years of plan adoption
Cost-Benefit Review	Due to low cost, the benefits are anticipated to outweigh costs
Priority	**Low**

57. Conduct study to examine and map the vulnerability of critical facilities, manufactured homes, and other structures to hazards. (Previous Plan Mitigation Action #14 – Torrance County)	
Project Description/Comments:	County has high percentage of manufactured homes and a number of historic critical facilities. Identify specific vulnerabilities and distribute information about how to strengthen their ability to resist high wind events. Input information into GIS.
Jurisdiction:	Torrance County, CPSWCD
Hazard(s) Addressed:	Severe Weather, Tornado, High Wind, Winter Storm
Responsible Organization:	Torrance County Planning and Zoning/Coordinator; Torrance County Assessor's Office/Manufactured Home Appraiser, Certified Appraisers, GIS/GPS Analyst
Estimated Costs:	Low
Possible Funding Sources:	Torrance County, Pre-Disaster Mitigation Assistance funds administered by NMOEM, Hazard Mitigation Grant Program Technical Assistance funds administered by NMOEM
Timeline for Implementation:	Within two years of plan adoption
Cost-Benefit Review	Due to low cost, the benefits are anticipated to outweigh costs
Priority	**Medium**

58. Prepare Public Education Effort for Winterizing Measures	
Project Description/Comments:	Provide educational information to local residents on insulating pipes to reduce damage from winter storms. Find ready-made brochures to distribute.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Severe Winter Storm
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low
Possible Funding Sources:	HUD if funds are needed
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Due to low cost of awareness programs, the benefits are anticipated to outweigh costs
Priority	**High**

59. Implement a new Tree Trimming to Protect Power Lines	
Project Description/Comments:	Trim trees along roadways to prevent interference with power lines during high winds and winter storms. County does not have a current tree trimming program in place
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Severe Winter Storm, High Winds, wild fire
Responsible Organization:	Local Forestry Department
Estimated Costs:	Low to Medium
Possible Funding Sources:	Incorporate into capital improvements plans
Timeline for Implementation:	Within two to three years of plan adoption
Cost-Benefit Review	Due to multiple benefits from tree-trimming, benefits expected to outweigh costs
Priority	**Medium**

60. Insulate Water Pipes on Exterior of Public Buildings	
Project Description/Comments:	Insulating the pipes will reduce incidences of pipes bursting and causing interior water damage and loss of water in public buildings
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Severe Winter Storm
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low to medium
Possible Funding Sources:	Incorporate into capital improvements plans
Timeline for Implementation:	Within three to five years of plan adoption
Cost-Benefit Review	Benefits relative to costs would have to be explored in greater detail
Priority	**Low**

61. Establish Lightning Safety Program for Torrance County Residents	
Project Description/Comments:	Raise awareness among Torrance County residents of dangers of lightning and what to do in a lightning storm. Obtain ready-made guides and brochures from sources like FEMA
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Thunderstorms (including lightning and hail)
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Minimal
Possible Funding Sources:	Some staff time needed
Timeline for Implementation:	Within two to three years of plan adoption
Cost-Benefit Review	Due to low cost of awareness programs, the benefits are anticipated to outweigh costs
Priority	**Medium**

62. Protect Public Buildings from Lightning Strike Damage	
Project Description/Comments:	Install a surge protector system for protecting electronic equipment from direct lightning strikes. Severe weather plan to take the extra step of disconnecting especially sensitive equipment.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Thunderstorms (including lightning and hail)
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low to Medium
Possible Funding Sources:	Incorporate into capital improvements plans
Timeline for Implementation:	Within two to three years of plan adoption
Cost-Benefit Review	Due to high cost of data loss and relative low cost of project, the benefits are anticipated to outweigh the costs
Priority	**Medium**

63. Protect Public Buildings from Hail Damage	
Project Description/Comments:	As public buildings are constructed or renovated, use hail-resistant metal roofing
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Thunderstorms (including lightning and hail)
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low to Medium
Possible Funding Sources:	Incorporate into capital improvements plans
Timeline for Implementation:	Within three to five years of plan adoption
Cost-Benefit Review	Benefits relative to costs would have to be explored in greater detail
Priority	**Low**

64. Implement Residential Safe Room Rebate Program	
Project Description/Comments:	Implement program to encourage individuals to construct safe rooms at residential homes by implementing a safe room rebate program to reimburse a portion of the construction costs.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Tornados
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low to Medium
Possible Funding Sources:	FEMA
Timeline for Implementation:	Within three to five years of plan adoption
Cost-Benefit Review	Benefits relative to costs would have to be explored in greater detail
Priority	**Low**

65. Early Warning System	
Project Description/Comments:	Purchase and install warning system/siren for Village of Willard
Jurisdiction:	Willard, CPSWCD
Hazard(s) Addressed:	Tornados, Sever weather, high winds, thunder storms
Responsible Organization:	Local Emergency Manager
Estimated Costs:	Low
Possible Funding Sources:	FEMA
Timeline for Implementation:	Within 1 to 2 years of plan adoption
Cost-Benefit Review	Life safety benefit are anticipated to outweigh low costs
Priority	**Low**

66. Tornado Warning System	
Project Description/Comments:	Purchase and install a tornado warning system
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities
Hazard(s) Addressed:	Tornados
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low to Medium
Possible Funding Sources:	FEMA
Timeline for Implementation:	Within three to five years of plan adoption
Cost-Benefit Review	Benefits relative to costs would have to be explored in greater detail
Priority	**Low**

67. Designate/ Set up a Public Cooling Centers	
Project Description/Comments:	Designate and set up cooling centers in well-known centrally located public facilities, which will serve as a shelter to vulnerable populations (particularly the elderly) during periods of extreme heat.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Extreme Heat
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Low to Medium (cost of generators)
Possible Funding Sources:	HUD, potentially FEMA
Timeline for Implementation:	Within two to three years from plan adoption
Cost-Benefit Review	Due to potential health risks due to extreme heat, the benefits are anticipated to outweigh the costs
Priority	**Medium**

68. Conduct fan drive to prepare for periods of extreme heat	
Project Description/Comments:	Collect and distribute fans to most vulnerable citizens (generally the elderly) during periods of extreme heat. Develop a list of vulnerable citizens ahead of any extreme heat.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino, land grant communities, CPSWCD
Hazard(s) Addressed:	Extreme Heat
Responsible Organization:	Local Emergency Managers
Estimated Costs:	Volunteer time and efforts
Possible Funding Sources:	Local donations
Timeline for Implementation:	Within three to five years from plan adoption
Cost-Benefit Review	Due to potential health risks due to extreme heat and voluntary nature of this effort, the benefits are anticipated to outweigh the costs
Priority	**Low**

6 Implementation Strategy

6.1 Capability Assessment

Torrance County and the municipalities have the following internal capabilities related to hazard mitigation which serve as a baseline of what they can accomplish with relation to hazard mitigation goals and strategies:

Table 6.1: Torrance County Capabilities

Regulations	• Torrance County Planning & Zoning Commission • New Mexico has adopted the 1997 UBC code as a minimum standard for all communities and provides inspection services through the Construction Industry Division of the New Mexico Department of Regulations and Licensing • Torrance County Subdivision Regulations • NFIP ordinance in three participating jurisdictions (Torrance County, Estancia, Moriarty)
Emergency Response/ Administrative	• Torrance County Emergency Management • Torrance County Fire Marshal • Torrance County Sheriff's Department • Torrance County Emergency response capacity includes 25 first responders and 6 fire rescue trucks • Willard Fire Department • Mountainair Police and Fire Department • Moriarty Police and Fire Department • Estancia Police and Fire Department • Encino Fire Department
Programs	• Edgewood Soil and Water Conservation District (western and north part of the County including Moriarty) • East Torrance Soil and Water Conservation District (eastern part of the County including Estancia) • Claunch-Pinto Soil and Water Conservation District (southern part of the County including Mountainair) • Estancia Basin Water Planning Committee • Estancia Basin Health and Restoration Program (includes forest trimming and defensible space) • Estancia Basin Watershed and Forest Health Experimental Monitoring Project • Hub Resource Conservation and Development • South Central Mountain Resource Conservation and Development • Capital Improvements Program
Plans	• 2008 Torrance County CWPP • 2003 Torrance County Comprehensive Land Use Plan • 2012 Moriarty Comprehensive Plan • 2012 Moriarty Water Conservation Program • 2004 Mountainair Comprehensive Land Use Plan • 2009 Village of Encino Comprehensive Land Use Plan • Estancia Basin Regional Water Plan
Critical Infrastructure	• Moriarty Airport • Estancia Airport • Estancia Police and Fire Stations • Estancia Civil Defense Facility • Mountainair Airport

	• Mountainair Police and Fire • Torrance County Police and Fire (east of Moriarty) • Williams Mid-American LPG and Natural Gas pipelines
Financial Capabilities	• Torrance County does not have a specific mitigation funding source; all activities will need to be funded through the general fund and grants. The general fund is tax based and does not have specific call out for mitigation, storm water or similar.

Funding sources for hazard mitigation projects that the HMPT will consider for its identified mitigation actions are:

Table 6.2: Federal, State and Other Funding Sources

Name of Program	Primary Purpose
FEMA Public Assistance 406 Mitigation	For damaged public structures in a Presidential disaster declaration area that are otherwise eligible to receive Public Assistance funds, mitigation measures to reduce future risk can be considered. See http://www.fema.gov/public-assistance-local-state-tribal-and-non-profit/hazard-mitigation-funding-under-section-406-0 for more information.
FEMA Hazard Mitigation Grant Program (HMGP)	Following a Presidential disaster declaration, this program funds mitigation projects and actions that are projected to reduce future losses in excess of the projects' costs. See http://www.fema.gov/hazard-mitigation-grant-program for more information.
FEMA Pre-Disaster Mitigation Program (PDM)	From an annual Congressional appropriation, this program funds mitigation projects and actions that are projected to reduce future losses in excess of the projects' costs. See http://www.fema.gov/pre-disaster-mitigation-grant-program for more information.
Natural Resource Conservation Service (NRCS) Emergency Watershed Protection Programs[32]	Provides technical and financial assistance for relief from imminent hazards in small watersheds, and to reduce vulnerability of life and property in small watershed areas damaged by severe natural hazard events. EWP is an emergency recovery program. All projects undertaken, with the exception of the purchase of floodplain easements, must have a project sponsor. 75% federal/25% non-federal cost-share
NRCS Watershed and Flood Prevention Operation Program	Assistance may be provided for authorized watershed projects to install conservation practices and project measures (works of improvement) throughout the watershed project area. The planned works of improvement are described in watershed project plans and are normally scheduled to be installed over multiple years.
USDA Rural Development Emergency Community Water Assistance Grants (ECWAG)	USDA can provide grants from $150,000 to $500,000 to assist a rural community that has experienced a significant decline in quantity or quality of drinking water due to an

[32] See the following website for more information and examples of funded projects: http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/programs/landscape/ewpp/?cid=nrcs143_008263

Name of Program	Primary Purpose
	emergency, or in which such decline is considered imminent, to obtain or maintain adequate quantities of water that meets the standards set by the Safe Drinking Water Act. This emergency is considered an occurrence of an incident such as, drought, earthquake, flood, tornado, hurricane, disease outbreak or chemical spill, leakage or seepage. See http://www.rurdev.usda.gov/UWEP_HomePage.html for more information.
USACE Section 205 Authority	Provides authority to the Corps of Engineers to plan and construct small flood damage reduction projects (structural and nonstructural) that have not already been specifically authorized by Congress.
USACE Section 219 of the Water Resources Development Act of 1992 (WRDA92), Environmental Infrastructure, as amended	Provides assistance to non-federal interests for carrying out water-related environmental infrastructure and resource protection and development projects, including wastewater treatment and related facilities, water supply, storage, treatment, and distribution facilities. Such assistance may be in the form of technical, planning, and design assistance as well as construction assistance for defined projects and locations with specific amounts authorized for each location. A non-federal cost share of not less than 25% is required for all assistance under Section 219.
USFS Collaborative Forest Restoration Program (CFRP)	Assists public or private forest owners with an opportunity to reduce wildfire dangers that threaten the community as a whole. 80% Federally funded
USFS Forestland Enhancement Plan	This program is administered directly to private landowners who have at least 10 acres of forestland. It provides 75% federal funding for the reduction of fuel loading to improve forest health and reduce fire risk. A side benefit is the improvement of wildlife habitat and water quality.
USFS Rural Community Assistance Economic Action Program (RCA-EAP)	The main purpose of the RCA-EAP is to use local forest products to produce value-added materials for resale or for the conversion of biomass materials (waste wood) to energy for heating of public buildings or other uses. It has a multi-objective component as a fuel reduction project in forests thereby mitigation wildfire potential. 80% Federally funded
HUD CDBG Tornado Shelters Act (TSA)	TSA allows local governments to use CDBG funds to create community tornado shelters (“safe rooms”) in manufactured housing communities. No cost-share info available
State Fire Assistance – Wildland/Urban Interface (SFA-WUI) Program	This grant program, funded at 50/50 cost-share by various federal agencies, is administered by the NM Forestry Division of the NM Energy, Minerals, and Natural Resources Department (EMNRD). SFA-WUI seeks to benefit local communities where the Wildland/Urban Interface is a concern through fuel reduction and creation of defensible space. Local governments are the grant recipients, and projects may be done on private land in conjunction with landowners.
State Water Trust Board	The Water Trust Board was created in the Act. Its purpose is to: 1) oversee and administer the Water Trust Fund and Water Project Fund; 2) review and recommend funding for qualifying water projects to the Legislature; and 3) pursue additional funding opportunities. See http://governor.state.nm.us/Water_Trust_Board.aspx for additional information.

Name of Program	Primary Purpose
New Mexico Community Foundation (NMCF)	NMCF is a statewide endowment-building and grant-making organization that serves and invests in New Mexico's people, communities and environment. With partners in every county, NMCF promotes philanthropy as a tool for building community assets, relationships and self-reliance. NMCF provides grants in several areas related to hazard mitigation and forest stewardship. See www.nmcf.org for more information.

Opportunities for increased capability for the County and the participating jurisdictions;

- *UBC* – Building codes are important mitigation tools because they are tailored to fit specific hazards present in each region. Consequently, structures that are built to applicable codes are resistant to hazards, such as strong winds, floods, and wildfires, and can help mitigate the effects of these hazards. New Mexico has adopted the 1997 UBC code as a minimum standard for all communities and provides inspection services through the Construction Industry Division of the New Mexico Department of Regulations and Licensing. Individual counties and municipalities are at liberty to adopt the most current UBC.
- *Floodplain Ordinance and Community Rating System (CRS)* – Torrance County and two other participating jurisdictions are already participants in the NFIP. These jurisdictions can benefit from adopting higher standards in their floodplain ordinances to ensure additional protection for development in the floodplain or prohibit future development. The villages of Willard and Town of Mountainair should consider joining the NFIP CRS to receive credit, and potential flood insurance premium discounts for its policyholders, for any adopted higher standards and other enhanced flood risk reduction activities.
- *Public Warning System* - Warning systems are needed to ensure timely and accurate information to minimize the effects of disasters in the county
- *Formal Mitigation Function* - For developing and implementing projects as well as maintaining the planning process
- *Firewise Communities/USA*: a project of the National Wildfire Coordinating Group's Wildland-Urban Interface Working Team. It provides information and guidance for communities in the wildland-urban interface area (www.firewise.org).

6.2 Prioritization

6.2.1 STAPLEE Criteria

FEMA developed a comprehensive set of criteria that allows communities to evaluate proposed actions in categories that reflect community values and sound principles for finding appropriate and cost-effective mitigation actions. The HMPT used these criteria, known by the acronym STAPLEE, to evaluate the potential impact of high priority proposed flood mitigation actions (which are the most actionable ones):

Table 6.3: STAPLEE Criteria

Evaluation Criteria	Considerations
Social	*Does the measure treat people fairly?* (i.e., Are different social and demographic groups, different generations, different creeds treated equally?)
Technical	*Will it work?* (i.e., Does it actually solve the problem and is it feasible?)
Administrative	*Do the County and/or its municipalities have the capacity to implement and manage the project?*
Political	*Does support exist from public and political stakeholders?*
Legal	*Do the County and/or its municipalities have the legal authority to implement and assume any reasonable liability?*
Economic	*Is it cost-effective? Is there a federal, state or non-profit source for funding? If federal, can the non-federal match bet met locally or through another source? Does it contribute to the local economy?*
Environmental	*Does it comply with environmental regulations? Will it preserve, protect, or enhance existing natural resources?*

The prioritization methodology involved comparing each proposed mitigation measure against the established criteria to determine if the measure would help the County and its municipalities meet the mitigation goals and objectives established for this plan. Then the mitigation measures were compared against each other to determine a priority order.

7 Plan Maintenance

This section discusses how the Torrance County Hazard Mitigation Plan will be implemented, evaluated and enhanced over time.

7.1 Implementing the Plan

Torrance County and participating jurisdictions will integrate this Plan into existing decision making processes or mechanisms. This includes integrating the requirements of the Plan into other planning documents; processes or mechanisms such as development plans, land use plans, continuity of operations plans, and capital improvement plans, when appropriate. The HMPT will be charged with monitoring, evaluating and implementing the Plan. It will also be responsible for ensuring that the goals and strategies of new and updated planning documents are consistent and do not conflict with the goals and actions of the Plan, and will not contribute to increased hazard risk for the planning area. Opportunities to integrate the requirements of this Plan into other planning mechanisms shall continue to be identified through future meetings of HMPT and through the five-year review process described herein.

7.2 Incorporation into Other Planning Mechanisms and Existing Programs

As part of the on-going planning process, the HMPT will continue to identify additional plans and programs that will augment or help support mitigation planning efforts. Since the last planning cycle, hazards identified in the plan were considered in the drafting stages of the Torrance County 2008 CWPP. The HMPT will work to incorporate mitigation into additional existing planning mechanisms including updates to plans and ordinances identified in section 2.2 of this plan.

Torrance County, the Town of Estancia, the City of Moriarty, the Town of Mountainair, the Village of Willard, and the Village of Encino acknowledge that it is necessary to ensure that future growth in the county should avoid or control the use of all areas containing known potentially hazardous environments. Further, hazard mitigation will not stop upon completion of each of the specific actions listed in this plan. Therefore, hazard mitigation will become a county-wide, ongoing and coordinated effort. The following areas of consideration will take place as part of this effort.

Funding future mitigation efforts will rely on Grants. The communities within Torrance County do not expect increased tax revenue from either a population boom or additive taxation. Torrance communities are funded through State programs; State sales tax, grants and local property tax levies. Community projects receive funding from the general funds of the respective communities. Disaster management and litigation work funding is not typically a budgeted item. Future mitigation efforts could be funded through direct line item budgeting but that would require broad community support and a restructuring of the municipality's budget.

Evaluation of declared emergencies and activations of area emergency operations centers. In the event that an emergency declaration is made within the county or its participating jurisdictions, an evaluation of the events leading to this declaration will be made in order to identify possible mitigation actions that can be taken to reduce or eliminate this hazard in the future. In addition, the activation of an emergency operations center within the county will require this same type of evaluation in order to identify possible mitigation actions that can be taken.

Incorporation into existing efforts. Torrance County communities utilized the previous mitigation plan to understand where and how to allocate available funding and to identify where staff efforts should be applied. Incorporation of mitigation actions was limited due to the limited available funding throughout communities in Torrance County. However actions to improve local drainage and community hazard identification were successful. For example, the county's ongoing efforts to enter and maintain agreements with local landowners for water usage and fire prevention education was discussed in the existing plan, has been implemented and is an ongoing action.

Successful efforts at eliminating or reducing the consequences of future hazard events cannot occur without controlling the growth of new development within known hazardous areas. As part of implementing the resolutions of the Torrance County Mitigation Plan, all proposed new development must be evaluated by the respective permitting officer against identified hazard-prone areas. Torrance County, Moriarty, and Estancia have zoning officials who will review new development and ensure it meets current zoning and building criteria. Other communities in Torrance County will be overseen by the Torrance County Zoning officials and the County manager. Enforcing current regulations and those adopted as part of future mitigation actions will help the communities of Torrance County meet their mitigation goals and maximize the benefit of planning activities. Therefore, the building permit approval system will include a review of all newly-proposed development projects to keep them from being built in known hazard-prone areas such as floodplains. If a proposed project falls within such an area, the permit may be disapproved or additional construction requirements may be established to eliminate any dangers that could be caused by the existence of the hazard.

In addition, county and community planning staffs will try to ensure that comprehensive plans like the water management plan, the master drainage plans and the Storm water pollution control plan, are developed based on the community's predicted growth patterns consider both hazard locations and the mitigating actions. To accomplish this, the planning staff and the mitigation team will collaborate during the creation and updating of future comprehensive plans. Managing the proper staff mix for planning efforts will be the responsibility of the county and local municipality management and will likely involve many of the same staff as participated in this HMP revision. Melding these two efforts will help steer growth away from identified hazard locations, wherever possible, and avoid increasing the hazard's potential damage. When the hazard locations cannot be avoided, building codes and zoning codes, where applicable, can be utilized to minimize the danger.

Additional projects may also be developed by the cooperative work of the planning staff and the mitigation planning team during the revision and updating process of the comprehensive plans. Projects identified in this manner will be included in the revision and updating of the Torrance County Mitigation Plan.

To address the concerns and desires of the general public, efforts will be made to obtain their input. Obtaining this input will be accomplished in the form of questionnaires and advertised public meetings. In addition, the comprehensive plan will be made available through public libraries and the internet. Contact numbers and addresses will be made available to the public so that input can be generated at any time. Questionnaires and public meetings will also be scheduled after the occurrence of a major disaster to provide an avenue for public input.

Additional Functions. In addition to incorporating the ideas of hazard mitigation into all planning efforts, other programs routinely take place in Torrance County and the participating jurisdictions to provide for the public's general safety. These programs are forms of mitigation. The road departments at each government level, including the state, work to maintain a safe transportation system through such projects as repaving and maintenance of road signs. Local municipality crews also maintain street sweeping capability, which removes dangerous debris from road surfaces and aids in keeping storm drains clean, which reduces the potential of flooding. Street sweeping activities can be planned for and integrated into other planning mechanisms to help the community fulfil its mitigation goals. In this case street sweeping will be integrated into the anticipated storm water pollution control plan as an ongoing action with multiple benefits where funding should be planned for and budgeted for. These activities are funded through the community general fund and are managed by the local government.

Municipal, county, and state law enforcement of traffic regulations aids in maintaining safe transportation routes. Laws are in place concerning the illegal dumping of debris and restrictions on open burning; these laws are enforced by the local law enforcement agencies and the local municipality office. Improving the enforcement of anti-dumping regulations will be incorporated into future planning efforts especially those related to pollution, flooding and fire prevention. Additional resources may be needed to adequately enforce the laws, which should be part of future planning and budgeting activities. The New Mexico Department of Transportation further monitors and inspects commercial transports in an effort to ensure that hazardous material movement is conducted in compliance with mandated regulations.

Additionally, emergency operations plans are in place and exercised regularly to ensure that area response agencies coordinate their efforts during emergency situations. The emergency operations plans are reviewed annually and revised as necessary. Training for first responders is an ongoing project and further ensures that police, fire, and emergency medical personnel are kept up-to-date in their respective areas of expertise. Torrance County has identified this need in adding a training center as noted in the mitigation actions.

7.3 Monitoring, Evaluating, and Updating the Plan

It is critical that the Torrance County Mitigation Plan remains a living document, with the goal of continuing the process of eliminating or reducing potential threats and resulting damage due to existing hazards in the county and participating jurisdictions. The HMP reflects what each Torrance County community will do to protect itself from its unique hazards and threats within its available resources. The general success of the HMP is dependent upon a well-established planning process and well-constructed maintenance process. The formal adoption of the HMP by the Torrance County Commission and City Council of each participating jurisdiction is imperative to effectively executing the HMP and the continued planning process.

This HMP will be monitored, maintained and updated by Torrance County Emergency Manager with support from the HMPT in order to continually address hazards and risks. These updates will be recorded Semi-Annually and made public record to ensure that the plan is executed in accordance with the goals. The Torrance County Emergency Manager will review new and ongoing projects against the goals of the HMP and consider HMP defined risks and goals in planning projects and annual budgets. The County Emergency Manager will schedule meetings with the HMPT **at least annually** to oversee and review updates and revisions to the HMP. The committee will hold an annual public forum for the continual development and assessment of the HMP starting twelve months after the final plan approval. The Torrance County Emergency Manager will maintain a list of HMPT members and update the list to reflect staff changes and new conditions within the county. In addition, the HMP will be **re-evaluated every five years** by the HMPT and forwarded to the New Mexico State Department of Homeland Security and Emergency Management (DHSEM) and the Federal Emergency Management Agency (FEMA) for approval as required to remain eligible for Pre-Disaster Mitigation and Hazard Mitigation Grant Program funding.

The plan will be revised based on local, state, and national guidelines. As laws, government regulations, political, public, and financial changes occur; the HMP should be monitored regularly and adjusted if affected by these changes. Additionally, the HMP should be analyzed following applicable disasters to review mitigation goals and update mitigation actions. This will ensure the survivability of the HMP. The HMPT should be informed and approve all changes. Updates requiring resolution will be forwarded to DHSEM upon approval. Changes to the HMP will be tracked. A system to track accomplishments and outstanding mitigation actions will be developed and maintained and will be based on the mitigations actions identified in this document. The Torrance County Emergency Manager will request input on an annual basis from the HMPT via an email reminder for any relevant up-dates. The bullet points below will be the basis of the email reminder for submission of up-dates. Agencies, departments, and other partners who complete related mitigation actions are responsible for providing

Torrance County Emergency Management and the HMPT with a summary of actions undertaken annually. The annual HMPT review should allow for further evaluation and identification of completed projects.

The exercise of evaluating the HMP will occur annually as the HMPT will assess goals and objectives of the current HMP and appraise the mitigation project's effectiveness to expected conditions using the following criteria:

- Evaluate the resulting benefit of all completed action plans.
- Evaluate the progress of action plans still being implemented.
- Evaluate public input relating to completed projects, ongoing projects, or developing trends or concerns within the mitigation process.
- Determine if new hazard threats have been identified and devise action plans accordingly.
- Revise, if necessary, the schedule of pending mitigation action plans.

Any edits or up-dates will be summarized in an annual report to be drafted by the Torrance County Emergency Manager and approved by the HMPT prior to posting on the County web site.

7.4 5 Year Plan Effectiveness Review and Update

The Plan will be thoroughly reviewed and updated every 5 years by the HMPT. The Torrance County Emergency Manager will initiate the plan update process 3 years into the current planning cycle to ensure the current plan does not expire. This process will determine whether there have been any significant changes that may, in turn, necessitate changes in the types of mitigation actions proposed. New development in identified hazard areas, an increased exposure to hazards, the increase or decrease in capability to address hazard risk, and changes to federal or state legislation are examples of factors that may affect the necessary content of the Plan.

The Plan review provides Torrance County and participating jurisdiction officials and the HMPT with an opportunity to evaluate those actions that have been successful, and to explore the possibility of documenting potential losses avoided due to the implementation of specific mitigation measures. The Plan review also provides the opportunity to address mitigation actions that may not have been successfully implemented as assigned. The Torrance County Emergency Manager will be responsible for reconvening the HMPT and conducting the 5 year plan review.

During the 5 year plan review process, the following questions will be considered as criteria for assessing the effectiveness and appropriateness of the Plan:

- Do the goals address current and expected conditions?
- Has the nature or magnitude of risk to hazards changed?
- Are current human and capital resources appropriate for implementing the Plan?
- Are there plan and mitigation action implementation obstacles such as social, technical, administrative, political, legal, economic, environmental, or coordination issues?
- Have new issues or needs been identified which are not adequately addressed in the Plan?
- Has there been a change in information, data, or assumptions from those on which the Plan is based?
- Have the outcomes occurred as expected?
- Are there errors, inaccuracies, or omissions made in the identification of issues or needs in the Plan?
- Did the identified agencies, individuals, and/or other partners participate in the plan implementation process as assigned?

Following the 5 year plan review and update, any revisions deemed necessary will be summarized and implemented according to the reporting procedures and plan amendment process outlined herein. Upon completion of the review and update/amendment process, the Plan will be submitted to the entire HMPT for review.

The overarching goal is to institutionalize a robust and repeatable process that produces an annual budget that is aligned with DHS strategic goals and the Secretary's IPG. FEMA produces a Resource Allocation Plan (RAP) that provides an overview of FEMA's resources and contains proposed levels of funding for each FEMA appropriation for the budget year and 4 out-years. As part of that process Torrance County is using its first year as the Budgeting year. Within the first year the HMPT will determine the priorities in which the plan will be implemented. The following considerations for each district will be evaluated and prioritized:

Torrance County/Town of Estancia/City of Moriarty/Town of Mountainar/Village of Willard/Village of Encino/Claunch-Pinto SWCD					
5 year plan					
Hazard Type	Year				
	1	2	3	4	5
Flood	Budget & Prioritize	Planning	Storm Water Management	Debris Clearing	Land Use Ordinances
Wildfire	Budget & Prioritize	Planning	Promote "Wildfire Awareness"	Review Comprehensive Plan	Retrofit Critical Structures
Severe Winter Storm	Budget & Prioritize	Planning	Promote public awareness workshops	Install Snow Fences	Develop Building Code
Drought	Budget & Prioritize	Planning	Conduct Workshop for Water Conservancy	Review and Implement Secondary Sources of Water	Create a plan for monitoring Water Supply systems

7.5 Continued Public Involvement

Input from the public is vital to an effective HMP. Torrance County and the participating jurisdictions will continue their transparent government and all-inclusive public involvement efforts established in the development of this HMP by continuing to include public input in the ongoing hazard mitigation planning processes. The County will continue to ensure adequate public access to the HMP by posting the HMP on the Torrance County website. It will also be available from Torrance County Emergency Management upon request. An annual public meeting will be held to update residents and stakeholders on the progress of action items within the HMP or to hold workshops for updating the HMP. The annual public meeting will allow for a review process to assess existing goals and mitigation actions and to examine the action plan. Public input and comments will assist the HMPT in determining the success of the plan implementation, the relevance of goals and objectives and the ranking of hazards and actions throughout the planning cycle.

Residents are also welcome to submit comments to the jurisdiction's point of contact about the HMP at any time.

APPENDIX A
Meeting Documentation (Meeting 1)

County Commission

Jim Frost
Commissioner
District 1

Julia Ducharme
Commissioner
District 2

LeRoy Candelaria
Commission Chair
District 3

PO Box 48 ~ 205 Ninth Street
Estancia, NM 87016
(505) 246-4752 Main Line (505) 384-5294 Fax
www.torrancecountynm.org

County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Ms. Sylvia Chávez, Mayor
Town of Estancia
P.O. Box 166
Estancia, NM 87016

Dear Ms. Chávez-

This letter is an important invitation to participate in the development of the Torrance County multi-jurisdictional Hazard Mitigation Plan Update that will help reduce the impacts of natural hazards in your Community. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

a) identify and profile the Community's risk to natural hazards;
b) track past mitigation efforts;
c) develop goals, objectives and actions to reduce the risk; and
d) involve a comprehensive group of stakeholders (where you fit in!) including neighboring jurisdictions, businesses, non-profits, state/federal agencies and academic institutions in its development.

You and your organization are asked to participate because of past participation in similar planning efforts and because your organization can provide unique insights and feedback into the successful development of this plan. Once a draft plan is developed (estimated Fall 2015), we will request your review and comments.

On behalf of the County, we would also like to invite you to attend the Hazard Mitigation Plan Stakeholder kickoff meeting on **July 28, 2015 at 9 a.m.** at the Torrance County Emergency Management Office located at 753 Salt Missions Trail, McIntosh, NM 87035. At the meeting, we will have a brief overview of the planning process and provide some key information for you to review.

The goal of the meeting is to assist participants in understanding the information we are seeking and for us to learn the most effective ways to support and promote risk reduction in your Community. We understand that this is not part of your normal duties, however the process does not require a great deal of your time, just feedback at critical points in the plan development.

The point of contact for the Community on this project is Mr. Javier Sanchez, Torrance County Emergency Manager; AECOM has been contracted by the County to develop this plan.

For questions, or if participation in this planning process is more appropriate for someone else in your organization, please contact Mr. Sanchez at 505-246-4748 or *jsanchez@tcnm.us*.

Thank you for your support.

County Commission

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Commissioner
District 1

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Mr. Ted Hart, Mayor
City of Moriarty
P.O. Box 130
Moriarty, NM 87035

Dear Mr. Hart-

This letter is an important invitation to participate in the development of the Torrance County multi-jurisdictional Hazard Mitigation Plan Update that will help reduce the impacts of natural hazards in your Community. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

e) identify and profile the Community's risk to natural hazards;
f) track past mitigation efforts;
g) develop goals, objectives and actions to reduce the risk; and
h) involve a comprehensive group of stakeholders (where you fit in!) including neighboring jurisdictions, businesses, non-profits, state/federal agencies and academic institutions in its development.

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Thank you for your support.

AGENDA

Torrance County Hazard Mitigation Plan
Kickoff Meeting
July 28, 2015 - 9AM-11AM

1) Introduction	Javier Sanchez, Torrance Co.
2) Scope and Objectives of Mitigation Plan	Jim DeAngelo, AECOM
3) Torrance County Hazard Mitigation Plan Team	Javier Sanchez, Torrance Co.
4) Overview of the Hazard Mitigation Planning Process	Jim DeAngelo, AECOM
5) Complete Questionnaire	Attendees
6) Action Items a) Data Collection b) Communication Methods c) Schedule d) Public Outreach	Jim DeAngelo, AECOM Javier Sanchez, Torrance Co.
7) Open Discussion	Jim DeAngelo, AECOM
8) Adjournment	Javier Sanchez, Torrance Co.

MEETING SIGN-IN

▶ Torrance County Hazard Mitigation Plan, Kickoff

▶ TIME: July 28, 2015 @ 9:00AM MDT
PLACE: Torrance Co. Emerg. Mang. Office
753 Salt Missions Trail, McIntosh, NM 87035

Name	Title	Organization	Phone	Email
Javier Sanchez	Torrance Co. Emergency Manager	Torrance Co.	505.246.4748	jsanchez@tcnm.us
Jim DeAngelo	AECOM Proj. Manager	AECOM	505.206.1750	Jim.deangelo@aecom.com
George Ramirez	President Manzano Land Grant	Manzano Land Grant	224 3427	
Debbie Romero		Manzano Land Grant	270 9589	
Martin Rivera	Torrance County Undersheriff	TCSO	(505)246-4973	mrivera@tcnm.us
Lester Gurley	Estancia Fire Chief	EFD	505 384 4338	firechief@townofestancia.com

6501 Americas Parkway NE, Suite 900
Albuquerque, NM 87110-5311
(505) 855-7500 / (505) 855-7555 fax

MEETING SIGN-IN

▶ Torrance County Hazard Mitigation Plan, Kickoff

▶ TIME: July 28, 2015 @ 9:00AM MDT
PLACE: Torrance Co. Emerg. Mang. Office
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Name	Title	Organization	Phone	Email
Javier Sanchez	Torrance Co. Emergency Manager	Torrance Co.	505.246.4748	jsanchez@tcnm.us
Jim DeAngelo	AECOM Proj. Manager	AECOM	505.206.1750	Jim.deangelo@aecom.com
Daniel Antonio Herrera	LA MERCED DE MANZANO	MANZANO LAND GRANT	8470595	tillie921@aol
Robert Chavez	~~Chief of Police~~ Town of Mountainair	Town of Mountainair	505-847-2806	RobertChavez@Mountainair.nm.gov
Robert V. Kobla	Fire Chief	Clauvee Pinto Soco	505-847-2243	Robert.Kobla@nm.nacinet.net
Leonard Lujan	Road Dept.	Torrance County	505-705-4031	Leonard2@tcnm.us
JOHN G PHILLIPS	MAYOR	VILLAGE OF ENCINO	5055842980	OAKVILLAGE@PLATEAU.TEL.NET
Faye Chavez	Chief(fire)	Willard	505-705-5218	Chieffayechavez@aol.com
STEVE SPANN	FIRE CHIEF	MORIARTY	505-29-8753	SSPANN@MORIARTYNM.GOV
TED HART	MAYOR	MORIARTY	505-832-4406	MayorHart@MoriartyNM.GOV
STEVE GUETSCHOW	PLZ	TC	505 246-4761	sguetschow@TCNM.US
Venessa Chavez	President	Tajique	11 400-0940	drewnessababydom@aol.com

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Kickoff Meeting
Torrance County Hazard Mitigation Plan

Jim DeAngelo

AECOM

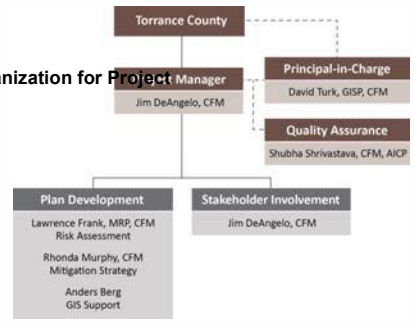
July 28, 2015

Agenda

- Introductions
- Scope and Objectives of Mitigation Plan
- Torrance Co. Hazard Mitigation Plan Team
- Overview of the Hazard Mitigation Planning Process
- Questionnaire
- Action Items and Discussion

AECOM

Organization for Project



AECOM

Vision and Purpose

- Goal of hazard mitigation planning:

  Make communities hazard and disaster resistant

- Purpose

  Identify local policies and actions that can be implemented over the long term to reduce risk and future losses from hazards

Vision and Purpose

- Comprehensive hazard mitigation planning prepares a community to:

  - Protect lives and property
  - Avoid damages and save dollars
  - Reduce or eliminate future damages by guiding new development
  - Speed post-disaster recovery
  - Avoid interruptions caused by hazards

Mitigation Planning Cycle

Mitigation Planning Cycle

Establish a Planning Process / Public Involvement Process

The Planning Process

- Identify the plan stakeholders and local champions
- Build on existing Torrance County Hazard Mitigation Plan
- Address the 14 natural hazards from the State Plan
- Gather information regarding Torrance Co. losses to natural Hazards
- Conduct vulnerability assessment and brainstorm mitigation ideas
- Prioritize mitigation actions

Data Collection

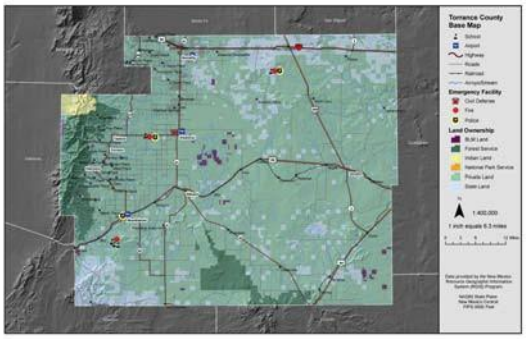
Hazard Category	Hazard Type
Atmospheric	Extreme Heat High Wind including Dust Storms Thunderstorm (Hail/Lightning) Tornado Severe Winter Storms
Hydrologic	Drought Flood
Geologic	Earthquake Expansive Soils Land Subsidence Volcano Landslide
Other	Wildland/Urban Interface Fire Dam Failure

Data Collection

- Drought/ Weather Events
  - Past damages - the extent of the drought, damages and cost to provide water
- Flood Events
  - Past damages - photographs and specific information like what was damaged and how high the water was in buildings
  - Will review most recent flood maps
- Wildfire Events
  - Past damages - the extent of the wildfire, what caused it and what did it damage or destroy

Mitigation Planning Cycle

Hazards



Hazard ID, Analysis & Risk Assessment

- Flood Characteristics - Torrance County
  - Three types of flooding: flash flood (particularly in steep sloped areas); riverine flooding and stormwater drainage issues.
  - Monsoon season increases flooding incidents

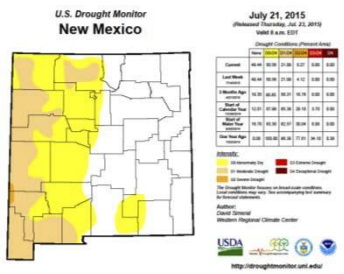
- Flood Risk
  - Flood maps - flood damage may also floodplain
  - Flood damage history

Hazard ID, Analysis & Risk Assessment

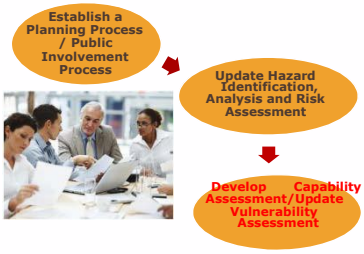
- Wildfire Risk
- Wildfire Characteristics
  - Influenced by the following:
    - Density of vegetation - fuel load
    - Topography (steep slopes induce greater spread of fire)
    - Weather - wind, dry conditions

Hazard ID, Analysis & Risk Assessment

- Drought Conditions



Mitigation Planning Cycle



Torrance County Hazard Mitigation Plan September 26, 2016 Page 16 AECOM

Vulnerability Assessment from 2007 HMP

Table 4: Multi-Jurisdictional Risk Assessment

Hazard	Torrance County	Moriarty	Mountainair	Willard	Encino	Estancia
Wildfire	High	High	High	Medium	Medium	Medium
Severe Weather (Tornado/Wind Storm; Thunderstorm/Lightning/Hail; Extreme Heat; and Winter Storm/Extreme Cold)	High	High	High	High	High	High
Drought	High	Medium	Medium	Low	Low	High
Floods / Flash Floods	Medium	Medium	Low	Low	Low	High
Human-Caused Hazards, including Hazardous Materials Releases, Nuclear Facility Accidents, and Terrorism	Low	High	Medium	High	High	Medium
Landslides, Subsidence and Earthquakes	Low	Low	Low	Low	Low	Low

High: Extreme probability to hazard, 75% chance of occurrence in any given year
Medium: Average probability to hazard, 50% chance of occurrence in any given year
Low: Small probability to hazard, 25% chance of occurrence in any given year

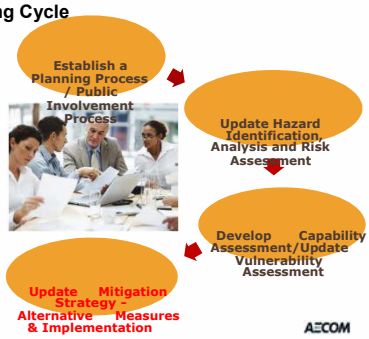
Torrance County Hazard Mitigation Plan July 28, 2015 Page 17 AECOM

Capability Assessment

- Will evaluate the laws, regulations, policies, and programs related to hazard mitigation and development in hazard-prone areas
- Develop estimated impacts on Mitigation Core Capabilities for the natural hazards of concern
- Will describe funding capabilities for hazard mitigation projects
- Will identify current and potential sources of federal, state, or private funding to implement mitigation activities

Torrance County Hazard Mitigation Plan July 28, 2015 Page 18 AECOM

Mitigation Planning Cycle



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Mitigation Strategy

- Addressing the Risk of Existing Development will require Mitigation Project Actions. Some examples:
  - Elevation of structure
  - Acquisition/Demolition of structure in floodplain
  - Stormwater/Drainage Improvement
  - Reroof for wildfire mitigation

AECOM

Mitigation Strategy

- Protecting Future Development
  - Development Restrictions (land use planning)
  - Comprehensive Planning/Capital Improvements
  - Building Codes
- For geographic-based hazards like flood and wildfire, location of development is very important
  - e.g., where possible, develop outside of mapped floodplain
  - Develop away from forested areas or the top of ridges

AECOM

Mitigation Strategy

- Integration with Comprehensive Plans where there are overlapping objectives
  - Fire Prevention Plans
  - Development Plans
  - Evacuation Plans

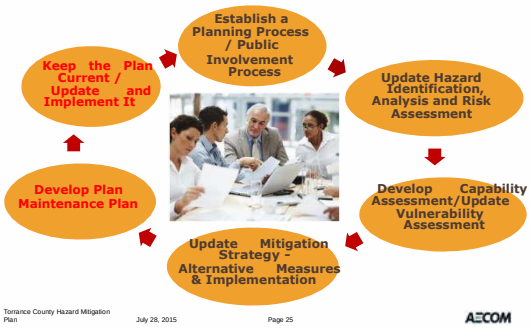
Mitigation Strategy

- Existing Development Will Require Mitigation Measures
  - Elevation
  - Relocation
  - Stormwater/drainage improvement
  - Reroof for wildfire mitigation
  - Storm Shelters/ Safe Room

Mitigation Strategy

- Future Development
  - Development Restrictions (land use planning)
  - Comprehensive Planning/Capital Improvements
  - Building Codes

Mitigation Planning Cycle



Plan Monitoring and Evaluation

- Keep the planning process alive
- Evaluating its effectiveness
- How and when to update the plan
- Incorporate into Existing Planning Mechanisms
- Plan Implementation Schedule

Project Management

- Deliverable Format
- Schedule - Meetings and Deliverables
  - Periodic Phone Calls
  - Risk Assessment Meeting
  - Final Meeting
- Quality Reviews

Project Management

Project Schedule

• Kickoff Meeting	July 28, 2015
• Risk Assessment & Mitigation Action Meeting(s)	*August 27, 2015 **
• Draft Plan Review Meeting	*September 17, 2015**
• Plan to State for Review	October 2015
• Plan to FEMA for Approval	November 2015
• Plan accepted pending adoption from FEMA	Winter 2015/2016

*tentative

AECOM

Communication Protocol

- Jim DeAngelo - AECOM PM and will coordinate closely with Plan Lead
- Javier Sanchez, Plan Lead, Torrance County Emergency Management

AECOM

Questions?

Thank You!

Jim.DeAngelo@aecom.com

AECOM

July 28, 2015

Meeting Minutes

Project Name:	***Torrance County HMP Update***	
Meeting:	***Kickoff Meeting***	
Date:	July 28, 2015	Time: 9AM-10:00AM
Place:	Torrance County Emerg. Mang. Office, 753 Salt Missions Trail, McIntosh, NM	

Attendees:
See Attached Sign In Sheet, Agenda, and Slide Presentation

1. Greetings and Introductions

- Javier Sanchez opened the meeting and introduced Jim DeAngelo as a contractor with AECOM to assist Torrance County in completion of the plan update.
- J. DeAngelo briefly introduced himself and began the presentation (slides Attached) reviewing the scope of the project the point of the plan update and discussed the URS/ Torrance County contractors relationship. Due to a conflict the slides were not able to be presented, but were used by J. DeAngelo to frame the conversation.
- J. DeAngelo continued the presentation by reviewing the vision and purpose of hazard mitigation and introducing the planning cycle
- J. DeAngelo discussed what kind of information the team should be collecting and how it would be used to supplement the available information for the plan update.
- The planning team discussed mitigation measures and began to understand what type of measures would be applicable to the plan.
- J. DeAngelo led a discussion related to who to include in the planning process and what the hazards faced by Torrance county are now, compared with several years ago. Several team members offered experiences and suggestions for hazards, mitigation actions, and community inclusion.
- J. DeAngelo continued the presentation by reviewing the project management of the update and discussing the proposed timeline.
- Action Items:
    - AECOM will review received surveys and coordinate with Torrance County to receive additional data.
    - J. Sanchez will compile a list of invitees for the second meeting.

Torrance County Multi-Jurisdictional Hazard Mitigation Plan Survey

The information you provide for this survey will help URS gather the information needed to prepare the hazard mitigation plan. Thank you for your participation!!

Your Name: Venessa Chavez

Title: President- TaJique Land Grant

Department: "

Contact Phone #: 505-400-0940

Contact Email: drewnessa babydom@aol.com

What does your agency oversee/manage?

La Merced Del Pueblo De TaJique

Does your agency have any risk management or property protection responsibilities? If yes, please describe these responsibilities:

Yes, TaJique Community Center. TaJique Cemetary, Public Park, Common lands

Please name any hazard events (e.g., flood, wildfire, dust storm) that you are familiar with in the last five years (provide approximate date and any information on what occurred):

Wild file. Flooding from burn scars

Do you have pictures of any of these events that could be used in the hazard mitigation plan? (if yes, we will contact you later) YES / NO

Yes

What types of projects might help reduce risk to the major hazards in Torrance County (e.g. flood, wildfire, drought, dust storm):

Thinning projects and planting in the burned areas. Removing old ash from previous flooding.

Torrance County Multi-Jurisdictional Hazard Mitigation Plan Survey

The information you provide for this survey will help URS gather the information needed to prepare the hazard mitigation plan. Thank you for your participation!!

Your Name: Lester Gary

Title: Fire Chief

Department: Estancia Fire

Contact Phone #: 505 384-4338

Contact Email: firechief@townofestancia.com

What does your agency oversee/manage?

Town of Estancia
CCA

Does your agency have any risk management or property protection responsibilities? If yes, please describe these responsibilities:

CCA

Please name any hazard events (e.g., flood, wildfire, dust storm) that you are familiar with in the last five years (provide approximate date and any information on what occurred):

Do you have pictures of any of these events that could be used in the hazard mitigation plan? (if yes, we will contact you later) YES / NO

What types of projects might help reduce risk to the major hazards in Torrance County (e.g. flood, wildfire, drought, dust storm):

Torrance County Multi-Jurisdictional Hazard Mitigation Plan Survey

The information you provide for this survey will help URS gather the information needed to prepare the hazard mitigation plan. Thank you for your participation!!

Your Name: STEVEN SPANN

Title: FIRE CHIEF

Department: CITY OF MORIARTY

Contact Phone #: 505-269-8953

Contact Email: SSPANN@MORIARTYNM.GOV

What does your agency oversee/manage?

FIRE/EMS/EMERGENCY OPERATIONS

Does your agency have any risk management or property protection responsibilities? If yes, please describe these responsibilities:

PRE-PLANNING, FIRE PREVENTION, CODE ENFORCEMENT, & FIRE SUPPRESSION OF ALL FEDERAL, STATE, & LOCAL PROPERTIES WITHIN THE INCORPORATED AREAS OF THE CITY OF MORIARTY

Please name any hazard events (e.g., flood, wildfire, dust storm) that you are familiar with in the last five years (provide approximate date and any information on what occurred):

FLOODING (MINOR), WILDFIRES, WINTER STORM CLOSURES,

Do you have pictures of any of these events that could be used in the hazard mitigation plan? (if yes, we will contact you later) (YES) / NO

What types of projects might help reduce risk to the major hazards in Torrance County (e.g. flood, wildfire, drought, dust storm):

FUEL REDUCTION IN WILDLAND AREAS.
RESERVE RESOURCES FOR FLOODING I.E. SAND BAGS, WATER DIVERTING & CONTAINMENT MATERIALS.

Torrance County Multi-Jurisdictional Hazard Mitigation Plan Survey

The information you provide for this survey will help URS gather the information needed to prepare the hazard mitigation plan. Thank you for your participation!!

Your Name: Robert Chung

Title: Chief of Police + Zoning/Code Officer

Department: Mountainair Police Dept.

Contact Phone #: (505) 847-2806

Contact Email: robertchung@mountainairNM.gov

What does your agency oversee/manage?

Manage law enforcement resources and oversee the safety of town property and personal property in Mountainair.

Does your agency have any risk management or property protection responsibilities? If yes, please describe these responsibilities:

Our Department has the responsibility of providing ~~protecting~~ security to our town residents and their property. Our Town also has the responsibility of proving necessary security and safety requirements on town property.

Please name any hazard events (e.g., flood, wildfire, dust storm) that you are familiar with in the last five years (provide approximate date and any information on what occurred):

① During monsoon season and heavy rain — local flooding of streets yearly.

② Fires of homes/trailer park 2015

Do you have pictures of any of these events that could be used in the hazard mitigation plan? (if yes, we will contact you later) (YES) / NO

Fires at Trailer park.

What types of projects might help reduce risk to the major hazards in Torrance County (e.g. flood, wildfire, drought, dust storm):

For Mountainair, providing funds to ensure fires do not spread & flooding on streets are contained.

APPENDIX A
Meeting Documentation (Meeting 2)

PO Box 48 ~ 205 Ninth Street
Estancia, NM 87016
(505) 246-4752 Main Line (505) 384-5294 Fax
www.torrancecountynm.org

Mr. Lester Gary, Fire Chief
Town of Estancia
P.O. Box 166

Estancia, NM 87016

Hello Mr. Gary,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

a) Identify and profile communities' risk to natural hazards;
b) Track past mitigation efforts;
c) Develop goals, objectives and actions to reduce the risk; and
d) Involve a comprehensive group of stakeholders (where you fit in!) including neighboring jurisdictions, businesses, non-profits, state/federal agencies and academic institutions in its development.

You and your organization are asked to participate because of past participation in similar planning efforts and because your organization can provide unique insights and feedback into the successful development of this plan. Once a draft plan is developed (estimated Fall 2015), we will request your review and comments.

We invite you to attend the **Hazard Mitigation Plan Stakeholder meeting** scheduled on **August 25 at 10 a.m.** The meeting will be held at the Torrance County Emergency Management Office located at 753 Salt Missions Trail, McIntosh, NM 87035. At the meeting, we will review the previous Torrance County Hazard Mitigation Plan and also review mitigation actions and threat ranking for the community.

Please be prepared to talk of your experiences in the community; any specific threat or mitigation action ideas are also appreciated. We understand that this is not part of your normal duties, however the process does not require a great deal of your time, but feedback at critical points in the plan development.

The point of contact for the community on this project is Mr. Javier Sanchez, Torrance County Emergency Manager; AECOM has been contracted by the County to develop this plan.

For questions, or if participation in this planning process is more appropriate for someone else in your organization, please contact Mr. Sanchez at 505-246-4748 or *jsanchez@tcnm.us*.

Thank you for your support.

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www.torrancecountynm.org

Mr. Ted Hart, Mayor
City of Moriarty
P.O. Box 130

Moriarty, NM 87035

Hello Mr. Hart,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

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Thank you for your support.

County Commission

Jim Frost
Commissioner
District 1

Julia Ducharme
Commissioner
District 2

LeRoy Candelaria
Commission Chair
District 3

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Ms. Faye Chávez, Fire Chief
Town of Willard
750 Dunlavy St.
Willard, NM 87063

Hello Ms. Chávez,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

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Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Mr. Robert Chung, Chief of Police
Town of Mountainair
P.O. Box 115
Mountainair, NM 87036

Hello Mr. Chung,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

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Dennis Wallin

Mr. John Gordy Phillips III, Mayor
Town of Encino
427 N Main St.
Encino, NM 88321

Hello Mr. Phillips,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

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Thank you for your support.

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Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Mr. Steven Guetschow
Torrance County Planning & Zoning
P.O. Box 48
Estancia, NM 87016

Hello Mr. Guetschow,

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For questions, or if participation in this planning process is more appropriate for someone else in your organization, please contact Mr. Sanchez at 505-246-4748 or *jsanchez@tcnm.us*.

Thank you for your support.

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Mr. Jason Trumbull, Fire Marshal
Torrance County Fire Department
P.O. Box 48
Estancia, NM 87016

Hello Mr. Trumbull,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

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Thank you for your support.

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Sheriff Heath White
Torrance County Sheriff's Office
P.O. Box 48
Estancia, NM 87016

Hello Sheriff White,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

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For questions, or if participation in this planning process is more appropriate for someone else in your organization, please contact Mr. Sanchez at 505-246-4748 or *jsanchez@tcnm.us*.

Thank you for your support.

County Commission

Jim Frost
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Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Mr. Nick Sedillo, Safety Officer
Torrance County Assessor's Officer
P.O. Box 48
Estancia, NM 87016

Hello Mr. Sedillo,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

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Mrs. Dierdre Tarr
Claunch-Pinto Soil & Water Conservation District
P.O. Box 129
Mountainair, NM 87036

Hello Mrs. Tarr,

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Ms. Chery Luján
East Torrance Soil & Water Conservation District
P.O. Box 58
Estancia, NM 87016

Hello Ms. Luján,

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Ms. Brenda Smythe
Edgewood Soil & Water Conservation District
P.O. Box 1050
Moriarty, NM 87035

Hello Ms. Smythe,

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Ms. Trisha Chávez
Torrance County Road Department
P.O. Box 48
Estancia, NM 87016

Hello Ms. Chávez,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

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Ms. Vanessa Chávez-Gutiérrez
Tajique Land Grant
P.O. Box 251
Torreón, NM 87061

Hello Ms. Chávez-Gutiérrez,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

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Mr. Ronnie Reynolds, Manager
EMW Gas Association
P.O. Box 118
Estancia, NM 87016

Hello Mr. Reynolds,

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Mr. Dave Berryman, Safety Administrator
Central New Mexico Electric Cooperative, Inc.
P.O. Box 669
Moriarty, NM 87025

Hello Mr. Berryman,

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Mr. James Hatton, Safety Manager
Corrections Corporation of America
Torrance County Detention Facility
P.O. Box 837
Estancia, NM 87016

Hello Mr. Hatton,

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Ms. Arlene T. Perea, Public Affairs
Mountainair Ranger District
P.O. Box 69
Mountainair, NM 87036

Hello Ms. Perea,

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Ms. Carol Glade

Deer Canyon Preserve

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Mr. George Ramírez
Manzano Land Grant

Hello Mr. Ramírez,

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Mr. José María Perea
Torreón Land Grant

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Mr. Orlando López

Manzano Spring & Ditch Association

Hello Mr. López,

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District 2

LeRoy Candelaria
Commission Chair
District 3

County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

PO Box 48 ~ 205 Ninth Street
Estancia, NM 87016
(505) 246-4752 Main Line (505) 384-5294 Fax
www.torrancecountynm.org

Hello,

Your participation is requested in the development of the **Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update** that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding. Overall, the planning process will:

a) Identify and profile communities' risk to natural hazards;
b) Track past mitigation efforts;
c) Develop goals, objectives and actions to reduce the risk; and
d) Involve a comprehensive group of stakeholders (where you fit in!) including neighboring jurisdictions, businesses, non-profits, state/federal agencies and academic institutions in its development.

You and your organization are asked to participate because of past participation in similar planning efforts and because your organization can provide unique insights and feedback into the successful development of this plan. Once a draft plan is developed (estimated Fall 2015), we will request your review and comments.

We invite you to attend the **Hazard Mitigation Plan Stakeholder meeting** scheduled on **August 25 at 10 a.m.** The meeting will be held at the Torrance County Emergency Management Office located at 753 Salt Missions Trail, McIntosh, NM 87035. At the meeting, we will review the previous Torrance County Hazard Mitigation Plan and also review mitigation actions and threat ranking for the community.

Please be prepared to talk of your experiences in the community; any specific threat or mitigation action ideas are also appreciated. We understand that this is not part of your normal duties, however the process does not require a great deal of your time, but feedback at critical points in the plan development.

The point of contact for the community on this project is Mr. Javier Sanchez, Torrance County Emergency Manager; AECOM has been contracted by the County to develop this plan.

For questions, or if participation in this planning process is more appropriate for someone else in your organization, please contact Mr. Sanchez at 505-246-4748 or *jsanchez@tcnm.us*.

Thank you for your support.

August 11, 2015

Hello!

We are continuing to develop the Torrance County Hazard Mitigation Plan Update, which will help reduce the risk to natural hazards. Its successful completion will also mean access to FEMA mitigation funding. In the interest of developing the best mitigation plan possible, we are inviting stakeholders to participate in a planning meeting scheduled for August 25, 2015 at 10AM. The meeting will be held Torrance County Emergency Management Office located at 753 Salt Missions Trail, McIntosh, NM 87035.

At the meeting mitigation actions will be developed for the plan that complement the overall strategies and mitigate the impacts of hazards before a natural disaster strikes. The point of contact for the Community on this project is Mr. Javier Sanchez, Torrance County Emergency Manager; AECOM has been contracted by the County to develop this plan.

For questions, please contact Mr. Sanchez at 505-246-4748 or jsanchez@tcnm.us.

The public is invited to participate in a planning meeting for the development of the Torrance County Hazard Mitigation Plan (Plan) update. The Plan, which will help reduce the risk to natural hazards, will also allow for access to Federal Emergency Management Agency (FEMA) mitigation funding. The meeting will be held:

August 25, 2015
10 a.m.

Torrance County Emergency Management Office
753 Salt Missions Trail
McIntosh, NM 87035

Mitigation actions will be developed for the Plan that complement overall mitigation strategies and lessen impacts of hazards before a natural disaster strikes. The point of contact for the community is Mr. Javier Sanchez, Torrance County Emergency Manager; AECOM has been contracted by the County to develop the Plan. For questions, contact Mr. Sanchez at 505-246-4748 or jsanchez@tcnm.us.

MEETING SIGN-IN

► Torrance County Hazard Mitigation Plan, Kickoff

► TIME: August 25, 2015 @ 10:00AM MDT
PLACE: Torrance County Commission Chambers, 205 9th Street Estancia, NM 87016

Name	Title	Organization	Phone	Email
Javier Sanchez	Torrance Co. Emergency Manager	Torrance Co.	505.246.4748	jsanchez@tcnm.us
Jim DeAngelo	AECOM Proj. Manager	AECOM	505.206.1750	Jim.deangelo@aecom.com
Ronnie Reynolds	EMW Gas Manager	EMW Gas	505.384.2369	ronnie@emwgas.org
KARLYN BATES	EDGEWOOD SWCD ADMIN. ASSIST.	EDGEWOOD SWCD	505-832-1111	karlyn.eswcd@gmail.com

6501 Americas Parkway NE, Suite 900
Albuquerque, NM 87110-5311
(505) 855-7500 / (505) 855-7555 fax

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Jim DeAngelo	AECOM Proj. Manager	AECOM	505.206.1750	Jim.deangelo@aecom.com
Anthony Martinez	District FMO	USFS	505 506-1971	ajmartinez@fs.fed.us
Valentin Vasquez	Acting AFMO	USFS		VVasquez@fs.fed.us
Trisha Chavez	Road Dept		5052464765	tchavez@tcnm.us
		Tajique	505 850 4524	
CHRISTINA ESTRADA	P+Z Officer CFM TC	Town of Estancia	505 384 4282	cestrada@townofestancia.com
STEVEN GUERRERO	P&Z T.C	TC	246-4761	
NICK F SEDILLO	R&R MANAGER	TCHA	246-4732	NSEDILLO@TCNM.US
Dierdre Tarr	District Manager	CPSWCD	847-2243	deetarr@yahoo.com Dierdre.Tarr@nm.nacdnet.net
ROBERT V. KOHLER	FIELD TECH	CPSWCD	847-2243	Robert.Kohler@nm.nacdnet.net

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CAROLYN McELROY		DEER CANYON	505-966-6695	CarolyBen mcelroy.net
JOHN PHILLIPS		ENCINO	5755842980	
CAROLE Glade		Deer Canyon	505-847-7469	carolegladc@gmail.com
Gilbert Chavez			384-2590	
Jake Chavez			384-2284	
Faye Chavez		Willard	705-5218	
David Deem		Willard	702-596-7735	
Angelina Halbert		Willard	384-2874	villageofwillard@qwestoffice.net
Martin Rivera	TCSO Undersheriff	sheriff's office	246-4773	mrivera@tcnm.us
Cheri Lujan	District Mgr.	ETSWCD	384-2272 x103	cheri.lujan@nm.nacdnet.net

6501 Americas Parkway NE, Suite 900
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AGENDA

Torrance County Hazard Mitigation Plan
Mitigation Meeting (2nd) Meeting
August 25, 2015 - 10AM-12PM

1) Introduction	Javier Sanchez
2) Review of Hazard Mitigation Process	Jim DeAngelo
3) Discuss Hazards/ Specifics on Flooding	Jim DeAngelo, Attendees
4) Review Goals	Jim DeAngelo, Attendees
5) Review 2007 Actions/ Add new Actions	Jim DeAngelo, Attendees
6) Development Trends	Attendees
7) Capability Assessment	Jim DeAngelo, Attendees
8) Next Steps	Jim DeAngelo Javier Sanchez
9) Open Discussion	All
10) Adjournment	Javier Sanchez, Torrance Co.

Kickoff Meeting
Torrance County Hazard Mitigation Plan

Jim DeAngelo

August 25, 2015

AECOM

Agenda

- Introductions
- Review of Mitigation Process
- Discuss Hazards/ Specifics on Flooding
- Review 2007 Actions/ New actions
- Development Trends
- Capability Assessment
- Next Steps

Vision and Purpose

- Goal of hazard mitigation planning:

  Make communities hazard and disaster resistant

- Purpose

  Identify local policies and actions that can be implemented over the long term to reduce risk and future losses from hazards

Vision and Purpose

- Comprehensive hazard mitigation planning prepares a community to:

- Protect lives and property
- Avoid damages and save dollars
- Reduce or eliminate future damages by guiding new development
- Speed post-disaster recovery
- Avoid interruptions caused by hazards

Mitigation Planning Cycle

Where are we in Process?

- Initiated Kickoff Meeting
- Identified Planning Team
- Created initial pro-DRAFT plan
- Review Hazards
- Review Goals
- Review Actions
- Discuss Capabilities
- Provide Specific Comments

Hazards

- Team utilizes matrix and community feedback to rank order hazards.
- Each community may rank order hazards independently
- Big 3: Flood, Fire, Drought
- Page 72 in DRAFT
- High Probability/ High Impact, Low Probability/ Low Impact
- Specific Details about past flooding/ other hazards.
  - Pictures, documentation, damages, impacts

Goals

- I. Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to wildfires.
- II. Reduce possibility of injury and death due to severe weather including tornadoes, high wind, severe winter storms, lightning and hail.
- III. Reduce possibility of damage and loss due to drought.
- IV. Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to flooding.

Goals

- V. Reduce possibility of damage and loss to existing community assets including structures, critical facilities, and infrastructure due to earthquakes.
- VI. Promote disaster-resistant future development.
- VII. Promote hazard mitigation as a public value in recognition of its importance to the health, safety, and welfare of the population.

Actions

- Section 5.2, Page 77 in DRAFT
- Review previous Actions

? Was action Completed? (yes/no)

? Why was action not completed? (not relevant/ no funding)

?Should Action be carried forward? (yes/ no/ yes w/ Mod) ?

What is needed to complete Action?

New Actions: Title, and detail

Development Trends/ Community Description

- Review text.
- Add updated for your community
- Interested in trends in growth, changes in demographics
- Review and comment specifically, text includes what AECOM has so far be able to determine

Capability Assessment

- See Page 102 Section 6.1
- List of Capabilities includes:
  - Regulations
  - Emergency Response
  - Programs
  - Plans
  - Infrastructure

Next Steps

- Receive Digital copy of Proto DRAFT Plan
- Review plan for your community, and the county as a whole.
- Provide detailed changes/ comments
  - Send to: Javier Sanchez
- Comments Incorporated by AECOM
- DRAFT Produced for final review
- Plan routed through state and federal agencies

Project Management

Project Schedule

Kickoff Meeting	July 28, 2015
Risk Assessment & Mitigation Action Meeting(s)	*August 25, 2015*
Draft Plan Review Meeting	Late *September 2015*
Plan to State for Review	October 2015
Plan to FEMA for Approval	November 2015
Plan accepted pending adoption from FEMA	Winter 2015/2016

**tentative*

Questions?

Thank You!

Jim.DeAngelo@aecom.com 505.206.1750

2015 Torrance County Hazard Mitigation Plan (HMP)
Baseline Survey

AECOM

Name: Karen Bates

Organization: Edgewood SWCD

NATURAL HAZARDS

*Natural hazards are **naturally occurring events** that will have an effect on people, facilities, operations/business and/or the environment.*

Q1. Circle four natural hazards that you believe are **MOST LIKELY** to occur in Torrance County.

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2015 Torrance County Hazard Mitigation Plan (HMP)
Baseline Survey

AECOM

Name: Cherie Lujan

Organization: East Torrance SWCD

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2015 Torrance County Hazard Mitigation Plan (HMP)
Baseline Survey

AECOM

Name: Trisha Chavez

Organization: Torrance County

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2015 Torrance County Hazard Mitigation Plan (HMP)
Baseline Survey

AECOM

Name: ROBERT V. KOHLEIL

Organization: CLAUNCH-PINTO SWCD

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2015 Torrance County Hazard Mitigation Plan (HMP)
Baseline Survey

AECOM

Name: CAROLE GLADE

Organization: DEER CANYON PRESERVE HOA

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2015 Torrance County Hazard Mitigation Plan (HMP)
Baseline Survey

AECOM

Name: CAROLYN McELROY

Organization: DEER CANYON PRESERVE

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Baseline Survey

AECOM

Name: Valentin Vasquez

Organization: USFS Mountainair R.D.

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Baseline Survey

AECOM

Name: Dierdre L. Tarr

Organization: Claunch-Pinto SWCD

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Baseline Survey

AECOM

Name: NICK E. PEDILLO

Organization: TORRANCE COUNTY RISK MANAGEMENT

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Name: Steve Guetschow

Organization: TC P&Z

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AECOM

Name: Faye Chavez

Organization: Village of Willard

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Baseline Survey

AECOM

Name: Angelina Halbert

Organization: Village of Willard

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2015 Torrance County Hazard Mitigation Plan (HMP)
Baseline Survey

AECOM

Name: David Perry

Organization: V. Mayor of Willard

NATURAL HAZARDS

*Natural hazards are **naturally occurring events** that will have an effect on people, facilities, operations/business and/or the environment.*

Q1. Circle four natural hazards that you believe are **MOST LIKELY** to occur in Torrance County.

- Drought
- Earthquake
- Extreme Heat
- Flood
- High Wind
- Severe Winter Storm
- Thunderstorm (Hail/Lightning)
- Tornado
- Wildfire

Q2. Circle four natural hazards that you believe are **LEAST LIKELY** to occur in Torrance County.

- Drought
- Earthquake
- Extreme Heat
- Flood
- High Wind
- Severe Winter Storm
- Thunderstorm (Hail/Lightning)
- Tornado
- Wildfire

Q3. Circle four natural hazards that, if they did occur, would have a **HIGH IMPACT** county-wide.

- Drought
- Earthquake
- Extreme Heat
- Flood
- High Wind
- Severe Winter Storm
- Thunderstorm (Hail/Lightning)
- Tornado
- Wildfire

Q4. Circle four natural hazards that, if they did occur, would have the **LEAST IMPACT** county-wide.

- Drought
- Earthquake
- Extreme Heat
- Flood
- High Wind
- Severe Winter Storm
- Thunderstorm (Hail/Lightning)
- Tornado
- Wildfire

2015 Torrance County Hazard Mitigation Plan (HMP)
Baseline Survey

AECOM

Name: Felix Barela

Organization: Tajique Land Grant

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AECOM

Name: CHRISTINA ESTRADA

Organization: Town of Estancia

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Baseline Survey

AECOM

Name: JOHN PHILLIPS

Organization: VILLAGE OF ENCINO

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2015 Torrance County Hazard Mitigation Plan (HMP)
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AECOM

Name: Javier E. Sanchez

Organization: Torrance County OEM

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Torrance County Multi-Jurisdictional Hazard Mitigation Plan Survey

The information you provide for this survey will help URS gather the information needed to prepare the hazard mitigation plan. Thank you for your participation!!

Your Name: STEVE GUETSCHOW

Title: P&Z Director / FLOOD PLAIN MANAGER

Department: PLANNING & ZONING

Contact Phone #: 246-4761

Contact Email: sguetschow@tcnm.us

What does your agency oversee/manage?

LAND DEVELOPMENT / FLOOD PLAIN MANAGER

Does your agency have any risk management or property protection responsibilities? If yes, please describe these responsibilities:

FLOOD PLAIN MANAGER - CONTROL PROPER DEVELOPMENT W/IN FLOOD HAZARD ZONES - MITIGATION of PROPERTY DAMAGE ASSISTED W/TRAFFIC CONTROL IN FLOOD SITUATIONS & RECORD EVENTS ON MAPS OF FHBM.

Please name any hazard events (e.g., flood, wildfire, dust storm) that you are familiar with in the last five years (provide approximate date and any information on what occurred):

MANZANO DRAW FLOOD 2014 ESTANCIA ~~2013~~ 2014

GALLEGOS CREEK FLOODING 2013 - 2014

ENCINO FLOODING 2013

Do you have pictures of any of these events that could be used in the hazard mitigation plan? (if yes, we will contact you later) (YES) / NO

What types of projects might help reduce risk to the major hazards in Torrance County (e.g. flood, wildfire, drought, dust storm):

Comments to the Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update Meeting:
Concerns Raised by Residents of Deer Canyon Preserve
August 2015

OVERVIEW: Deer Canyon Preserve (the "Preserve") is a 13,000+ acre residential development approximately 5 miles south of Mountainair, NM. Entrance to the Preserve is via 4 miles on BO 16, which meets Route 55 approximately 1 mile south of Mountainair. The Preserve is comprised of 182 home sites and extends approximately 12 additional miles south of Mountainair on a road that is a privately-maintained extension of County Road BO 16. There are approximately 23 miles of roads through the Preserve. The development roughly parallels Route 60 along the Chupadera Mesa.

NEED: The Preserve is a growing community and safety and emergency ingress, egress, and access are top priorities. In the dry piñon-juniper forest, the likelihood and risk of fire is very high. There is presently no ingress or egress road from the southern portion of the development to Route 60, and only one additional eastern exit path to Route 55 that is located approximately a mile south of the intersection with BO 16. Almost all of the homes rely solely upon the privately maintained extension of BO 16 for ingress and egress, and any emergency event blocking this road south of the BO 16 junction would trap all residents located south of the event.

Our primary hazard mitigation concerns are two-fold – emergency access to and from Route 60 and improvement and maintenance of County Road BO 16.

Point 1 - Access to and from Route 60: The entire Deer Canyon community relies upon BO 16 as the sole reliable, marked, and passable emergency ingress and egress route, with the sole possible alternate route located at the very front of the development. If an emergency event blocked any portion of the lower 12-mile stretch of road, there is no exit route for the residents and no ingress for emergency vehicles. Well marked, regularly maintained access and exit roads to Route 60 are needed for the benefit of prompt emergency ingress to the lower portion of the development and as an alternate escape route in the event of fire or other disaster.
As an historical overview, County Road BO 16, the primary entrance and exit route, initially served 4-5 homes and one large ranch until a developer purchased the tract that is now Deer Canyon. County-approved plans proposed by the developer called for two additional entrances at exit roads for the southern portion of the development for safety, convenience, and to reduce traffic on BO 16. The developer failed to secure the necessary easements over state lands which are subject to long-term grazing leases. Early residential development of Deer Canyon Preserve was at the northern end near Mountainair and alternate access to and from

the southern end was less critical when your committee last looked at the problem. However, there is significant development of the southern portions of the development and, at present, the majority of homes are up to 16 miles away from access to Route 55, all of which rely upon BO 16 and its continuation.

Access from the southern portion of the preserve to Route 60 has been a major concern for all persons in Deer Canyon – most of whom are retirees – especially those living in or seeking to build in the middle and southern areas of the Preserve. Our safety committee has met with local and state emergency agencies, the State land office, and many neighbors. Local and state fire and emergency personnel have repeatedly warned about the need to have more than one access route not only for resident egress and evacuation, but for EMS and fire personnel access as well. Much of this area is abutted by state-owned land that is leased for grazing. Access through the state-owned land would theoretically be an option, but this land is for the most part abutted by private land that restricts access to highway 60 or any feeder roads. The county-owned access road proposed by the developer in the county-approved plans is BO 04 (also known as Marty Road) has been closed and the County recently abandoned maintenance of the portion of this road through private land.

Deer Canyon Preserve is adjacent to many large and small ranches and state-owned land. While the law allows overland exit through private property in an emergency, there are no roads to the natural egress points and significant obstacles, such as arroyos, downed trees, and slash piles will obstruct passage unless there is a planned, maintained road identified by the County. In addition, there are no marked or signed or tended evacuation routes so even if a portion of the terrain were passable, fire-fighting vehicles would be unable to locate any traversable entrance from Route 60 if the fire were to block any portion of the 12 mile stretch south of County Road BO 16.

Point 2 - Upgrade and Maintenance of BO16: With the rapid growth in Deer Canyon Preserve over the past 10 years, and the fact that all traffic passes over BO 16, the increased wear on BO 16 has significantly degraded the road which is at present inadequate to serve current traffic. County Road BO16, the only exit route, regularly becomes impassable during snow or following heavy rains. Unless and until there is access to Route 60 from the southern portion of the development, BO 16 will remain the sole entrance and exit for emergency vehicles such as fire and ambulance. It is therefore essential that County Road BO 16 be immediately repaired then upgraded and regularly maintained. DCP residents have been working with the County Road Department to address these issues, but funding is limited and repairs and maintenance have been minimal.

SUMMARY: In summary, the 182 owners in Deer Canyon Preserve are seeking assistance in finding and establishing a marked and maintained evacuation route to highway 60 and the improvement, repair, and maintenance of County Road BO16. We ask that these issues be addressed in the Torrance County Multi-Jurisdictional Hazard Mitigation Plan. The homeowners and the owners association are willing and available to work with the County and other agencies to protect not only the property and lives of residents of Deer Canyon but of our neighbors in the surrounding area as well.

Thank you.

Deer Canyon Preserve Contacts:

Carole Glade, HOA Vice President - 505-847-7468; 201-280-0766
caroleglade@gmail.com

Jim McGovern, Safety Committee Chair – 714-504-5543 – jcmcgo@custombri.com

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Jim McGovern, Safety Committee Chair – 714-504-5543 – jcmcgo@custombri.com

Carolyn J McElroy, Esq - HOA Secretary
505-966-6695 carolyn.mcelroy@verizon.net

Torrac Tony OEM Notes.

5.

a) hydraulic system

Water Resource mgt. Plan

1. Walter St. Estancia
2. Mntn. 18 Sub-divisions
3 Torreón
4. Tajique
5. Mntn.
6. Deer Canyon

b) Specific sites

AECOM

Meeting Minutes

Project Name:	***Torrance County HMP Update***	
Meeting:	***Kickoff Meeting***	
Date:	August 25, 2015	Time: 10AM-12:00PM
Place:	Torrance County Commission Chambers, 205 9th Street, Estancia, NM 87016	

Attendees:
See Attached Sign In Sheet, Agenda, and Slide Presentation

1. Greetings and Introductions

- Javier Sanchez opened the meeting and introduced Jim DeAngelo. J. DeAngelo briefly reviewed the agenda began the presentation. The presentation focused on reviewing the goals hazards and items from the effective mitigation plan. (slides Attached).
- J. DeAngelo continued the presentation by reviewing the vision and purpose of hazard mitigation and introducing the planning cycle
- J. DeAngelo opened a DRAFT version of the new plan and presented it to the audience.
- The audience and team worked through previous mitigation actions to determine which to carry forward, and also to identify new actions. Team members commented and the draft was annotated.
- J. DeAngelo reviewed the steps moving ahead and reminded the team that participation was key. J. DeAngelo reminded the team that the draft plan would be posted and that specific comments and annotations should be made. So items unable to be determined in the meeting were highlighted for further consideration by the team.
- J. DeAngelo continued the presentation by reviewing the project management of the update and discussing the proposed timeline.
- Action Items:
  - AECOM will provide Torrance county with a revised Proto DRAFT for comment
  - J. Sanchez will facilitate posting the DRAFT and collecting comments.
  - J. Sanchez will monitor the comments and forward to Jim DeAngelo with any available additional information
  - J. DeAngelo and J. Sanchez will coordinate on the timeline for the final meeting and final draft review.

APPENDIX A
Meeting Documentation (Meeting 3)

PO Box 48 ~ 205 Ninth Street
Estancia, NM 87016
(505) 246-4752 Main Line (505) 384-5294 Fax
www.torrancecountynm.org

Mr. Dave Berryman, Safety Administrator
Central New Mexico Electric Cooperative, Inc.
P.O. Box 669
Moriarty, NM 87025

Hello,

Your participation is requested in the final steps in the development of the Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding.

You and your organization are asked to participate because of past participation in the Hazard mitigation Plan update and similar planning efforts and because your organization can provide unique insights and feedback into the successful development of this plan. A draft plan is available for review on the county web page.

We invite you to attend the Final Hazard Mitigation Plan Stakeholder meeting scheduled on December 10, 2015 at 10 a.m. The meeting will be held at the Torrance County Commission Chambers, located at 205 9th Street Estancia, NM 87016. At the meeting, the Draft plan will be presented and key aspects will be discussed.

Please review the DRAFT plan prior to the meeting, we will also address specific questions or comments you might have related to the plan. This meeting is open to the public and will serve as a key portion of the necessary public outreach required to establish the plan. We understand that this is not part of your normal duties; however the meeting will not require a great deal of your time.

The point of contact for the community on this project is Mr. Javier Sanchez, Torrance County Emergency Manager; AECOM has been contracted by the County to develop this plan.

For questions, or if participation in this planning process is more appropriate for someone else in your organization, please contact Mr. Sanchez at 505-246-4748 or jsanchez@tcnm.us.

Thank you for your support.

County Commission

Jim Frost
Commissioner
District 1

Julia Ducharme
Commissioner
District 2

LeRoy Candelaria
Commission Chair
District 3

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Ms. Faye Chávez, Fire Chief
Town of Willard
750 Dunlavy St.
Willard, NM 87063

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Ms. Vanessa Chávez-Gutiérrez
Tajique Land Grant
P.O. Box 251
Torreón, NM 87061

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County Manager
Joy Ansley

Deputy County Manager
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Mr. Robert Chung, Chief of Police
Town of Mountainair
P.O. Box 115
Mountainair, NM 87036

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Thank you for your support.

Natural Hazard Questionnaire

The Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update is almost complete. The purpose of the Plan is to better understand the natural hazards that pose a threat to the area and develop actions that reduce the risk associated with these hazards. This comment collection form is for your use to comment on the DRAFT Hazard Mitigation Plan. Please complete the form and forward to Javier Sanchez.

Schedule

Responses may be mailed or emailed to the following location:

Javier E. Sanchez, Torrance County Emergency Manager

P.O. Box 48

Estancia, NM 87016

Email: jsanchez@tcnm.us

All responses must be received no later than January 7, 2016

Comment Collection

1) Please indicate the municipality you reside in:

Torrance County (Unincorporated)

Moriarty

Estancia

Mountainair

Willard

Encino

Other:_____

2) Are you commenting as:

a. Citizen

b. Local Jurisdiction

c. Community Organization

d. Company

e. Non-Profit Organization

f. Other: _____

3) Your contact information: (optional)

Page 1 (Place Comments on Second Page)

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Mr. Lester Gary, Fire Chief
Town of Estancia
P.O. Box 166
Estancia, NM 87016

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Thank you for your support.

County Commission

Jim Frost
Commissioner
District 1

Julia Ducharme
Commissioner
District 2

LeRoy Candelaria
Commission Chair
District 3

PO Box 48 ~ 205 Ninth Street
Estancia, NM 87016
(505) 246-4752 Main Line (505) 384-5294 Fax
www.torrancecountynm.org

County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Ms. Carol Glade
Deer Canyon Preserve

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Mr. Steven Guetschow
Torrance County Planning & Zoning
P.O. Box 48
Estancia, NM 87016

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Mr. Ted Hart, Mayor
City of Moriarty
P.O. Box 130
Moriarty, NM 87035

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Mr. James Hatton, Safety Manager
Corrections Corporation of America
Torrance County Detention Facility
P.O. Box 837
Estancia, NM 87016

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Mr. José María Perea
Torreón Land Grant

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Mr. Orlando López
Manzano Spring & Ditch Association

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Ms. Chery Luján
East Torrance Soil & Water Conservation District
P.O. Box 58
Estancia, NM 87016

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County Manager
Joy Ansley

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Annette Ortiz

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Dennis Wallin

Ms. Arlene T. Perea, Public Affairs
Mountainair Ranger District
P.O. Box 69
Mountainair, NM 87036

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Dennis Wallin

Mr. George Ramírez
Manzano Land Grant

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(505) 246-4752 Main Line (505) 384-5294 Fax
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Mr. Ronnie Reynolds, Manager
EMW Gas Association
P.O. Box 118
Estancia, NM 87016

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Mr. Nick Sedillo, Safety Officer
Torrance County Assessor's Officer
P.O. Box 48
Estancia, NM 87016

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County Manager
Joy Ansley

Deputy County Manager
Annette Ortiz

County Attorney
Dennis Wallin

Ms. Brenda Smythe
Edgewood Soil & Water Conservation District
P.O. Box 1050
Moriarty, NM 87035

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(505) 246-4752 Main Line (505) 384-5294 Fax
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Ms. Trisha Chávez
Torrance County Road Department
P.O. Box 48
Estancia, NM 87016

Hello,

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Mrs. Dierdre Tarr
Claunch-Pinto Soil & Water Conservation District
P.O. Box 129
Mountainair, NM 87036

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Mr. Jason Trumbull, Fire Marshal
Torrance County Fire Department
P.O. Box 48
Estancia, NM 87016

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Sheriff Heath White
Torrance County Sheriff's Office
P.O. Box 48
Estancia, NM 87016

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Mr. Lester Gary, Fire Chief
Town of Estancia
P.O. Box 166
Estancia, NM 87016
Firechief@townofestancia.com

Mr. Ted Hart, Mayor
City of Moriarty
P.O. Box 130
Moriarty, NM 87035
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chieffayechavez@aol.com

Mr. Robert Chung, Chief of Police
Town of Mountainair
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Mountainair, NM 87036
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Mr. John Gordy Phillips III, Mayor
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Encino, NM 88321
wrock1@plateautel.net

Mr. Steven Guetschow
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Mr. Jason Trumbull, Fire Marshal
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Sheriff Heath White
Torrance County Sheriff's Office
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Mr. Nick Sedillo, Safety Officer
Torrance County Assessor's Officer
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aperea@fs.fed.us

Ms. Carol Glade
Deer Canyon Preserve

Mr. George Ramírez
Manzano Land Grant

Mr. José María Perea
Torreón Land Grant

Mr. Orlando López
Manzano Spring & Ditch Association

From:	jsanchez@tcnm.us
To:	sheriffhwhite@gmail.com; mrivera@tcnm.us; jbull502@aol.com; tchavez@tcnm.us; nsedillo@tcnm.us; sguetschow@tcnm.us; wrock1@plateautel.net; mayorhart@moriartynm.org; townclerk@mountainairnm.gov; chieffayechavez@aol.com; Firechief@townofestancia.com; john.perea@nm.usda.gov; Cheri.Lujan@nm.nacdnet.net; Deidre.Tarr@nm.nacdnet.net; deetarr@yahoo.com; bsmythe.eswcd@gmail.com; Drewnessababydom@aol.com; ronnie@emwgas.org; dave.berryman@cnmec.org; James.Hatton@correctionscorp.com; atperea@fs.fed.us; caroleglade@gmail.com
Cc:	DeAngelo, Jim; jansley@tcnm.us; aortiz@tcnm.us
Subject:	IMPORTANT Invitation from Javier Sanchez, Torrance County OEM: Final Hazard Mitigation Plan Meeting December 10, 2015 at 10:00 AM
Date:	Monday, December 07, 2015 11:01:53 AM

Dear all,

Hello and good morning. I hope that you are all well and had a great holiday. Your participation is requested for the final steps in the development of the Torrance County Multi-Jurisdictional Hazard Mitigation Plan Update that will help reduce the risk of natural hazards. Its successful completion will also mean access to FEMA mitigation funding.

You and your organization are asked to participate because of past participation in similar planning efforts and because your organization can provide unique insights and feedback into the successful development of this plan. As mentioned in previous emails, a draft plan is available for review on the county website.

I invite you to attend the Final Hazard Mitigation Plan Stakeholder meeting scheduled on December 10, 2015 at 10 a.m. The meeting will be held at the Torrance County Commission Chambers, located at 205 9th Street Estancia, NM 87016. At the meeting, the Draft plan will be presented and key aspects will be discussed. The meeting will last approximately 1-2 hours.

Please review the DRAFT plan prior to the meeting, which will also address specific questions or comments you might have related to the plan. This meeting is open to the public and will serve as a key portion of the necessary public outreach required to establish the plan. We understand that this is not part of your normal duties; however the meeting will not require a great deal of your time.

As always, please feel free to contact me at anytime should you have any questions or concerns. Thank you for your support.

P.S. Please RSVP, as we will be serving snacks.

Sincerely,

Javier E. Sanchez
Torrance County Emergency Manager
753 Salt Missions Trail
McIntosh, NM 87035
Office: (505) 246-4748
Cell: (505) 705-0836
Email: jsanchez@tcnm.us

From:	jsanchez@tcnm.us
To:	sheriffhwhite@gmail.com; mrivera@tcnm.us; jbull502@aol.com; tchavez@tcnm.us; nsedillo@tcnm.us; sguetschow@tcnm.us; wrock1@plateautel.net; mayorhart@moriartynm.org; townclerk@mountainairnm.gov; chieffayechavez@aol.com; Firechief@townofestancia.com; john.perea@nm.usda.gov; Cheri.Lujan@nm.nacdnet.net; Deidre.Tarr@nm.nacdnet.net; deetarr@yahoo.com; bsmythe.eswcd@gmail.com; Drewnessababydom@aol.com; ronnie@emwgas.org; dave.berryman@cnmec.org; James.Hatton@correctionscorp.com; atperea@fs.fed.us; caroleglade@gmail.com
Cc:	DeAngelo, Jim; jansley@tcnm.us; aortiz@tcnm.us
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As always, please feel free to contact me at anytime should you have any questions or concerns. Thank you for your support.

P.S. Please RSVP, as we will be serving snacks.

Sincerely,

Javier E. Sanchez
Torrance County Emergency Manager
753 Salt Missions Trail
McIntosh, NM 87035
Office: (505) 246-4748
Cell: (505) 705-0836
Email: jsanchez@tcnm.us

Torrance County has been working to update its Hazard Mitigation Plan. We would like to invite you, the general public, to attend a Public Hazard Mitigation Plan Meeting scheduled **December 10, 2015**. The meeting is scheduled for **10:00 AM**. The meeting will be held at the **Torrance County Commission Chambers, located at 205 9th Street Estancia, NM 87016.**

A DRAFT plan has been completed and is available for review on the county web page. To review the digital or hard copy DRAFT, please contact Mr. Javier Sanchez, the Torrance County Emergency Manager. The DRAFT plan incorporates the information received from the previous meetings and the State Mitigation Plan.

At the meeting, we will have a brief overview of the planning process and then review the draft plan. Comments will be collected for consideration. Please come prepared to discuss specific changes to the draft document. The comment period will continue through the meeting.

The county contact is Mr. Javier Sanchez at 505-705-0836.

AGENDA

Torrance County Hazard Mitigation Plan
Mitigation Meeting (3rd) Meeting
December 10, 2015 - 10AM-12PM

MEETING SIGN-IN

► Torrance County Hazard Mitigation Plan, Kickoff

► TIME: December 12, 2015 @ 10:00AM MDT
PLACE: Torrance County Commission Chambers, 205 9th Street Estancia, NM 87016

Name	Title	Organization	Phone	Email
Javier Sanchez	Torrance Co. Emergency Manager	Torrance Co.	505.246.4748	jsanchez@tcnm.us
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Anthony MARTUS			505 2287414	
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Angelina Talbert	Village of Willard CLERK/Treas.	VOW	384-2874	Villageofwillard@questoffice.net
DAVID BERRYMAN	CNMEC SAFETY ADMIN	CNMEC	847-1065	DAVE.BERRYMAN@CNMEC.ORG
John R Shelby III	ENCINO MAYOR		575 584 2980	OAKVILLAGE@PLATEAUTEL.NET
JIM McGOVERN	citizen	Deer Canyon Preserve	714 504 5543	jcmcgo@customtbri.com
Carole GLADE	Brd member	Deer Canyon	505-847-7468	caroleglade@gmail.com
ADRIAN PADILLA	Fire Prevention USFS	USFS	505-847-2990	adrian.padilla@FS.FED.US
Michael Williams	Captain 642	USFS	505.847.2990	MPWilliams@fs.fed.us

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Albuquerque, NM 87110-5311
(505) 855-7500 / (505) 855-7555 fax

MEETING SIGN-IN

▶ Torrance County Hazard Mitigation Plan, Kickoff

▶ TIME: December 12, 2015 @ 10:00AM MDT
PLACE: Torrance County Commission Chambers, 205 9th Street Estancia, NM 87016

Name	Title	Organization	Phone	Email
Javier Sanchez	Torrance Co. Emergency Manager	Torrance Co.	505.246.4748	jsanchez@tcnm.us
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LESTER GARY	EFD Fire Chief	ESTANCIA	505-384-4338	Firechief@townofESTANCIA.com
CHRISTINA ESTRADA	Town of Estancia Zoning Office + Chief of Police Town of Mountainair	Planning & Zoning Mountainair	5057055540	cestrada@townofestancia.com
Robert Chung			505-359-8919	robertchung@mountainair nm.gov
STEVEN GUETSCHOW	TC PEZ-FLOODPLAIN MAN.	TORRANCE CO	505-246-4761	sguetschow@tc.nm.us
Ronnie Reynolds	Manager EMW Gas	EMW Gas	505-384-2369	ronnie@EMWgas.org
James Hutton	TCDF	Torrance Co.	505-384-2711	James.Hutton@cca.com

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TORRANCE COUNTY MULTI-JURISDICTION HAZARD MITIGATION PLAN UPDATE



URS

December 10, 2015

MITIGATION PLANNING CYCLE

URS

DEVELOPING PLAN & CURRENT STATUS

- Research Local Resources, Plans, and Historical Events
- Review New Mexico 2013 Hazard Mitigation Plan
- Feedback from Hazard Mitigation Planning Team (HMPT)
- Best Practices from other areas
- Draft Initial Hazard Mitigation Plan

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STATE IDENTIFIED HAZARDS

Hazard Category	Hazard Type
Atmospheric	Extreme Heat High Wind Thunderstorm (Hail/Lightning) Tornado Severe Winter Storms
Hydrologic	Drought Flood
Geologic	Earthquake Expansive Soils Land Subsidence Volcano Landslide
Other	Wildland/Urban Interface Fire Dam Failure

SUMMARY OF RISK ASSESSMENT

Table 4.10 Category/Degree of Risk for Torrance County

	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Flood	Highly Likely	Critical	Moderate	Less than 6 Hours	Less than 24 Hours	3.5
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	3.3
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	3.0
Earthquake	Highly Unlikely	Critical	Large	Less than 6 Hours	Less than 6 Hours	1.6
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 week	3.0
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	1.6
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	2.1

SUMMARY OF RISK ASSESSMENT

Table 4.11 Category/Degree of Risk for the Town of Estancia

	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Flood	Highly Likely	Critical	Moderate	Less than 6 Hours	Less than 24 Hours	3.5
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	3.3
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	3.0
Earthquake	Highly Unlikely	Critical	Large	Less than 6 Hours	Less than 6 Hours	1.6
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 Week	3.0
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	1.6
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	2.1

SUMMARY OF RISK ASSESSMENT

Table 4.12 Category/Degree of Risk for the City of Moriarty

	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Flood	Highly Likely	Critical	Moderate	Less than 6 Hours	Less than 24 Hours	3.5
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	3.3
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	3.0
Earthquake	Highly Unlikely	Critical	Large	Less than Hours	Less than 6 Hours	1.6
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 week	3.0
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	1.6
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	2.1

URS

SUMMARY OF RISK ASSESSMENT

Table 4.13 Category/Degree of Risk for the Town of Mountainair

	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Flood	Possible	Limited	Small	Less than 6 Hours	Less than 24 Hours	2.2
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	3.3
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	3.0
Earthquake	Highly Unlikely	Critical	Large	Less than Hours	Less than 6 Hours	1.6
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 week	3.0
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	1.6
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	2.1

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SUMMARY OF RISK ASSESSMENT

Table 4.14 Category/Degree of Risk for the Village of Willard

	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Flood	Highly Likely	Critical	Moderate	Less than 6 Hours	Less than 24 Hours	3.5
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	3.3
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	3.0
Earthquake	Highly Unlikely	Critical	Large	Less than Hours	Less than 6 Hours	1.6
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 week	3.0
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	1.6
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	2.1

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SUMMARY OF RISK ASSESSMENT

Table 4.15 Category/Degree of Risk for the Village of Encino

	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Flood	Possible	Limited	Small	Less than 6 Hours	Less than 24 Hours	2.2
Wildfire	Highly Likely	Limited	Moderate	6 to 12 Hours	Less than 24 Hours	3.3
Drought	Likely	Limited	Large	More than 24 Hours	More than 1 Week	3.0
Earthquake	Highly Unlikely	Critical	Large	Less than Hours	Less than 6 Hours	1.6
Severe Winter Storms	Likely	Critical	Large	More than 24 Hours	Less than 1 week	3.0
Thunderstorm	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
High Wind	Likely	Minor	Small	12 to 24 Hours	Less than 6 Hours	2.3
Tornado	Unlikely	Limited	Small	Less than 6 Hours	Less than 6 Hours	1.6
Extreme Heat	Possible	Minor	Moderate	More than 24 Hours	Less than 1 Week	2.1

URS

MITIGATION ACTION SUMMARY

- FEMA requires a comprehensive range of specific mitigation projects for each profiled hazard
  - A minimum of 2 projects per participating jurisdiction are required for each hazard

URS

MITIGATION ACTION SUMMARY

- Projects were identified for specific Hazards
  - Flood
  - Fire
  - Drought
- Education/ Regulation/ and Planning as well as Engineering Projects

URS

MITIGATION ACTION SUMMARY

- All Hazards
  - Education/Outreach programs were identified for all hazards on risk identification, mitigation and preparedness
  - Education/Outreach programs were identified to mitigate specific hazards including:
    - Flood - Well Safety; Flood Insurance
    - Drought - Water conservation
    - Wildfire - Fire safety
    - Earthquake - Safety awareness
    - Severe Winter Storm - Winterizing
    - Thunderstorms - Lightning Safety

URS

MITIGATION ACTIONS

Expand county GIS data to identify Hazard-Prone and Sensitive Areas for new building codes (Previous Plan Mitigation Action #1 - Torrance County)	
Project Description/Comments:	Prioritize and implement a GIS sensitive-areas analysis to identify properties within the County and used to adopt new county-wide building codes. Hardware and software can be shared with other County offices. This project was implemented since the 2007 planning cycle but additional updates are needed. Project is on-going.
Jurisdiction:	Torrance County
Hazard(s) Addressed:	Thunderstorm/Lightning/Hail; Winter Storm; Tornado
Responsible Organization:	Torrance County Planning and Zoning Department/Planning & Zoning Coordinator
Estimated Costs:	$75,000 - Low
Possible Funding Sources:	Local budgets, FEMA
Timeline for Implementation:	Within 1 year of plan adoption
Cost-Benefit Review	Due to relatively low cost and life safety benefits, the overall benefits are anticipated to outweigh costs
STAPLEE+C Review	No concerns raised
Priority	High

URS

MITIGATION ACTIONS

Adopt and enforce a local nuisance ordinance to address properties with overgrown vegetation.	
Project Description/Comments:	Mountainair and Willard both have chronic problems with large lots on edge of town that have potential to create large grasslands wildfire
Jurisdiction:	Town of Mountainair and Village of Willard
Hazard(s) Addressed:	Wildland Fire
Responsible Organization:	Town of Mountainair and Village of Willard Planning and Zoning/City Planners
Estimated Costs:	$40,000 - Low
Possible Funding Sources:	General Funds
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Cost to adopt ordinance less than value of one residential structure. Benefits are anticipated to outweigh costs
STAPLEE+C Review	No concerns raised
Priority	High

URS

MITIGATION ACTIONS

Continue to develop agreements between USFS, NM State Forestry, and private landowners to utilize water held in private cisterns during wildfires. (Previous Plan Mitigation Action #6 - Torrance County)	
Project Description/Comments:	This agreement will allow fire fighters to enter private lands to utilize privately held water sources during times of wildfire. The agreement will allow legal access to the property and reduce time needed to eliminate time needed to gain entrance. This project was partially implemented since the 2007 Plan. Project needs future coordination to further advance in future.
Jurisdiction:	All Jurisdictions
Hazard(s) Addressed:	Flood, Flash Flood
Responsible Organization:	Torrance County/County Commissioners, Mountainair Ranger District, East Torrance, Claunch-Pinto and Edgewood Soil and Water Conservation Districts.
Estimated Costs:	Low
Possible Funding Sources:	USFS, NM State Forestry
Timeline for Implementation:	Within 1 year of plan adoption
Cost-Benefit Review	Value of structures in high-risk WUI: $28 million. Benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	High

URS

MITIGATION ACTIONS

Develop and support public safety interagency planning, training, and response to wildfires in Torrance County - Participate in East Mountain Interagency Fire Planning Agency (EMIFPA). (Previous Plan Mitigation Action #12 - Torrance County)	
Project Description/Comments:	Develop a program to integrate planning and training efforts for local emergency response for wildfire. The group will function as a platform for sharing lessons learned and strategies for an integrated city/county/volunteer response to wildfires.
Jurisdiction:	All Jurisdictions
Hazard(s) Addressed:	Wildfire
Responsible Organization:	Torrance County, Encino, Estancia, Moriarty, Mountainair and Willard Volunteer Fire Departments/Fire Chiefs.
Estimated Costs:	Low
Possible Funding Sources:	General Budget
Timeline for Implementation:	Within 1 year of plan adoption
Cost-Benefit Review	Value of structures in high-risk WUI: $28 million. Preparation can increase response time and decrease damages. Benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	High

URS

MITIGATION ACTIONS

Review and improve emergency responders and dispatch communication tool.	
Project Description/Comments:	Review and improve emergency responders and dispatch communication tool.
Jurisdiction:	Torrance County
Hazard(s) Addressed:	All hazards
Responsible Organization:	Torrance County Fire Departments/Emergency Manager
Estimated Costs:	Low
Possible Funding Sources:	General Budget
Timeline for Implementation:	Within 1 year of plan adoption
Cost-Benefit Review	Improved communication can increase response time and decrease damages. Benefits expected to outweigh costs.
STAPLEE+C Review	No concerns raised
Priority	High

URS

MITIGATION ACTIONS

Multi-Hazard Public Education Program	
Project Description/Comments:	Educate residents on natural hazard threats, impacts, mitigation opportunities, and advanced preparations to make in advance of events. Print materials will be developed and distributed at local government buildings and public libraries.
Jurisdiction:	Torrance County, Estancia, Moriarty, Mountainair, Willard, Encino , land
Hazard(s) Addressed:	Flood, Wildland Fire, Drought, Severe Winter Storms, High Wind, Thunderstorm (including lightning and hail), Earthquake, Extreme Heat, Dam Failure, Tornado
Responsible Organization:	Local Emergency Management Divisions
Estimated Costs:	Low
Possible Funding Sources:	Local budgets, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety benefits expected to outweigh the low costs
STAPLEE+C Review	No concerns raised
Priority	High

URS

MITIGATION ACTIONS

Moriarty Stormwater Pollution Plan and Project	
Project Description/Comments:	Moriarty should consider preparing an areawide storm water pollution plan to protect the community from hazardous and toxic chemicals picked up and carried by stormwater. The preparation of stormwater pollution plans for all major construction sites will help bring compliance with EPA requirements. The City's water supply should be protected from stormwater pollutants that can leach into ground water or infiltrate the water supply infrastructure. Storm water runoff is intensified by impervious surface areas such as paved streets, parking lots, and building rooftops.
Jurisdiction:	Moriarty
Hazard(s) Addressed:	Flood
Responsible Organization:	Moriarty Public Works
Estimated Costs:	High
Possible Funding Sources:	USACE, General Funds, New Mexico State Legislature, State Department of Transportation, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety, environmental, and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	High

URS

MITIGATION ACTIONS

Moriarty Wellhead Project	
Project Description/Comments:	Protect groundwater by preventing specific land use activities that may contaminate the groundwater. Regulate development in flood prone areas and wellhead protection zones through the zoning ordinance.
Jurisdiction:	Moriarty
Hazard(s) Addressed:	Flood
Responsible Organization:	Moriarty Public Works
Estimated Costs:	High
Possible Funding Sources:	USACE, General Funds, New Mexico State Legislature, State Department of Transportation, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety, environmental, and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	High

URS

MITIGATION ACTIONS

Torrance County Culvert Ordinance	
Project Description/Comments:	Prepare an ordinance for installation of culverts at junction of private roads and county roads
Jurisdiction:	Torrance County
Hazard(s) Addressed:	Flood
Responsible Organization:	Torrance County Road Department
Estimated Cost:	High
Possible Funding Sources:	New Mexico State Legislature, State Department of Transportation, General, FEMA
Timeline for Implementation:	Within one year of plan adoption
Cost-Benefit Review	Life safety and economic benefits expected to outweigh the costs
STAPLEE+C Review	No concerns raised
Priority	High

URS

CAPABILITY ASSESSMENT

- Describes existing County/municipal regulations, program, plans, and emergency response capability related to mitigation
- Identifies potential sources of federal, local, or private funding to implement mitigation activities

URS

MITIGATION ACTION SUMMARY

- FEMA requires a comprehensive range of specific mitigation projects for each profiled hazard
  - A minimum of 2 projects per participating jurisdiction are required for each hazard

URS

MITIGATION ACTION SUMMARY

- All Hazards
  - Education/Outreach programs were identified for all hazards on risk identification, mitigation and preparedness
  - Education/Outreach programs were identified to mitigate specific hazards including:
    - Flood - Well Safety; Flood Insurance
    - Drought - Water conservation
    - Wildfire - Fire safety

URS

NEXT STEPS

- Where do we go from here?
  - Incorporate comments from final meetings and public input
  - Finalize Plan - with authorization and approval from HMPT
  - Submit to New Mexico Department of Homeland Security and Emergency Management
    - Upon approval - submit to FEMA for final approval
- Community Adoption of Final Plan

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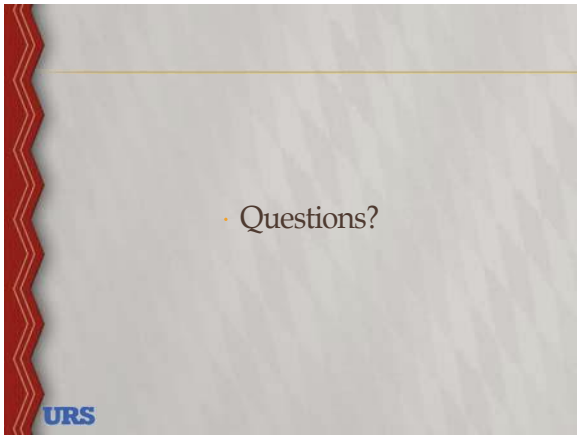
SCHEDULE

Receive Final Comments	1/8/2016
Prep Final Document	1/26/2016
Submit to NMDHSEM	1/29/2016
Submit to FEMA	3/19/2016*
Receive Final Pending Adoption	5/19/2016*
Community Adoption	7/1/2016*

- * Tentative Date

URS


Questions?
URS

Meeting Minutes

Project Name:	***Torrance County HMP Update***
Meeting:	***Final Meeting***
Date:	December 10, 2015 | Time: 10AM-12:00PM
Place:	Torrance County Commission Chambers, 205 9th Street, Estancia, NM 87016

Attendees:
See Attached Sign In Sheet, Agenda, and Slide Presentation

1. Greetings and Introductions

- Javier Sanchez opened the meeting and introduced Jim DeAngelo. J. DeAngelo briefly reviewed the agenda began the presentation. The presentation focused on reviewing the DRAFT HMP that was provided to the HMP previously. (slides Attached).
- J. DeAngelo continued the presentation by briefly reviewing the vision and purpose of hazard mitigation and the planning cycle
- J. DeAngelo reviewed the hazard rankings and summary of risk assessment with the HMPT.
- J. DeAngelo then reviewed key mitigation actions for each hazard.
- J. DeAngelo reviewed each mitigation action for each community as presented in the DRAFT HMP, comments were noted.
- J. DeAngelo reviewed the steps moving ahead and completed the presentation by reviewing the project management of the update and discussing the proposed timeline.
- Action Items:
  - J. Sanchez will transmit any comments from the public or HMPT to J. DeAngelo
  - information. DeAngelo will update the DRAFT HMP and prepare it for review by the state and FEMA.

APPENDIX B

Plan Review Tool

LOCAL MITIGATION PLAN REVIEW TOOL

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

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

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

Jurisdiction: Torrance County	**Title of Plan:** Torrance County Hazard Mitigation Plan	**Date of Plan:** August 2017
Local Point of Contact: Martin Lucero	**Address:** PO Box 48 Estancia, New Mexico 87106	
Title: Torrance County Emergency Management Coordinator		
Agency: Torrance County		
Phone Number: 505-705-0836	**E-Mail:** mlucero@tcnm.us	

State Reviewer: Wendy Blackwell	**Title:** State Hazard Mitigation Officer	**Date:** 10/5/17

FEMA Reviewer: Ben Buchanan	**Title:** HM Community Planner	**Date:** October 11, 2017
FEMA Reviewer: Shanene Thomas	**Title:** HM Community Planner	**Date:** October 17, 2017
Date Received in FEMA Region 6	**October 11, 2017**	
Plan Not Approved	**October 17, 2017 (Approvable Pending Adoption)**	
Plan Approvable Pending Adoption		
Plan Approved		

Local Mitigation Plan Review Tool (FEMA, October 1, 2011) A-1

SECTION 1:
REGULATION CHECKLIST

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

1. REGULATION CHECKLIST **Regulation** (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	p17-21 Appendix A CPSWCD Appendix p4;	X	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	p19 CPSWCD Appendix C; p4	X	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	p22 Appendix A CPSWCD Appendix C; p5	X	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	p20 CPSWCD Appendix C;p 10	X	
A5. Is there discussion of how the community (ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	p145 CPSWCD Appendix C; p 9	X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	Page 128-130. CPSWCD Appendix C; p 9.	X	
ELEMENT A: REQUIRED REVISIONS			

ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	Section 4 CPSWCD Appendix C; p 5-7	X	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	Section 4 CPSWCD Appendix C C; p 5-6	X	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	Section 4 including Tables 4.10-4.15 P 85 – 87 CPSWCD Appendix C C; p 7	X	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	p88-89 CPSWCD Appendix C; p 7	X	
ELEMENT B: REQUIRED REVISIONS			
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	P 29 CPSWCD Appendix C; p 9	X	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	P 77-8 CPSWCD Appendix C; p 7	X	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	p88 CPSWCD Appendix C; p 7	X	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	P 97-133 CPSWCD Appendix C; p 7-9	X	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	P 97-133, 138-139 CPSWCD Appendix C; p 7-9	X	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Sec. 6.1. Sec. 7.1 Pg 121, 127, 128 CPSWCD Appendix C; p 9	X	
ELEMENT C: REQUIRED REVISIONS			

ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	p24	x	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	p89-97	x	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	p97	x	
ELEMENT D: REQUIRED REVISIONS			

ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))			x
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))			x
ELEMENT E: REQUIRED REVISIONS Upon receiving an approvable pending adoption (APA) notification from FEMA, the plan must be adopted by each participating jurisdiction. These adoption must be submitted to FEMA to obtain approval of the plan.			

ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 2:
PLAN ASSESSMENT

INSTRUCTIONS: The purpose of the Plan Assessment is to offer the local community more comprehensive feedback to the community on the quality and utility of the plan in a narrative format. The audience for the Plan Assessment is not only the plan developer/local community planner, but also elected officials, local departments and agencies, and others involved in implementing the Local Mitigation Plan. The Plan Assessment must be completed by FEMA. The Assessment is an opportunity for FEMA to provide feedback and information to the community on: 1) suggested improvements to the Plan; 2) specific sections in the Plan where the community has gone above and beyond minimum requirements; 3) recommendations for plan implementation; and 4) ongoing partnership(s) and information on other FEMA programs, specifically RiskMAP and Hazard Mitigation Assistance programs. The Plan Assessment is divided into two sections:

1. Plan Strengths and Opportunities for Improvement
2. Resources for Implementing Your Approved Plan

Plan Strengths and Opportunities for Improvement is organized according to the plan Elements listed in the Regulation Checklist. Each Element includes a series of italicized bulleted items that are suggested topics for consideration while evaluating plans, but it is not intended to be a comprehensive list. FEMA Mitigation Planners are not required to answer each bullet item, and should use them as a guide to paraphrase their own written assessment (2-3 sentences) of each Element.

The Plan Assessment must not reiterate the required revisions from the Regulation Checklist or be regulatory in nature, and should be open-ended and to provide the community with suggestions for improvements or recommended revisions. The recommended revisions are suggestions for improvement and are not required to be made for the Plan to meet Federal regulatory requirements. The italicized text should be deleted once FEMA has added comments regarding strengths of the plan and potential improvements for future plan revisions. It is recommended that the Plan Assessment be a short synopsis of the overall strengths and weaknesses of the Plan (no longer than two pages), rather than a complete recap section by section.

Resources for Implementing Your Approved Plan provides a place for FEMA to offer information, data sources and general suggestions on the overall plan implementation and maintenance process. Information on other possible sources of assistance including, but not limited to, existing publications, grant funding or training opportunities, can be provided. States may add state and local resources, if available.

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

How does the Plan go above and beyond minimum requirements to document the planning process with respect to:

- *Involvement of stakeholders (elected officials/decision makers, plan implementers, business owners, academic institutions, utility companies, water/sanitation districts, etc.);*
- *Involvement of Planning, Emergency Management, Public Works Departments or other planning agencies (i.e., regional planning councils);*
- *Diverse methods of participation (meetings, surveys, online, etc.); and*
- *Reflective of an open and inclusive public involvement process.*

Element B: Hazard Identification and Risk Assessment

In addition to the requirements listed in the Regulation Checklist, 44 CFR 201.6 Local Mitigation Plans identifies additional elements that should be included as part of a plan's risk assessment. The plan should describe vulnerability in terms of:

1) *A general description of land uses and future development trends within the community so that mitigation options can be considered in future land use decisions;*
2) *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; and*
3) *A description of potential dollar losses to vulnerable structures, and a description of the methodology used to prepare the estimate.*

How does the Plan go above and beyond minimum requirements to document the Hazard Identification and Risk Assessment with respect to:

- *Use of best available data (flood maps, HAZUS, flood studies) to describe significant hazards;*
- *Communication of risk on people, property, and infrastructure to the public (through tables, charts, maps, photos, etc.);*
- *Incorporation of techniques and methodologies to estimate dollar losses to vulnerable structures;*
- *Incorporation of Risk MAP products (i.e., depth grids, Flood Risk Report, Changes Since Last FIRM, Areas of Mitigation Interest, etc.); and*
- *Identification of any data gaps that can be filled as new data became available.*

Element C: Mitigation Strategy

How does the Plan go above and beyond minimum requirements to document the Mitigation Strategy with respect to:

- *Key problems identified in, and linkages to, the vulnerability assessment;*
- *Serving as a blueprint for reducing potential losses identified in the Hazard Identification and Risk Assessment;*
- *Plan content flow from the risk assessment (problem identification) to goal setting to mitigation action development;*
- *An understanding of mitigation principles (diversity of actions that include structural projects, preventative measures, outreach activities, property protection measures, post-disaster actions, etc);*
- *Specific mitigation actions for each participating jurisdictions that reflects their unique risks and capabilities;*
- *Integration of mitigation actions with existing local authorities, policies, programs, and resources; and*
- *Discussion of existing programs (including the NFIP), plans, and policies that could be used to implement mitigation, as well as document past projects.*

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

How does the Plan go above and beyond minimum requirements to document the 5-year Evaluation and Implementation measures with respect to:

- *Status of previously recommended mitigation actions;*
- *Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk;*
- *Documentation of annual reviews and committee involvement;*
- *Identification of a lead person to take ownership of, and champion the Plan;*
- *Reducing risks from natural hazards and serving as a guide for decisions makers as they commit resources to reducing the effects of natural hazards;*
- *An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.);*
- *Discussion of how changing conditions and opportunities could impact community resilience in the long term; and*
- *Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience.*

B. Resources for Implementing Your Approved Plan

Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?*

FEMA Mitigation grants are available to eligible applicants. Search grants.gov for additional resources for implementing mitigation actions.

SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

INSTRUCTIONS: For multi-jurisdictional plans, a Multi-jurisdiction Summary Spreadsheet may be completed by listing each participating jurisdiction, which required Elements for each jurisdiction were 'Met' or 'Not Met,' and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it should be used as an optional worksheet to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

MULTI-JURISDICTION SUMMARY SHEET													
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
1												
2												
3												
4												
5												
6												
7												
8												