

Hazard Mitigation Plan

Storey County 2015

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BLM	United States Bureau of Land Management
PW	Public Works
CIA	Central Intelligence Agency
CDC	Center for Disease Control
cfs	cubic feet per second
CFR	Code of Federal Regulations
County	Storey County
DHS	Department of Homeland Security
DMA 2000	Disaster Mitigation Act of 2000
DOJ	Department of Justice
DOT	United States Department of Transportation
EHS	Extremely Hazardous Substance
EMPG	Emergency Management Planning Grant
EOC	Emergency Operation Center
EPA	United States Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
FEMA	Federal Emergency Management Agency
FBI	Federal Bureau of Investigation
GIS	Geographic Information System
HAZUS-MH	(abbreviation for HAZ ards United States) is a geographic information system-based natural hazard loss estimation software package developed and freely distributed by the Federal Emergency Management Agency
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
InSAR	Interferometric Synthetic Aperture Radar
JAVMA	Journal of the Federal Coordinator for Meteorology
LEPC	Local Emergency Planning Committee
М	Magnitude
MMI	Modified Mercalli Intensity
mph	miles per hour
NDEM	Nevada Division of Emergency Management
NDEP	Nevada Division of Environmental Protection
NDF	Nevada Division of Forestry
NDOT	Nevada Department of Transportation
NERMP	Nevada Earthquake Risk Mitigation Plan
NFIP	National Flood Insurance Program

NBMG	Nevada Bureau of Mines & Geology
NPS	National Park Service
NRC	National Response Center
NWS	National Weather Service
OFCM	Office of the Federal Coordinator for Meteorology
PDM	Pre-Disaster Mitigation
POC	Point of Contact
SERC	State Emergency Response Commission
SFHA	Special Flood Hazard Area
SHMO	State Hazard Mitigation Officer
SPWB	State Public Works Board
Stafford Act	Robert T. Stafford Disaster Relief and Emergency Assistance Act
State	State of Nevada
SR	State Route
UBC	Uniform Building Code
UNR	University of Nevada Reno
URM	Unreinforced Masonry Buildings
URS	URS Corporation
USC	United States Code
USDA	US Department of Agriculture
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USGS	United States Geological Survey
WMD	Weapons of Mass Destruction

Across the United States, natural and human-caused disasters have led to increasing levels of death, injury, property damage, and interruption of business and government services. The toll on families and individuals can be immense and damaged businesses cannot contribute to the economy. The time, money and effort to respond to and recover from these emergencies or disasters divert public resources and attention from other important programs and problems. With four Federal declarations in the last ten years, Storey County, Nevada, recognizes the consequences of disasters and the need to reduce the impacts of natural and human-caused hazards.

The elected and appointed officials of the County also know that with careful selection, mitigation actions in the form of projects and programs can become long-term, cost effective means for reducing the impact of natural and human-caused hazards. Applying this knowledge, the Storey County Hazard Mitigation Planning Task Force prepared the *Storey County, Nevada, Hazard Mitigation Plan.* With the support of various County officials, the State of Nevada, and the United State Department of Homeland Security/Federal Emergency Management Agency (FEMA), this plan is the result of several months worth of work to create a hazard mitigation plan that will guide the County toward greater disaster resistance in full harmony with the character and needs of the community and region.

People and property in the County are at risk from a variety of hazards that have the potential for causing widespread loss of life and damage to property, infrastructure, and the environment. The purpose of hazard mitigation is to implement actions that eliminate the risk from hazards, or reduce the severity of the effects of hazards on people and property. Mitigation is any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. Mitigation encourages long-term reduction of hazard vulnerability. The goal of mitigation is to save lives and reduce property damage. Mitigation can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical community 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.

The *Storey County, Nevada Hazard Mitigation Plan* has been updated in compliance with Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act or the Act), 42 U.S.C. 5165, enacted under Sec. 104 the Disaster Mitigation Act of 2000 (DMA 2000), Public Law 106-390 of October 30, 2000. Since the first plan was adopted in 2006, many mitigation actions have been completed and the status of actions from the 2010 plan are contained in Appendix F. This updated plan identifies on-going and new hazard mitigation actions intended to eliminate or reduce the effects of future disasters throughout the County. This section provides an overview of the Disaster Mitigation Act of 2000 (DMA 2000; Public Law 106-390), the adoption of the updated *Storey County, Nevada, Hazard Mitigation Plan* (HMP) by the local governing body, and supporting documentation for the adoption.

1.1 DISASTER MITIGATION ACT OF 2000

The DMA 2000 was passed by Congress to emphasize the need for mitigation planning to reduce vulnerability to natural and human-caused hazards. The DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act; 42 United States Code [USC] 5121-5206 [2008]) by repealing the act's previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). In addition, Section 322 provides the legal basis for the Federal Emergency Management Agency's (FEMA's) mitigation plan requirements for mitigation grant assistance.

To implement the DMA 2000 planning requirements, the Federal Emergency Management Agency (FEMA) published an Interim Final Rule in the *Federal Register* on February 26, 2002. This rule (44 Code of Federal Regulations [CFR] Part 201) established the mitigation planning requirements for states, tribes, and local communities. The planning requirements are described in detail in Section 2 and identified in their appropriate sections throughout this Plan. In addition, a crosswalk documenting compliance with 44 CFR is included as Appendix E.

1.2 ADOPTION BY THE LOCAL GOVERNING BODY AND SUPPORTING DOCUMENT

The requirements for the adoption of an HMP by the local governing body, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 REQUIREMENTS: PREREQUISITES

Adoption by the Local Governing Body

Requirement §201.6(c)(5): [The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).

Element

Has the local governing body adopted the plan? Is supporting documentation, such as a resolution, included? *Source: FEMA, March 2008.*

Storey County, to be referred to as Storey County or the County throughout this plan, is the sole jurisdiction represented in this HMP. There are no other political subdivisions within Storey County. This HMP meets the requirements of Section 409 of the Stafford Act and Section 322 of the DMA 2000.

The local governing body of Storey County (Storey County Commissioners) has adopted this HMP. The signed resolution is provided in Appendix A.

This section provides an overview of the County's HMP. This includes a review of the purpose and authority of the HMP and a description of the document.

2.1 PLAN PURPOSE AND AUTHORITY

The DMA 2000, also referred to as the 2000 Stafford Act amendments, was approved by Congress on October 10, 2000. On October 30, 2000, the President signed the bill into law, creating Public Law 106-390. The purposes of the DMA 2000 are to amend the Stafford Act, establish a national program for pre-disaster mitigation, and streamline administration of disaster relief.

The HMP meets the requirements of the DMA 2000, which calls for all communities to prepare hazard mitigation plans. By preparing this HMP, the County is eligible to receive Federal mitigation funding after disasters and to apply for mitigation grants before disasters strike. This HMP starts an ongoing process to evaluate the risks different types of hazards pose to the County, and to engage the County and the community in dialogue to identify the steps that are most important in reducing these risks. This constant focus on planning for disasters will make the County, including its residents, property, infrastructure, and the environment, much safer.

The local hazard mitigation planning requirements encourage agencies at all levels, local residents, businesses, and the non-profit sector to participate in the mitigation planning and implementation process. This broad public participation enables the development of mitigation actions that are supported by these various stakeholders and reflect the needs of the entire community.

States are required to coordinate with local governments in the formation of hazard mitigation strategies, and the local strategies combined with initiatives at the state level form the basis for the State Mitigation Plan. The information contained in HMPs helps states to identify technical assistance needs and prioritize project funding. Furthermore, as communities prepare their plans, states can continually improve the level of detail and comprehensiveness of statewide risk assessments.

For FEMA's Pre-Disaster Mitigation (PDM) grant program and Hazard Mitigation Grant Program (HMGP), a local jurisdiction must have an approved HMP to be eligible for PDM and HMGP funding for a Presidentially declared disaster after November 1, 2004. Plans approved any time after November 1, 2004, will allow communities to be eligible to receive PDM and HMGP project grants.

Adoption by the local governing body demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in the HMP. Adoption legitimizes the updated HMP and authorizes responsible agencies to execute their responsibilities. The resolution adopting this HMP is included in Appendix A.

2.2 STAFFORD ACT GRANT PROGRAMS

The following grant programs require a State, tribe, or local entity to have a FEMA-approved State or Local Mitigation Plan.

Hazard Mitigation Grant Program (HMGP): HMGP provides grants to State, tribes, and local entities to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property as a result of natural disasters and to enable mitigation measures to be implemented during the immediate recovery from disaster. Projects must provide a long-term solution to a problem: for example, elevation of a home to reduce the risk of flood damages as opposed to buying sandbags and pumps to fight the flood. In addition, a project's potential savings must be more than the cost of implementing the project. Funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. The amount of funding available for the HMGP under a particular disaster declaration is limited. The program may provide a State or tribe with up to 20 percent of the total disaster grants awarded by FEMA. The cost-share for this grant is 75/25 percent (Federal/non-Federal).

Pre-Disaster Mitigation (PDM) Program: PDM provides funds to State, tribes, and local entities, including universities, for hazard-mitigation planning and the implementation of mitigation projects before a disaster event. PDM grants are awarded on a nationally competitive basis. Like HMGP funding, a PDM project's potential savings must be more than the cost of implementing the project. In addition, funds may be used to protect either public or private property or to purchase property that has been subjected to, or is in danger of, repetitive damage. Congress appropriates the total amount of PDM funding available on an annual basis. The cost-share for this grant is 75/25 percent (Federal/non-Federal).

Flood Mitigation Assistance (FMA): The FMA program provides funds on an annual basis so that measures can be taken to reduce or eliminate risk of flood damage to buildings insured under the National Flood Insurance Program (NFIP). FMA provides up to 75% Federal funding for a mitigation activity grant and/or up to 90% Federal funding for a mitigation activity grant containing a repetitive loss strategy.

Repetitive Flood Claims (RFC): The RFC program provides funds on an annual basis to reduce the risk of flood damage to individual properties insured under the NFIP that have had one or more claim payments for flood damages. RFC provides up to 100% Federal funding for eligible projects in communities that qualify for the program.

Severe Repetitive Loss (SRL): The SRL program provides funds on an annual basis to reduce the risk of flood damage to residential structures insured under the NFIP that have had one or more claim payments for flood damages. SRL provides up to 75% Federal funding for eligible projects in communities that qualify for the program.

2.3 PLAN ORGANIZATION

The remainder of this HMP consists of the following sections.

• Section 3 - Community Description

Section 3 provides a general history and background of the County and historical trends for population, demographic and economic conditions that have shaped the area. Trends in land use and development are also discussed.

SECTIONTWO

• Section 4 - Planning Process

Section 4 describes the planning process, identifies Planning Committee members, and the key stakeholders within the community and surrounding region. In addition, this section documents public outreach activities and the review and incorporation of relevant plans, reports, and other appropriate information.

• Section 5 - Risk Assessment

Section 5 describes the process through which the Planning Committee identified and compiled relevant data on all potential natural hazards that threaten the County and the immediately surrounding area. Information collected includes historical data on natural hazard events that have occurred in and around the County and how these events impacted residents and their property.

The descriptions of natural hazards that could affect the County are based on historical occurrences and best available data from agencies such as FEMA, the U.S. Geological Survey (USGS), and the National Weather Service (NWS). Detailed hazard profiles include information on the frequency, magnitude, location, and impact of each hazard as well as probabilities for future hazard events.

• Section 6 – Vulnerability Analysis

Section 6 identifies potentially vulnerable assets such as people, housing units, critical facilities, infrastructure and lifelines, hazardous materials facilities, and commercial facilities. These data were compiled by assessing the potential impacts from each hazard using GIS and FEMA's natural hazards loss estimation model, HAZUS-MH. The resulting information identifies the full range of hazards that the County could face and potential social impacts, damages, and economic losses.

• Section 7 - Capability Assessment

Although not required by the DMA 2000, Section 7 provides an overview of the County's resources in the following areas for addressing hazard mitigation activities:

- Legal and regulatory resources
- Administrative and technical: The staff, personnel, and department resources available to expedite the actions identified in the mitigation strategy
- Fiscal: The financial resources to implement the mitigation strategy

Section 8- Goals, Objectives & Actions - Mitigation Strategy

As Section 8 describes, the Planning Committee developed a list of mitigation goals, objectives, and actions based upon the findings of the risk assessment and the capability assessment. Based upon these goals and objectives, the Planning Committee reviewed and prioritized a comprehensive range of appropriate mitigation actions to address the risks facing the community. Such measures include preventive actions, property protection techniques, natural resource protection strategies, structural projects, emergency services, and public information and awareness activities.

SECTIONTWO

• Section 9 - Plan Maintenance Process

Section 9 describes the Planning Committee's formal plan maintenance process to ensure that the HMP remains an active and applicable document. The process includes monitoring, evaluating, and updating the HMP; implementation through existing planning mechanisms; and continued public involvement.

• Section 10 - References

Section 10 lists the reference materials used to prepare this HMP.

• Appendices

The appendices include the Adoption Resolution, Maps, Planning Committee Meetings, and Public Involvement process.

This section describes the history, location, and geography of the County as well as its government, demographic information, and current land use and development trends. The demographics and land use development trends sections where updated.

3.1 HISTORY, LOCATION, AND GEOGRAPHY

As shown in Figure C-1 (Appendix C), Storey County is in northwestern Nevada, approximately 14 miles east of Reno, 237 miles east of San Francisco, and 441 miles northwest of Las Vegas. The County is bordered on the west and north by Washoe County, Nevada, and on the east and south by Lyon County, Nevada. The Truckee River Basin and Carson River Basin along with associated streams are the primary drainage systems within Storey County. The major transportation route to Virginia City, Storey County seat, is State Route 341, intersecting U.S. 395 near Reno via Geiger Grade and U.S. 50, southwest in Carson City. Interstate 80 (I-80) is 23 miles to the northwest in Reno. With 264 square miles of total land area, Storey County accounts for less than one-quarter of 1 percent of the State's total land area. This makes Storey County the second-smallest county in Nevada. Storey County was created in 1861 and named for Captain Edward Farris Storey, who was killed in 1860 in the Pyramid Lake Indian War. Although it is among the smallest counties in the State, it was the most populous county in Nevada when it was established in 1861.

The attraction to Storey County started in 1859 when miners discovered the largest deposit ever found of gold and silver in Virginia City, called the Comstock Lode. Between 1859 and 1878 the Comstock Lode yielded about \$400 million in silver and gold. Mining has continued since then to the present but certainly nowhere near the yields of its heyday in the late 1800's. . In the fall of 1859, Virginia City had a population of between 200 to 300 people. After the Comstock Lode discovery in early 1860, approximately 10,000 people moved to the area. The peak population for the Virginia City/Gold Hill area was in 1875 topping at around 25,000 people. The political ramifications of this significant economic and population escalation resulted in the creation of the Nevada Territory, carved from the Utah Territory, by President Buchanan on March 2, 1861. Today, about 4,300 residents remain with 1,027 in Virginia City, 1,500 located five miles north of Virginia City in the Virginia Highlands, another 212 just south in Gold Hill, 1,200 in the community of Mark Twain located six miles east of Virginia City and the remainder along the north, west, and southern county boundary areas.

Beginning with the Comstock Lode, many historic events have occurred in this area, one of which was the arrival in late 1861 of Samuel Clemens, who worked as a reporter for the *Territorial Enterprise* for 21 months, and left as Mark Twain. Occurring in 1862 in the Virginia City area was the organization of the San Francisco Stock Exchange Board, the first mining exchange in the United States. The old Geiger Grade Toll Road, which was constructed to link Virginia City with immigrant trails and supply routes crossing the Truckee River, created the site that would become Reno in 1868. Long after the gold and silver rush became a memory, Storey County continues to attract more than 1.6 million tourists annually. Complementing its mining history and established tourism draw, Storey County's growing industrial sector has begun to play an equally important role in strengthening its future economic outlook.

Storey County, the second smallest Nevada county, has built a reputation on always doing things big—one of the biggest gold and silver discoveries in history and now, as of 2008 home of the

United State's largest industrial park, the Tahoe-Reno Industrial Center (TRI). This 107,000-acre center, located in the community of McCarran, has an 80-million-square-foot industrial-space capacity. Numerous and varied commercial companies have already located there and more are choosing the locale. Also located in the TRI area are three sophisticated power plants: NV Energy, Barrick Mines, and Naniwa (a power plant that provides additional power support during peak hours). Applications have been submitted to the County to develop an oil refinery on site as well as several bio fuels facilities to include solid waste, medical waste, and others. With completion of development in 2017, the TRI Center will bring an estimated additional 16,000 people into Storey County each day. See Section 3.4 for development trends.

As could be expected with the extent of mining in the area, the major geophysical feature of the County is its mountainous topography. At an elevation of 6,200 feet, Virginia City, the County seat, is located on the steep eastern slope of Mt. Davidson which has an elevation from 7,838 to 4,000. The majority of the land developed over the past 40 years has been on the perimeter of the County, primarily in the level areas adjacent to Lyon County and along the riparian zone of the Truckee River. The Tahoe Reno Industrial Center (TRIC) is a massive 107,000 acre park that encompasses a developable 30,000 acre industrial complex with pre-approved industrial and manufacturing uses. The build out of phase 2 of 3 is nearly complete. Although a considerable amount of developable land exists in the interior of the County, the mountainous terrain and lack of adequate road networks have combined to restrict development. As such, the development trend of the past 40 years is being encouraged to continue.

3.2 GOVERNMENT

The Storey County Board of Commissioners consists of three elected members. Each Commissioner is required to reside in one of three districts, which are equally divided among the County's population based on the census. Storey County does not have any incorporated jurisdictions. Population districts, such as the one described above regarding the members of the Board of Commissioners, serve a variety of means. For example, the County Master Plan identifies four population districts for their planning purposes and the Nevada Division of Water Resources identifies five. As the County continues to grow and the infrastructure expands the population districts will expand and develop as well and at some point will require an official delineation of the population districts within Storey County. Currently each Commissioner is elected by all residents of the County to serve a 4-year term and to discuss and determine all issues on a countywide basis. The Board of Commissioners meets each first and third Tuesday of the month and holds additional meetings when necessary. As the County's governing board, the Commission has vast responsibilities spanning from budgeting to policy enactment and enforcement. Below are some of the many services the Storey County Commissioners provide to the residents and businesses of the County:

- Approve all County department budgets and monitor their performance
- Set the tax rate countywide, as well as water and sewer rates in Virginia City and Gold Hill
- Establish and monitor the policies and ordinances that run the County government

SECTIONTHREE

Key Officials

Commissioner 1	Administrative Officer	District Attorney
Commissioner 2	Assessor	Emergency Mgr.
Commissioner 3	Clerk/Treasurer	Fire Chief
	Communications Director	IT Director
	Community Services Officer	Justice of the Peace
	Community Development Director	Public Works
	Comptroller	Recorder
	County Manager	Sheriff

County Departments/Divisions

Assessor	Emergency Management	Sheriff's Department
Clerk/Treasurer	Fire Protection District	
Commissioners/Human Resources	Information Technology	
Communications	Justice Court	
Community Services	Planning	
Comptroller	Public Works	
District Attorney	Recorder	

3.3 DEMOGRAPHICS

According to the Nevada State Demographer, the County's population is estimated at 4,123 in 2011. This was near the 2006 population estimate of 4,132 and a 21 percent increase from the 2000 US Census population of 3,399. The Nevada State Demographer estimates the county will grow at a rate of 4.0% annually over the next 20 years. This is well below the state average however due to the economic decline in Nevada since 2008 population is expected to be flat for the next few years. In addition to those living in Virginia City an estimated 1,000,000 people for visit for tourism each year.

Approximately 20 percent of the total population was under 18 years, 60 percent was between 18 and 54 years, and 20 percent was 55+ years and over. The County's nonfarm employment was 2,879 persons in 2011 (NV Department of Employment,

http://www.nevadaworkforce.com/admin/uploadedPublications/3069_2011_E&P_Final.pdf)

with an average annual wage of \$43,403. The economic base of the County primarily consists of Trade, Transportation and Utilities and manufacturing due to the large industrial complex near I80 in the northern part of the county. See below for the largest employers in the County. The median household income is \$59,386 and the median value of owner-occupied housing unit is \$215,200 according to the US Census Bureau.

Storey County's Largest Employers are as follows:

Employer	Town	Industry	Number of Employees
Wal-Mart Stores Inc.	McCarran	General Warehousing	500-599
Petsmart Inc.	McCarran	General Warehousing	200-299
Intellisource LLC	McCarran	General Warehousing	200-299
Storey County	Virginia City	Government	50-100
Source: https://www.nvenergy.com/business/economicdevelopment/regional/western/index.cfm			

Table 3-1: County Employers

3.4 LAND USE AND DEVELOPMENT TRENDS

The majority of the land developed in Storey County during the past 40 years has been on the perimeter of the County, primarily in the level areas adjacent to Lyon County and along the riparian zone of the Truckee River. Storey County's Master Plan examines the development of four primary population areas:

- Virginia City/Gold Hill: This area is located in the mountainous southwest section of the County. The development of this area can be directly attributed to the discovery of the Comstock Lode and is a major tourist attraction; specifically, this is the location of the largest historic district within the State of Nevada and one of the largest historic districts in the nation. Small scale mining has begun in the last 2 years in this area.
- **Virginia Highlands**: Located 5 miles north of Virginia City, this is a mountainous residential subdivision of one-, ten-, and forty-acre parcels, with primarily upscale housing. There is currently no commercial development in this area.
- **Mark Twain**: Located 6 miles due east of Virginia City, this is a residential subdivision consisting primarily of manufactured homes. The terrain is relatively level.
- **The River District:** This district stretches about 25 miles along the south bank of the Truckee River and makes up the northern boundary of the County. It has a mixed land use of residential, agricultural, recreational, industrial, and commercial development and is divided into 3 areas:
 - McCarran Reno-Tahoe-Industrial Park Industrial Center has a total of 30,000 developable acres. Businesses in this area currently employ approximately 8 to 10 thousand. There are currently two petroleum plants for refining and cracking or cleaning old product. A jet fuel producer is currently under construction of their refinery for processing solid waste. TESLA is under construction with a 5 year plan

for a 6 million square feet battery manufacturing facility which will add six thousand workers. Current predictions are for 20 thousand workers at TRI by 2020.

- 2. Lockwood Primarily a residential community with 1033 residents according to the 2010 census. There is a hay processing plant located in the area.
- 3. Painted Rock A residential community with approximately 20 residential structures on more than one acre each.

All of the districts are within 1 or 2 miles of the County boundary; none are in the interior. With few exceptions, all of the population of the County is located in these four districts.

Unlike most of Nevada, where 87 percent is managed by Federal agencies, more than 90 percent of Storey County is privately owned.

State Route 439 known as USA Parkway, which will connect Interstate 80 to US Highway 50 in 2017, will provide access from McCarran, where the TRI Development area is located, proceeds south to the County line with Lyon County in the area of the Ramsey/Weeks cutoff in Silver Springs. This new road will have multiple benefits—the most important benefit being direct access for emergency workers to traverse their response area north/south or to quickly reach wildfires occurring within the interior of the County. The secondary benefit will eliminate the current commute route through Reno for many of the workers in the TRI Development making the development only 15 minutes away from the residential communities along the Highway 50.

Sunset Acres is a proposed development of 300 homes and the Master Plan is currently being updated to include this development. This development is not within any mapped flood areas. This is scheduled to be built out over the next 10 years.

This section provides an overview of the planning process; identifies Planning Committee members, and key stakeholders; documents public outreach efforts; and summarizes the review and incorporation of existing plans, studies, and reports used in the development of this HMP. Additional information regarding the Planning Committee and public outreach efforts is provided in Appendices C and D.

The requirements for the planning process, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Planning Process

Documentation of the Planning Process

Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- 1. An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
- 2. An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and nonprofit interests to be involved in the planning process; and

3. Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information. **Requirement §201.6(c)(1)**: [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved. Element

- Does the new or updated plan provide a narrative description of the process followed to prepare the plan?
- Does the new or updated plan indicate who was involved in the planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan Committee, provided information, reviewed drafts, etc.?)
- Does the new or updated plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)
- Does the new or updated plan indicate that an opportunity was given for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?
- Does the updated plan document how the planning team reviewed and analyzed each section of the plan?
- Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?
- Does the updated plan indicate for each section whether or not it was revised as part of the update process?

Source: FEMA, March 2008.

4.1 OVERVIEW OF PLANNING PROCESS

The first step in the planning update process was to establish a Planning Committee composed of existing County agencies. Joe Curtis, Emergency Manager and Cherie Nevin, served as the primary Points of Contact (POC) for the County and the public. Karen Johnson functioned as project leader for the update process.

The County assisted by the State of Nevada, Hazard Mitigation Officer updated this HMP. Each section of the previous HMP plan was reviewed for content and the committee revised every section of the plan. The plan was re-drafted into a new outline to better assist the State Hazard Mitigation Officer in the review process. All NV state plans are requested to be in this new outline.

During the 5 years since the previous plan was adopted plan maintenance performed during the 4th year during the LEPC meeting. All information on mitigation action accomplishments and

new public input was derived during the planning process. With this new plan and the plan maintenance section has been revised to include forms and the SHMO has developed an exercise for local plan maintenance which will corrected this omission.

The following table provides the new section format and provides details on the update.

Plan Section	Update Effort	What Changed
Section 1 – Official Record of Adoption	Minor Revision	The process for plan adoption remains the same but the update provides a discussion of this process. Section 1 and 2 of the 2008 plan were switched.
Section 2 - Background	Minor Revision	The plan organization sections were modified to reflect current plan.
Section 3 – Community Description	Minor Revisions	This section was updated to include new land use map and expanded to include land use and development trends to address new requirements.
Section 4 – Planning Process	Major Revisions	This section details the current plan's planning process. Public and stakeholders outreach efforts
Section 5 – Hazard Analysis	Moderate Revisions	. The individual hazard sections were reformatted to the new outline and then provided to the committee member with expertise to update history and revise as needed. New Hazus information was used for the earthquake hazard and new FIRM maps were used for flood hazard.
Section 6 – Vulnerability Analysis	Moderate Revisions	New analysis of residential, non residential and critical facilities based on mapping efforts tied to hazards was included. Identified URMs included. Future development was included. The team used this section to prioritize projects.
Section 7 – Capability Assessment	Minor Revisions	A local mitigation capability assessment was included and a section on NFIP was included to address requirements.
Section 8 – Mitigation Strategy	Major Revisions	The goals and actions were reviewed and progress was included, actions deleted, and actions added. The prioritization process was expanded to include the STAPLE+E process to better evaluate and prioritize actions.
Section 9 – Plan Maintenance	Minor Revision	SHMO maintenance exercise included.
Section 10 – Reference	New	This section was added for future plan update reference.

 Table 4-1. Plan Outline and Update Effort

Once the Planning Committee was formed, the following five-step planning process took place during the 12-month period from January 2013 to October 2013.

- **Organize resources:** The Planning Committee identified resources, including County staff, agencies, and local community members, which could provide technical expertise and historical information needed in the development of the HMP.
- Assess risks: The Planning Committee identified the hazards specific to the County, and developed the risk assessment for the thirteen identified hazards. The Planning Committee reviewed the risk assessment, including the vulnerability analysis, prior to and during the development of the mitigation strategy.
- Assess capabilities: The Planning Committee reviewed current administrative and technical, legal and regulatory, and fiscal capabilities to determine whether existing provisions and requirements adequately address relevant hazards.
- **Develop a mitigation strategy:** After reviewing the risks posed by each hazard, the Planning Committee worked to develop a comprehensive range of potential mitigation goals,

objectives, and actions. Subsequently, the Planning Committee identified and prioritized the actions to be implemented.

• **Monitor progress:** The Planning Committee developed an implementation process to ensure the success of an ongoing program to minimize hazard impacts to the County.

4.2 HAZARD MITIGATION PLANNING COMMITTEE

4.2.1 Formation of the Planning Committee

As previously noted, the planning process began in January 2013. Cheri Nevin, Emergency Management for the County, utilized the Local Emergency Planning Committee (LEPC) as the advisory body, known as the Planning Committee, which included staff from relevant County agencies and community organizations. The Planning Committee members are listed in Table 4-2. The Planning Committee meetings are described in section 4.2.2. Meeting minutes are provided in Appendix C.

Name	Department	Participation
Chair: Joe Curtis	Emergency Management	Co-Chair of the Committee, chaired meetings, provided evaluation and information on the following sections, risk assessment, vulnerability analysis, mitigation strategies, plan maintenance, provided public outreach Attended meetings, reviewed drafts and provided input

Table 4-2. Storey County Hazard Mitigation Planning Committee

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Cherie Nevin	Emergency Management	Co-Chair of the Committee, chaired meetings, provided update, evaluation and information on the following sections, planning, hazard profiles, vulnerability analysis, risk assessment, mitigation strategies, plan maintenance
		Attended meetings, reviewed drafts and provided input
Gary Hames	Fire Chief	Provided evaluation and information on the following sections, wildfire, vulnerability analysis, risk assessment, mitigation strategies, plan maintenance
		Attended meetings, reviewed drans and provided input
Pat Whitten	County Manager	Provided evaluation and information on the following sections, flood, vulnerability analysis, risk assessment, mitigation strategies, plan maintenance
		Attended meetings, reviewed drafts and provided input
Jenna Damon	NV Division of Water Resources, Flood Plain Management	Provided evaluation and information on the following sections, flood, vulnerability analysis, risk assessment, mitigation strategies
		Attended meetings, reviewed drafts and provided input
Gary Johnson	UNR, NBMG	Provided evaluation and information on the following sections, earthquake, vulnerability analysis, risk assessment, mitigation strategies, plan maintenance
		Attended meetings, reviewed draits and provided input
Karen Johnson	NV Division of Emergency Management	state hazards, mitigation strategies, plan maintenance
		Attended meetings, reviewed drafts and provided input
Eric Schmidt	Douglas County GIS	Provided information on GIS including flood mapping. Attended meetings, reviewed drafts and provided input
	Director of Community	Provided information on flood & community
Dean Haymore	Development/Building/Floodplain Manager	Attended meetings, reviewed drafts and provided input
		Provided public input
John Haskins	Comstock Mining	Attended meetings reviewed drafts and provided input
		Provided nublic input
Rick Vasquez	Walmart	Attended meetings, reviewed drafts and provided input
		Provided information on fire and mitigation strategy
Joe Fording	NDF	Attended meetings, reviewed drafts and provided input
		Provided information on fire and mitigation strategy
Bill Moline	NDF	Attended meetings, reviewed drafts and provided input
Mike Nevin	County Public Works	Provided information on county roads, utilities and buildings, vulnerability analysis, mitigation strategy Attended meetings, reviewed drafts and provided input

4.2.2 Planning Committee Meetings & Monthly Progress

• January 2013

During the kick-off meeting, at the Walmart Distribution Center, the Committee discussed the objectives of the DMA 2000, the hazard mitigation planning process, the public outreach

process, and the steps involved in updating the HMP and achieving the County's goals. The planning process was discussed including the purpose of the plan and the plan tasks, goals and actions. The Committee completed the Incorporation of Existing Plans/Study Table to identify all the plans/studies available (as shown in section 4.4). Members received a copy of the 2008 HMP. A review of the County and State identified hazards was used as a starting point to complete a hazard identification table. The exercise identified the specific hazards that the Planning Committee wanted to address in the HMP. The Planning Committee used the hazards identified and completed a Hazard Profiling Worksheet. The exercise used group averaging to prioritize the hazards into high, medium and low categories. The Committee reviewed the 2008 HMP's actions and provided input as to status. See Appendix D for agenda, handouts and minutes.

• April 2013

The Committee met in Virginia City and discussed the results of the hazard rating exercise and determined hazard ratings for the plan. Leads for the hazards were determined. The Committee reviewed the Hazard Mitigation Questionnaire for public input (see Appendix C). See Appendix D for agenda, handouts and sign in sheet.

• July 2013

The Committee met in Lockwood and discussed the update to the Earthquake hazard profile including historical earthquakes and mitigation action status and new actions. See Appendix D for agenda, handouts and sign in sheet.

• January 2014

The Committee met in Lockwood and discussed the Community section and the Hazardous Materials & Severe Weather profiles. Critical facilities were discussed. Chris Smallcomb of NOAA gave a briefing on drought. Mitigation actions for these sections were also discussed.

• April 2014

The Committee met in Virginia City and Jenna Damon gave a presentation on Flood profile and mitigation actions and Karen Johnson provided the Wildfire profile and mitigation actions. Maps were provided to committee for review.

• July 2014

Presented the Committee with the initial analysis of the vulnerability assessment, describing which assets were analyzed and how values were estimated. The Planning Committee reviewed goals and actions and drafted new actions. Planning Committee used STAPLE+E form to prioritize actions. See Appendix D for meeting handouts. With the information from the prioritization process the Planning Committee selected the top actions they felt were feasible and realistic to be completed during this iteration of the HMP. With this information they completed the Mitigation Action matrix.

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• September 2014

The Committee reviewed the maintenance section. The completed plan was distributed to the Planning Committee for their review.

• October 2014

The plan was provided to the NV State Hazard Mitigation Officer for review and submission to FEMA.

4.2.3 Plans, Studies, Reports and Technical Information

The Committee felt that the information available was of high quality. The Division of Water Resources, the Truckee River Flood Project and the NV Division of Forestry provided mapping of flood and wildfire risk. The URM structures were mapped and included in this update.

4.3 PUBLIC INVOLVEMENT

The public was invited to participate in the planning committee meetings and meeting agenda were posted. Additionally, a questionnaire was sent out to the County residents within a Hawthorne Utilities Landfill Assessment, a press release and letters to stakeholders for their participation. From this outreach a large amount of input and review was provided.

Questionnaire

The County distributed the hazard mitigation questionnaires during the National Night Out event on August 6, 2013, to the public. This provided very few responses and the next update should review ways to improve public involvement. The questionnaire can be found in Appendix D.

Public Awareness

All committee planning meeting agendas were posted at the County offices and the public was welcome and invited to attend.

Letters to Stakeholders and Neighboring Communities

The County emailed notification regarding the update of the HMP to the following entities:

- FEMA Did not attend but will review the plan.
- State NDEM, NDOT, NDWR, NDF, UNR NBMG Participated in the planning effort.
- State Assembly & Senate Representative Did not participate.
- Counties of Carson City, Churchill, Lyon, Pershing and Washoe– Did not participate but their HM plans were reviewed for hazard information.
- National Weather Service Attended, provided input and review.

All but FEMA, State Assembly and Senate Representative, and neighboring counties participated. FEMA will be sent the plan for review. Mapping was provided by the Douglas County GIS group through a county agreement for mapping services. The neighboring counties

were aware of the planning effort and offered to provide answers to specific questions. No questions were requested of them during the planning effort.

4.4 INCORPORATION OF EXISTING PLANS AND OTHER RELEVANT INFORMATION

During the planning process, the Planning Committee reviewed and incorporated information from existing plans, studies, reports, and technical reports into the HMP. A synopsis of the sources used follows.

- *Storey County Master Plan, 1999*: The Land-Use Element provides information on existing land use and future development trends.
- *Storey County Zoning Plan 2012:* Land-Use Element provides information on future land use and provides flood plain zoning.
- *Storey County Historical Structure Study 2011*: This plan provides information on historically significant structures including the Courthouse.
- *Storey County Building Code IBC 2003*: Storey plans to adopt the 2009 IBC in July of 2013.
- *Storey County Comprehensive Flood Control Plan 2011.* This plan provides information on flooding locations and specific mitigation recommendations.
- *State of Nevada Hazard Mitigation Plan, October 2010*: This plan, prepared by the State of Nevada, was used to ensure that the County's LHMP was consistent with the State's plan.
- *Flood Insurance Study, Storey County, Nevada, Unincorporated Areas, Revised 2010, FEMA Community Number – 320033:* This study provides historical and detailed information regarding flood hazards throughout Storey County and was useful when developing the flood-hazard profile and flood-mitigation strategy.
- Nevada Community Wildfire Risk/Hazard Assessment Project, Storey County, January 2005: This report was prepared specifically for the communities within Storey County, Nevada, identified in the 2001 *Federal Register* list of communities that are located in the vicinity of Federal lands most vulnerable to the threat of wildfire.
- Hazardous Materials Emergency Response Plan 2012:

The following FEMA guides were also consulted for general information on the HMP process:

- *How-To Guide #1: Getting Started: Building Support For Mitigation Planning* (FEMA 2002c)
- How-To Guide #2: Understanding Your Risks Identifying Hazards and Estimating Loss Potential (FEMA 2001)
- How-To Guide #3: Developing the Mitigation Plan: Identifying Mitigation Actions and Implementing Strategies (FEMA 2003a)
- How-To Guide #4: Bringing the Plan to Life: Implementing the Hazard Mitigation Plan (FEMA 2003b)

A complete list of the sources consulted is provided in Section 10, Reference

A hazard analysis includes the identification and screening of each hazard and subsequent profiling of each hazard. Hazard identification is the process of recognizing the natural and human-caused events that threaten an area. Natural hazards result from unexpected or uncontrollable natural events of sufficient magnitude. Human-caused hazards result from human activity and include technological hazards and terrorism. Technological hazards are generally accidental or result from events with unintended consequences, for example, an accidental hazardous materials release. Terrorism is defined as the calculated use of violence or thereat of violence to attain goals that are political, religious, or ideological in nature.

Even though a particular hazard may not have occurred in recent history in the study area, all hazards that may potentially affect the study area are included in the screening process. The hazards that are unlikely to occur or for which the risk of damage is accepted as being very low, are eliminated from consideration.

All identified hazards will be profiled by describing hazards in terms of their nature, history, magnitude, frequency, location, and probability. Hazards are identified through the collection of historical and anecdotal information, review of existing plans and studies, and preparation of hazard maps of the study area. Hazard maps are used to determine the geographic extent of the hazards and define the approximate boundaries of the areas at risk.

5.1 HAZARD IDENTIFICATION AND SCREENING

The requirements for hazard identification, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Risk Assessment - Overall

Identifying Hazards

201.6(c)(2)(i): [The risk assessment shall include a] description of the type of all natural hazards that can affect the jurisdiction.

Element

• Does the new or updated plan include a description of all the types of all natural hazards that affect the jurisdiction?

Source: FEMA, March 2008.

The first step of the hazard analysis is the identification and screening of hazards, as shown in Table 5-1. During the first HMP meeting, the Planning Committee reviewed the current HMP and the State's identified hazards from the State of Nevada Hazard Mitigation Plan and identified 16 possible hazards (14 natural hazards and 2 human-caused hazards).

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Hazard Type	Should It Be Profiled?	If Yes is this New?	Explanation
Avalanche	Yes	No	No historical record of this hazard in the County however except on roads.
Drought	Yes	No	Statewide drought declarations were issued in 2002 and 2004.
Earthquake	Yes	No	Several active fault zones pass through the County.
Epidemic	Yes	No	This hazard was addressed in the State Multi- Hazard Mitigation Plan.
Expansive Soils	No		No historical record of this hazard in the County
Extreme Heat	No		No historical record of this hazard in the County
Flood (Including Dam/Levee Failure)	Yes		Flash floods and other flood events occur regularly during thunderstorms.
Hazardous Material Event	Yes	No	The County has an industrial park and Highway 80 that pass through the county however Committee determined to only profile hazard. No vulnerability analysis was included. As the industrial park is located miles from any residential area.
Infestations	No		No recorded damages
Land Subsidence & Ground Failure	Yes	No	This was previously titled Caving Ground and the mines under Virginia City have a possibility of collapse.
Severe Weather Snow/Ice//Windstorm/Hail	Yes	No	Storey is susceptible to severe weather. Previous events have caused damage to property. Windstorm and Hail where included in this section for this update.
Seiche	No		No recent historic events have occurred.
Tornado	No		No historic events have occurred.
Volcano	No		No significant historic events have occurred in the County. The Planning Committee determined not to include this hazard.
WMD / Terrorism	Yes	No	This hazard was included but Committee only profiled hazard. No vulnerability analysis was included.
Wildland Fire	Yes	No	The terrain, vegetation, and weather conditions in the region are favorable for the ignition and rapid spread of wildland fires.

Table 5-1. Identification and Screening of Hazards

Assigning Vulnerability Ratings

During a Committee meeting the members were tasked to prioritize the hazards by their total impact in the community. An exercise requiring the committee to complete a form which tabulated their ratings of each hazard was accomplished. The exercise formula took into account the historical occurrence of each respective hazard, the potential area of impact when the disaster does occur, and the magnitude. Please see Table 5-2 below for scoring criteria.

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It is important to note that hazards of the same magnitude and the same frequency can occur in similar sized areas; however, the overall impact to the areas would be different because of population densities and property values in the areas impacted.

		Magnitude	Duration	Economic	Area Affected
Lowest	1	Insured Loss	1-3 Days	Community	Community
	2	Local	4-7 Days	City/Town	City / Town
	3	State	8-14 Days	County	County
	4	Federal Emergency	15-20 Days	State	State
Highest	5	Federal Disaster	20 + Days	Federal	Federal
-		·	•		•

Table 5-2. Vulnerability Ratings Rubric

		Frequency	Degree of Vulnerability	State & Community Priorities
Lowest	1	10+ years	1-5% damaged	Advisory
	2	6-9 years	6-10%	Considered further Plan
	3	1-5 years	11-25%	Prompt Action
	4	2-12 months	26-35%	Immediate Action
Highest	5	0-30 days	36-50%	Utmost immediacy

The Committee referenced the NV DEM historical records, RCI plans and HAZUS runs from Nevada Bureau of Mines and Geology (NBMG) for scientific data that was used for magnitude, economic and frequency scores based on historical frequencies and / or projected probabilities of the hazards identified.

Upon obtaining total scores for each hazard, the team utilized the scores to analyze and prioritize the hazards to focus upon during the profiling, vulnerability assessment and mitigation planning. Table 5-3 is a summary of the hazards scoring results of the members present at the meeting.

Hail & thunderstorm, severe winter storm, and severe windstorm were combined for profiling purposes.

The Planning Committee determined that eleven hazards pose a threat to the County: drought, earthquakes, epidemic, floods, hazardous materials events, land subsidence, severe weather, terrorism/WMD, volcano, wildland fires. The Planning Committee decided to include the frequency and magnitude ranking in the table below in addition to the total score from the exercise to better demonstrate the hazards impact on the county.

Hazard Type			Countywide
Natural	Frequency	Magnitude	Average Score
Avalanche	Low	Low	Very Low (11)
Caving (Mine) & ground failure	Moderate	Low	Moderate (17)
Drought	Low	Low	Low (14)

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Hazard Type			Countywide
Natural	Frequency	Magnitude	Average Score
Earthquakes	Low	High	Moderate (19)
Epidemic	Low	Low	Low (14)
Flood (Includes dam failure, canal/ditch failure)	High	High	High (26)
Severe Weather Hail & thunderstorm Winter storm Windstorm	High	Low	Overall – Moderate (20) 12 - Low 22– Moderate 21 – Moderate
Wildfire	High	High	High (31)
Human Caused			
Hazmat	Moderate	Low	Low (21)
Terrorism	Low	High	Low (22)

Table 5-3: Hazard Extent Classification

Although Hazmat and Terrorism scored a medium overall the Planning Committee determined through discussion that the magnitude from an incident is historically so low they rated this hazard as low. The remaining hazards excluded through the screening process were considered to pose no threat to life and property in the County due to the low likelihood of occurrence or the low probability that life and property would be significantly affected. Should the risk from these hazards increase in the future, the HMP can be updated to incorporate a vulnerability analyses for these hazards.

The Planning Committee determined through discussion that Avalanche, Epidemic, Hazmat, Mine caving and Terrorism will have a Hazard Profile developed but will not be carried through to the Risk Assessment or Mitigation Strategy, as currently and historically they occurred in unpopulated areas or has little to no impact, measureable magnitude, or feasible mitigation actions. Terrorism would not be carried through to the Risk Assessment or Mitigation Strategy since there are other planning mechanisms that better deal with planning for Terrorism.

The County's Hazard Rating results generally correspond with ratings determined in the State of Nevada Standard Hazard Mitigation Plan.

High Risk	Moderate Risk	Low Risk	Very Low Risk	
Earthquake Flood Wildfire	Mine Caving/ Land subsidence Severe Weather Terrorism	Drought Epidemic Hazardous - Materials	Avalanche	

Table 5-4. Hazard Ranking

5.2 HAZARD PROFILE

The requirements for hazard profile, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Risk Assessment - Profiling Hazards

Profiling Hazards

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Element

- Does the risk assessment identify the location (i.e., geographic area affected) of each natural hazard addressed in the plan?
- Does the risk assessment identify the **extent** (i.e., magnitude or severity) of each hazard addressed in the plan?
- Does the plan provide information on **previous occurrences** of each hazard addressed in the plan?
- Does the plan include the probability of future events (i.e., chance of occurrence) for each hazard addressed in the plan?

Source: FEMA, March 2008.

The specific hazards selected by the Planning Committee for profiling have been examined in a methodical manner based on the following factors:

- Nature
- History •
- Location of future events
- Extent of future events
- Probability of future events

The hazards profiled for the County are presented in Section 5.2 hazards in alphabetical order. The order of presentation does not signify the level of importance or risk. Low hazards were not profiled.

5.2.1 Avalanche

Planning Significance – Very Low

5.2.1.1 Nature

An avalanche is a mass of snow sliding down a mountainside. An avalanche occurs when gravitational pull exceeds the bonding strength of the snow cover. There are four factors that contribute to an avalanche; a steep slope, a snow cover, a weak layer in the snow cover, and a trigger. About 90 percent of all avalanches start on slopes of the 30-45 degrees; about 98 percent of all avalanches occur on slopes of 25-50 degrees. Avalanches release most often on slopes above timberline, such as gullies, roads cuts, and small openings in the trees. Avalanches can also occur on small slopes well below timberline, such as gullies, road cuts, and small openings in the trees. Very dense trees can anchor the snow to steep slopes and prevent avalanches from starting; however, avalanches can release and travel through a moderately dense forest.

The vast majority of avalanches occur during and shortly after winter storms, during the winter and spring months between January and April. The most avalanche-prone months are in order, February, March, and January. The avalanche danger increases with major snowstorms and periods of thaw. Duration of avalanche impacts is generally one to three days or less.

5.2.1.2 History

There are oral accounts of two avalanche events in the Geiger Grade area occurring approximately 50 to 100 years ago and of one in Virginia City within the past 5 years. The avalanche in Virginia City was described as moving a multi-thousand gallon water tank about 300 feet vertically down the hill to a nearby residence landing atop a privately owned garage. There were no injuries or fatalities reported in any of the three events. No additional events could be found in local or national data bases.

5.2.1.3 Location, Extent, and Probability of Future Events

There are several factors that influence avalanche conditions and locations, with the main ones being slope angle, slope aspect, and terrain. Other factors include slope shape, vegetation cover, elevation, and path history. Avalanches usually occur on slopes 35 to 60 degrees; Virginia City is located on the eastern slope of Mt. Davidson, where the slope is at approximately 30 to 35 degrees. The sides of the Geiger Grade slope between Reno and Virginia City are approximately 45 or more degrees. An avalanche can occur on slopes of 25 to 35 degrees. At slope angles above 70 degrees, the snow tends to slough off and does not have the opportunity to accumulate. Avalanches can occur outside the optimum slope angle range, but are not as common.

Slope aspect, also termed orientation, describes the direction a slope faces with respect to the wind and sun. Leeward slopes (slopes facing away from wind and snow) loaded by wind-transported snow are problematic because the wind-deposited snow increases the stress and enhances slab formation. Intense direct sunlight can weaken and lubricate the bonds between the snow grains, weakening the snowpack. Shaded slopes are also potentially unstable because the weak layers may be held for a longer time in an unstable state. Where Virginia City is located on

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the eastern portion of Mt. Davidson is not considered a leeward slope but faces the east catching the daily rising sunlight.

The local terrain features determine an avalanche's path. The path has three parts: the starting zone, the track, and the run-out zone. The starting zone is where the snow breaks loose and starts sliding. It is generally near the top of a canyon, bowl, ridge, etc., with steep slopes between 25 and 50 degrees. Snowfall is usually significant in this area.

Most avalanches in a given path are relatively small and frequent, affecting only a small portion of the potential path area. Occasionally, much larger avalanches release which extend nearly to the observed limits of the path. These larger events are usually referred to as "10-year" events but in reality, reflect an order of magnitude return period between 3 years and 30 years. On rare occasions, exceptionally large avalanches occur that extend well beyond the established boundaries of the paths. These avalanches often referred to as "10-year" avalanches, are likely to affect all or most of the potential path area.

Avalanches usually occur on slopes 35 to 60 degrees and can occur on slopes of 25 to 35 degrees. The slope of Virginia City (30 to 35 degrees) indicates it is possible for an avalanche to occur there. The Geiger Grade slope (approximately 5 degrees) is significantly less likely to occur with any regularity. A design avalanche is defined as an avalanche occurring within an order of magnitude range between 30 years and 300 years. Statistically, design avalanches have a 1 percent probability of occurring during any given year, but could occur in consecutive years or many years apart.

5.2.2 Caving Ground (Mine Collapse)

Planning Significance - Moderate

5.2.2.1 Nature

The area around abandoned mine openings and open pits can be weak and cave-in without warning. Cave-ins are obviously dangerous. Areas that are likely to cave-in are often hard to detect. A minor disturbance, such as vibrations caused by walking or speaking, may cause a cave-in.

The top of a mine shaft is especially dangerous. The rock at the surface is often decomposed and timbers may be decayed or missing; therefore walking anywhere near a shaft opening should be avoided. The whole area is often ready and waiting to slide into the shaft, which can be hundreds of feet deep.

5.2.2.2 History

Through oral history there is community knowledge of two significant events where mine shafts that were filled during the 1920s significantly caved leaving large holes in the ground at two separate school locations the first in 1991 at Gallagher Elementary School and then around 1994-95 at the Virginia City High School. Additional caving events occurred along highways requiring the roads to be closed for repairs to be completed. The first occurred around 2000 and the second in 2006 with additional damage in 2015 along Highway 342 in lower Gold Hill about ¼ mile north of the county line; all events were as a result of flood waters or heavy rains collapsing previously covered mine shafts.

The Nevada Division of Minerals advises they manage and collect data regarding abandoned mine hazards throughout the State. However, due to budgetary restraints their data base is maintained using an antiquated system and remains in a constant state of flux. They acknowledge their data base is sorely out-dated and that they have not been able to inventory all abandoned mine hazards in Storey County partly because they do not have access to events occurring on private property. Additionally, they do not specifically inventory events regarding subsidence or collapse of abandoned mine shafts such as the events described above.

5.2.2.3 Location, Extent, and Probability of Future Events

The Comstock Lode was the largest gold and silver deposit ever discovered in the State of Nevada and is located beneath Virginia City as well as extending below the interior of the County. By the late 1800s the Comstock Lode had ebbed. Then in the 1920s, with an abundance of abandoned mines and cars, it became common practice to fill the shafts of inactive mines with wrecked vehicles and other large discarded items. Over the last century filled shafts have settled or support timbers have collapsed causing a multitude of hazards to include sink holes. 1994 saw another gold boom with Nevada producing approximately 64% of the U.S. production and 10% of the total world gold production (Nevada Division of Minerals, 1994; Price and others, 1995). Abandoned mines are located not only throughout the State of Nevada but there is a high concentration in and surrounding the Virginia City and Gold Hill areas. The deepest shafts of these mines measure 3,300 feet below the shaft's collar.

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of Minerals has inventoried 175 abandoned mine hazard locations between 1989 and June 10, 2009 in Storey County. Each of the 175 sites are provided with an individual identification number and includes the geo-address, rank for each hazard to include degree and type, as well as providing details of the mine visibility. All sites include a detailed description of the status of the hazard at the time of the inspection. There are approximately an additional 30 more category descriptions for each hazard site. Although the data collected on each hazard site is extensive, the Nevada Division of Minerals states they have only a portion of the estimated sites inventoried. With the mining history past and present so densely concentrated in the Virginia City and Gold Hill areas abandoned mines are acknowledged to be a current hazard and one that will persist well into the future. Without an in-depth study not only in Storey County but throughout the State of Nevada the extent of the risk to life and property has not yet been fully defined but can only be speculated upon considering the deepest of the known shafts are measured at 3,300 feet.

5.2.3 Drought

Planning Significance - Low

5.2.3.1 Nature

Drought is a temporary but recurrent feature of climate that occurs virtually everywhere, including in regions that normally receive little rainfall. Characteristics of drought can vary significantly from one region to another and, partly due to differences in impact, there are scores of definitions. Drought is often described simply as a period of deficient precipitation, usually lasting a season or more, resulting in extensive damage to agricultural crops with consequential economic losses. Water shortages can result for some activities, groups, or environmental sectors.

The onset and end of a drought are difficult to determine, and in contrast with quick and intense natural hazards such as tornadoes, the impact of drought is more of a slower "creeping hazard" and may be spread over a larger geographic area. The impact of a particular drought depends on numerous factors including duration, intensity, and geographic extent as well as regional water supply demands by humans and vegetation.

The negative effects of drought increase with duration. Lower than normal reservoir or river levels can impact recreational opportunities, fire suppression activities, and animal habitat. Patterns of human consumption can also be altered. Non-irrigated croplands are most susceptible to precipitation shortage. Rangeland and irrigated agricultural crops may not respond to moisture shortage as rapidly, however yield during periods of drought can be substantially lower. During periods of severe drought, lower moisture in plant and forest fuels create an increased potential for devastating wildfires. An increase in insect infestation can be a particularly damaging impact from severe drought conditions.

The <u>U.S. Drought Monitor</u> product utilizes several indices along with data retrieved from various organizations and personnel directly involved in the field to create a graphical assessment of drought conditions. The five drought intensities or classifications offered by the authors of this product are: D0 Abnormally Dry, D1 Moderate Drought, D2 Severe Drought, D3 Extreme

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Drought and D4 Exceptional Drought. The <u>National Weather Service in Reno</u> will issue Drought Information Statements and brief water resource partners during periods of drought.

5.2.3.2 History

Increased wildfire risk, water shortages and an anomalous insect infestation have all been attributed to recent droughts. Storey County has experienced 6 drought periods of Drought Monitor classification D1 or higher since 2000, including the current drought. Maximum intensity of these droughts ranged from severe (D2) to extreme (D3) and averaged 16 months in duration. The longest drought in the period of record was from January 2007 to October 2010 – 45 months. The last two droughts have been the longest and most extreme since 2000. There is no regular pattern to drought occurrences in the county, though there have been long periods without drought, most notably the wet years of 2005-2006. It should be noted the ongoing drought starting in 2012 has resulted in a USDA Drought Disaster Area Declaration for much of Nevada. Storey County is considered a "Contiguous County" in this declaration.

Following is a list of recent drought periods extracted from data supplied by the U.S. Drought Monitor.

Drought Period	Duration of Drought	Maximum Intensity
3 April 2001 – 19 Mar 2002	11 months	Extreme (D3)
28 May 2002 – 24 Dec 2002	7 months	Severe (D2)
11 Feb 2003 – 30 Dec 2003	10 months	Severe (D2)
13 Apr 2004 – 18 Jan 2005	9 months	Extreme (D3)
23 Jan 2007 – 12 Oct 2010	45 months	Extreme (D3)
3 Jan 2012 – ongoing	16 months	Extreme (D3)

5.2.3.3 Location, Extent, and Probability of Future Events

Droughts are a naturally-occurring cyclical part of the climate and Storey County is highly susceptible to periods of dry conditions and drought. Based on recent cycles, Storey County can expect highly varying degrees and durations of drought to occur. The recently released <u>Southwest Climate Assessment</u> report indicated that drought severity has increased across the Southwest U.S., including Nevada, and that the trend is likely to continue.
Figure 5-1 Nevada Drought Severity



Statistics type: Traditional (D0-D4, D1-D4, etc.)					, D1, etc.)	
Week	Nothing	D0-D4	D1-D4	D2-D4	D3-D4	D4
3/15/2011	89.83	10.17	0	0	0	0
3/11/2014	0	100	99.32	72.95	33.46	5.37

http://droughtmonitor.unl.edu/MapsAndData/WeeklyComparison.aspx

5.2.4 Earthquake

Planning Significance – High

5.2.4.1 Nature

An earthquake is a sudden motion or trembling caused by a release of strain accumulated within or along the edge of the earth's tectonic plates. The effects of an earthquake can be felt far beyond the site of its occurrence. Earthquakes usually occur without warning and, after just a few seconds, can cause massive damage and extensive casualties. The most common effect of earthquakes is ground motion, or the vibration or shaking of the ground during an earthquake.

The severity of ground motion generally increases with the amount of energy released and decreases with distance from the fault or epicenter of the earthquake. Ground motion causes waves in the earth's interior, also known as seismic waves, and along the earth's surface, known as surface waves. There are two kinds of seismic waves. P (primary) waves are longitudinal or compressional waves similar in character to sound waves that cause back-and-forth oscillation along the direction of travel (vertical motion). S (secondary) waves, also known as shear waves, are slower than P waves and cause structures to vibrate from side to side (horizontal motion). There are also two kinds of surface waves: Raleigh waves and Love waves. These waves travel more slowly and typically are significantly less damaging than seismic waves.

In addition to ground motion, several secondary hazards can occur from earthquakes, such as surface faulting. Surface faulting is the differential movement of two sides of a fault at the earth's surface. Displacement along faults, both in terms of length and width, varies but can be significant (e.g., up to 20 feet), as can the length of the surface rupture (e.g., up to 200 miles). Surface faulting can cause severe damage to linear structures including railways, highways, pipelines, and tunnels.

Earthquake-related ground failure due to liquefaction is another secondary hazard. Liquefaction occurs when seismic waves pass through saturated granular soil, distorting its granular structure and causing some of the empty spaces between granules to collapse. Porewater pressure may also increase sufficiently to cause the soil to behave like a fluid for a brief period and cause deformations. Liquefaction causes lateral spreads (horizontal movements of commonly 10 to 15 feet, but up to 100 feet), flow failures (massive flows of soil, typically hundreds of feet, but up to 12 miles), and loss of bearing strength (soil deformations causing structures to settle or tip). Liquefaction cause severe damage to property.

The effects of earthquake waves at the surface can be measured using the Modified Mercalli Intensity (MMI) Scale, which consists of arbitrary rankings based on observed effects, or the Richter Magnitude Scale, a mathematical basis that expresses the effects of an event in magnitude (M).

5.2.4.2 History

Nevada is ranked third in the states having the highest number of large earthquakes. The Sierra Nevada-Great Basin seismic belt includes earthquakes along the eastern side of the Sierra Nevada and appears to be a northern continuation of the Eastern California seismic belt. The

Central Nevada seismic belt, shown on the map below, which trends north-south in the westcentral part of the state, includes the largest historic earthquakes in Nevada in the 20th century. the County sits within both belts.

The figure below provides the historical earthquakes in the County.

Figure 5-	2
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Large Historic Earthquakes in Storey County					
Date	Magnitude	Near			
March 15, 1860	7.0	Olinghouse fault			
May 29, 1868	6.0	Virginia City.			
December 26, 1869	6.7	Virginia City & Washoe Co.			
December 27, 1869	6.1	After shock			
April 24, 1914	6.4	Fernley or Wadsworth			
June 25m 1933	6.0	Near Wabuska			
February 1953	7.2	Stillwater (outside of County)			

Source: NBMG 2010

5.2.4.3 Location, Extent, and Probability of Future Events

The location of damage from an earthquake would have the greatest impact in Virginia City with the highest population density and historical structures many of which are unreinforced masonry. The figure below provides a map of the major faults in the County. The map in Appendix B, Figure B-6 shows greater detail of the fault lines in the County.



Figure 5-3: Major Faults Storey County

Source: NBMG 2010 http://www.nbmg.unr.edu/Pubs/m/m167/m167.pdf

Figure 5-4 Comstock Fault



The Nevada Earthquake Safety Council, in part through the services of the Nevada Bureau of Mines and Geology (NGMG) and the Nevada Seismological laboratory, provides assistance of Earthquake risk assessment and earthquake mitigation activities for the State of Nevada. The Hazard Mitigation Steering Committee will utilize the Nevada Earthquake Risk Mitigation Plan (NERMP) for consideration in identifying Storey County Policy and mitigation Strategies.

The Executive Summary of the NERMP states that Nevada is earthquake country, ranking third in the nation in the number of major earthquakes. Since the 1850s, 62 earthquakes have occurred in Nevada that have had potentially destructive magnitudes of 5.5 (Richter Scale) or greater. Nevada is a national leader in population growth, and the risk of harm and loss from earthquakes increases proportionally with population and development. We can expect earthquakes to continue to occur in Nevada and some of these will strike our growing urban centers and communities.

"The occurrence rates of major historical earthquakes in western Nevada produced 1 ½ to 7 times higher probabilities of having a major earthquake than estimates based on instrumental seismicity and geological data sets." NBMG Open-File Report 03-3, Nevada Bureau of Mines and Geology, 2009. The extent & probability for the entire County is shown in the figure below was provided by the Nevada Bureau of Mines & Geology and is the probability of earthquakes of various magnitudes occurring within 50 years within 50 kilometers.

Table 5-0: Eartiquake Probability						
6 of Probability of magnitude greater than				an	Rank by	
County	5.0	5.5	6.0	6.5	7.0	Probability
Virginia City	>90	~80	70	50	12-15	3rd highest in the state of NV

 Table 5-6: Earthquake Probability

Source: Bureau of Mines & Geology, UNR, Estimated Losses from Earthquakes Near NV Communities, 2009

5.2.5 Epidemic

Planning Significance - Low

5.2.5.1 Nature

A disease is a pathological (unhealthy or ill) condition of a living organism or part of the organism that is characterized by an identifiable group of symptoms or signs. Disease can affect any living organism, including people, animals, and plants. Disease can both directly (via infection) and indirectly (via secondary impacts) harm these living things. Some infections can cause disease in both people and animals. The major concern here is an epidemic, a disease that affects an unexpected number of people or sentinel animals at one time. (Note: an epidemic can result from even one case of illness if that illness is unheard of in the affected population, i.e., smallpox)

Of great concern for human health are infectious diseases caused by the entry and growth of microorganisms in man. Most, but not all, infectious diseases are communicable. They can be spread by coming into direct contact with someone infected with the disease, someone in a carrier state who is not sick at the time, or another living organism that carries the pathogen. Disease-producing organisms can also be spread by indirect contact with something a contagious person or other carrier has touched and contaminated, like a tissue or doorknob, or another medium (e.g., water, air, food).

According to the Centers for Disease Control and Prevention (CDC), during the first half of the twentieth century, optimism grew as steady progress was made against infectious diseases in humans via improved water quality and sanitation, antibiotics, and inoculations (October 1998). The incidences and severity of infectious diseases such as tuberculosis, typhoid fever, smallpox, polio, whooping cough, and diphtheria were all significantly reduced during this period. This optimism proved premature, however, for a variety of reasons, including the following: antibiotics began to lose their effectiveness against infectious disease (e.g., Staphylococcus aureus); new strains of influenza emerged in China and spread rapidly around the globe; sexually transmitted diseases resurged; new diseases were identified in the U.S. and elsewhere (e.g., Legionnaires's disease, Lyme disease, toxic shock syndrome, and Ebola hemorrhagic fever); acquired immunodeficiency syndrome (AIDS) appeared; and tuberculosis (including multidrug-resistant strains) reemerged (CDC, October 1998).

In a 1992 report titled *Emerging Infections: Microbial Threats to Health in the United States*, the Institute of Medicine (IOM) identified the growing links between U.S. and international health, and concluded that emerging infections are a major and growing threat to U.S. health. An emerging infectious disease is one that has newly appeared in a population or that has been known for some time, but is rapidly increasing in incidence or geographical range. Emerging infectious diseases are a product of modern demographic and environmental conditions, such as global travel, globalization and centralized processing of the food supply, population growth and increased urbanization.

In response to the threat of emerging infectious diseases, the CDC launched a national effort to protect the US public in a plan titled *Addressing Emerging Infectious Disease Threats*. Based on the CDC's plan, major improvements to the US health system have been implemented, including

improvements in surveillance, applied research, public health infrastructure, and prevention of emerging infectious diseases (CDC, October 1998).

Despite these improvements, infectious diseases are the leading cause of death in humans worldwide and the third leading cause of death in humans in the U.S. (American Society for Microbiology, June 21, 1999). A recent follow-up report from the Institute of Medicine, titled *Microbial Threats to Health: Emergence, Detection, and Response*, notes that the impact of infectious diseases on the U.S. has only grown in the last ten years and that public health and medical communities remain inadequately prepared. Further improvements are necessary to prevent, detect, and control emerging, as well as resurging, microbial threats to health. The dangers posed by infectious diseases are compounded by other important trends: the continuing increase in antimicrobial resistance; the diminished capacity of the U.S. to recognize and respond to microbial threats; and the intentional use of biological agents to do harm (Institute of Medicine, 2003).

The CDC has established a national list of over 50 nationally reportable diseases. A reportable disease is one that, by law, must be reported by health providers to report to federal, state or local public health officials. Reportable diseases are those of public interest by reason of their communicability, severity, or frequency. The long list includes such diseases as the following: AIDS; anthrax; botulism; cholera; diphtheria; encephalitis; gonorrhea; Hantavirus pulmonary syndrome; hepatitis (A, B, C); HIV (pediatric); Legionellosis; Lyme disease; malaria; measles; mumps; plague; polio (paralytic); rabies (animal and human); Rocky Mountain spotted fever; rubella (also congenital); Salmonellosis; SARS; Streptococcal disease (Group A); Streptococcal toxic-shock syndrome; Trichinosis, tuberculosis, Typhoid fever; and Yellow fever (Centers for Disease Control and Prevention, May 2, 2003).

Many other hazards, such as floods, earthquakes or droughts, may create conditions that significantly increase the frequency and severity of diseases. These hazards can affect basic services (e.g., water supply and quality, wastewater disposal, electricity), the availability and quality of food, and the public and agricultural health system capacities. As a result, concentrated areas of diseases may result and, if not mitigated right away, increase, potentially leading to large losses of life and damage to the economic value of the area's goods and services.

5.2.5.2 History

The influenza pandemic of 1918 and 1919, known as the Spanish Flu, had the highest mortality rate in recent history for an infectious disease. More than 20 million persons were killed worldwide, some 500,000 of which were in the U.S. alone (Centers for Disease Control and Prevention, October 1998). More recent incidences of major infectious diseases affecting people in the U.S. include the following:

• **H1N1,** an influenza strain that was first recognized in Mexico and entered the US in Southern California in April 2009. H1N1 was recognized as a world wide pandemic by the World Health Organization in May 2009. The CDC graph below illustrates the number of office visits due to the flu and demonstrates how easily the US medical system can be overwhelmed by a pandemic.



Figure 5-5: Percentage of Visits for Influenza-like Illness (ILI)

*There was no week 53 during the 2006-07 or 2007-08 influenza seasons, therefore the week 53 data point for those seasons is an average of weeks 52 and 1.

Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), National Summary 2008-2009 and Previous Two Seasons (Posted October 16, 2009, 7:30 PM ET, for Week Ending October 10, 2009)

H1N1 varies from other influenzas in that it doesn't seem to affect populations born after 1950 due to that group's immunity to a similar strain. The CDC has taken an aggressive approach to this highly contagious strain and is in the process of inoculating the US public through vaccinations. Although H1N1 has a less than 1% mortality rate due to the high contagion rate this could lead to a significantly higher than normal number of deaths for the 2009-2010 flu season. (Centers for Disease Control and Prevention, October 2009)

- West Nile Virus (WNV), a seasonal infection transmitted by mosquitoes, caused an epidemic which grew from an initial U.S. outbreak of 62 disease cases in 1999 to 4,156 reported cases, including 284 deaths, in 2002. However due to communities' aggressive approach to mosquito control the number of cases dropped to 1356 with 44 deaths in 2008 (Centers for Disease Control and Prevention, October 2009).
- Severe acute respiratory syndrome (SARS), which is estimated to have killed 774 and infected 8,098 worldwide. In the U.S., there were 175 suspect cases and 8 confirmed cases all who traveled to other parts of the world, although no reported deaths (Centers for Disease Control and Prevention, October 2009).
- Norovirus CDC estimates that 23 million cases of acute gastroenteritis are due to norovirus infection, and it is now thought that at least 50% of all food borne outbreaks of gastroenteritis can be attributed to noroviruses (Centers for Disease Control and Prevention, October 2009).

• Escherichia coli (abbreviated as *E. coli*) are a large and diverse group of bacteria. Although most strains of *E. coli* are harmless, others can make you sick. Some kinds of *E. coli* can cause diarrhea, while others cause urinary tract infections, respiratory illness and pneumonia, and other illnesses. Experts think that there may be about 70,000 infections with *E. coli* O157 each year in the United States. (Centers for Disease Control and Prevention, October 2009).

Figure 5-6: States Where Persons Infected with the Outbreak Strain of E. coli O157:H7, Live United States, by State March 1, 2009 to June 22, 2009



Centers for Disease Control; http://www.cdc.gov/ecoli/

Table 5-7: Historic	Occurrences of	of Epidemics	Registered	in Nevada
			0	

Date	Details
February 1992	Cholera outbreak confirmed. At least 26 passengers from Aerolineas Argentinas Flight 386 that brought a cholera outbreak to Los Angeles traveled on to Las Vegas, where 10 showed symptoms of the disease. Cholera or cholera-like symptoms developed in 67 passengers of Flight 386.
Spring 2000	Five cases of the measles confirmed. Outbreak identified and confirmed, Clark County Health District (CCHD) Office of Epidemiology (OOE) worked with the Immunization Clinic and the media to alert the community about the prevention of the spread of the disease.
October 2004	Norovirus confirmed at a major public accommodation facility on the Strip. Details regarding the spread of this disease and the exact number affected are still under investigation and pending at time of print of this plan.
April 2009	H1N1 virus confirmed by the WHO as a worldwide epidemic. The CDC conducted a vaccination program to contain this virus.

5.2.5.3 Extent and Probability of Future Events

The probability and magnitude of disease occurrence, particularly an epidemic, is difficult to evaluate due to the wide variation in disease characteristics, such as rate of spread, morbidity and mortality, detection and response time, and the availability of vaccines and other forms of prevention. A review of the historical record (see above) indicates that disease related disasters do occur in humans with some regularity and varying degrees of severity. There is growing concern, however, about emerging infectious diseases as well as the possibility of a bioterrorism attack.

Epidemics constitute a significant risk to the population of Nevada, particularly as it relates to the frequency in which the Storey County population interacts with visitors to Virginia City and the proximity of Las Vegas and Reno's tourist population. Of highest concern is in the Reno area, in various entertainment venues, and Reno/Tahoe International Airport. The transient nature of the Washoe County population, coupled with dense population gatherings increase the potential for an epidemic as well as for its spread into neighboring counties such as Storey. However the planning committee considers the probability to be low considering the counties small population and remote location.

5.2.5.4 Location

An epidemic in the County would affect a regional response requiring coordination among Walker River Tribal Health Clinic, Hawthorne Army Depot, neighboring counties, state and federal agencies. Segments of the population at highest risk for contracting an illness from a foreign pathogen are the very young, the elderly, or individuals who currently experience respiratory or immune deficiencies. These segments of the population are present within the County.

5.2.5.5 Warning Time

Due to the wide variation in disease characteristics, the warning time for a disease disaster can vary from no time to months, depending upon the nature of the disease. No warning time may be available due to an extremely contagious disease with a short incubation period, particularly if combined with a terrorist attack in a crowded environment. However, there are agencies in place that have capabilities to prevent, detect, and respond to these types of diseases, such as the Centers for Disease Control (CDC), and the Nevada State Health Division (NSHD). This provides a positive, balancing influence to the overall outcome of a disease disaster event.

5.2.6 Flood

Planning Significance – Moderate

5.2.6.1 Nature

Flooding as defined by the National Flood Insurance Program is "A general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties from:

- Overflow of inland or tidal waters;
- Unusual and rapid accumulation or runoff of surface waters from any source;
- Mudflow, (a river of liquid and flowing mud on the surfaces of normally dry land areas, as when earth is carried by a current of water, or
- Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above.

Floodplains are lowlands adjacent to water bodies that are subject to recurring floods. Floods are natural events that are considered hazards only when people and property are affected.

Nationwide, floods result in more deaths than any other natural hazard. Physical damage from floods includes the following:

- Inundation of structures, causing water damage to structural elements and contents.
- Erosion or scouring of stream banks, roadway embankments, foundations, footings for bridge piers, and other features.
- Impact damage to structures, roads, bridges, culverts, and other features from high-velocity flow and from debris carried by floodwaters. Such debris may also accumulate on bridge piers and in culverts, increasing loads on these features or causing overtopping or backwater effects.
- Destruction of crops, erosion of topsoil, and deposition of debris and sediment on croplands.
- Release of sewage and hazardous or toxic materials as wastewater treatment plants are inundated, storage tanks are damaged, and pipelines are severed.

Floods also cause economic losses through closure of businesses and government facilities; disrupt communications; disrupt the provision of utilities such as water and sewer service; result in excessive expenditures for emergency response; and generally disrupt the normal function of a community.

In Storey, flooding is most commonly associated with unusually heavy rainfall in the State of Nevada and can be influenced by both frontal systems out of the Northern Pacific Ocean and tropical storms coming from the South. Due to the aridity of the County, the area is dry except during and shortly after these storms. When a major storm develops, water collects rapidly in a short period of time. As a consequence, flows are of the flash-flood type. Flash floods are

generally understood to involve a rapid rise in water level, high velocity, and large amounts of debris, which can lead to significant damage that includes the uprooting of trees, undermining of buildings and bridges, and scouring of new channels. The intensity of flash flooding is a function of the intensity and duration of rainfall, steepness of the watershed, stream gradients, watershed vegetation, natural and artificial flood storage areas, and configuration of the streambed and floodplain.

In areas where alluvial fans are present, the flow paths of flash floods lack definition. Flow depths with alluvial fan flooding are generally shallow with damage resulting from inundation, variable flow paths, localized scour, and the deposition of debris.

Canal and Dam Failures

Dam or canal failures involve unintended releases or surges of impounded water resulting in downstream flooding. The high-velocity, debris-laden wall of water released from dam failures results in the potential for human casualties, economic loss, lifeline disruption, and environmental damage. Failures may involve either the total collapse of a dam, or other hazardous situations such as damaged spillways, overtopping from prolonged rainfall, or unintended consequences from normal operations. Severe storms with unusually high amounts of rainfall within a drainage basin, earthquakes, or landslides may cause or increase the severity of the failure.

Factors causing failure may include natural or human-caused events, or a combination of both. Dam failures usually occur when the spillway capacity is inadequate and water overtops the dam. Piping, when internal erosion through the dam foundation occurs, is another factor in a dam failure. Structural deficiencies from poor initial design or construction, lack of maintenance or repair, or gradual weakening from aging are factors that contribute to this hazard.

5.2.6.2 History

Flooding has occurred from November through March as a result of rain on frozen ground or on snow. According to the 1993 FEMA Flood Insurance Study, severe flooding along the Truckee River occurred during the following years: January 1874; January 1875; January 1886; April-May 1890; February 1904; and February 1963. Most recently, the County received a Presidential Declaration for severe storms and flooding along the Truckee River for the incident period of December 31, 2005 to January 4, 2006.

Historical flash flooding are shown below.

Date	Location	Description
3/10/1995	Rainbow Bend subdivision and Six Mile Canyon	A flash flood down Long Valley Creek in Storey County flooded the Rainbow Bend subdivision and washed out three bridges over the creek. The water main to the subdivision was also washed out. The subdivision was evacuated. Also, Six Mile Canyon, between Virginia City and US Highway 50 was closed due to flash flooding.
2/3/1996	Lockwood area	Lockwood in northern Storey County hardest hit; two bridges were washed out, stranding several people in their homes.
6/29/2000	Geiger Grade	Storey County Sheriff reported boulders washed onto Geiger

Table 5-8: Historical Flash Floods

Hazard Analysis

		Grade (State Route 341) and lots of hail.
8/2/2002	Virginia City Highlands	Heavy downpours caused flash flooding in the Virginia City Highlands. In 20 minutes, 1.23 inches of rain fell, washing out roads and delaying the transport of fire equipment.
8/14/2004	Patrick area	Heavy rainfall left 6 inches of water covering part of I-80 3 miles east-northeast of Patrick. The Tracy Clark exit was impassable.
7/19/2006	Between Lockwood and Patrick	Heavy rainfall caused flash flooding along I-80 between Lockwood and Patrick. Minor mudslides left 4 to 5 inches of debris on roads in the area.

Dam & Canal Failure

There have been no Federal declarations for Storey County as a result of dam, ditch, or retention basin failure. However, there have been Federal declarations in adjacent Washoe County due to flooding events associated with the Truckee River Irrigation Ditch which flows approximately 25 miles through Storey County.

5.2.6.3 Location, Extent, and Probability of Future Events

Floods are described in terms of their extent (including the horizontal area affected and the vertical depth of floodwaters) and the related probability of occurrence. Flood studies often use historical records, such as stream flow gages, to determine the probability of occurrence for floods of different magnitudes. The probability of occurrence is expressed as a percentage for the chance of a flood of a specific extent occurring in any given year.

Factors contributing to the frequency and severity of flooding include the following:

- Rainfall intensity and duration
- Antecedent moisture conditions
- Watershed conditions, including steepness of terrain, soil types, amount and type of vegetation, and density of development
- The existence of attenuating features in the watershed, including natural features such as swamps and lakes and human-built features such as dams
- The existence of flood control features, such as levees and flood control channels
- Velocity of flow
- Availability of sediment for transport, and the erodibility of the bed and banks of the watercourse

These factors are evaluated using (1) a hydrologic analysis to determine the probability that a discharge of a certain size will occur, and (2) a hydraulic analysis to determine the characteristics and depth of the flood that results from that discharge.

The magnitude of flood used as the standard for floodplain management in the United States is a flood having a 1 percent probability of occurrence in any given year. This flood is also known as the 100-year flood or base flood. The most readily available source of information regarding the 100-year flood is the system of Flood Insurance Rate Maps (FIRMs) prepared by FEMA. These

maps are used to support the National Flood Insurance Program (NFIP). The FIRMs show 100year floodplain boundaries for identified flood hazards. These areas are also referred to as Special Flood Hazard Areas (SFHAs) and are the basis for flood insurance and floodplain management requirements. The FIRMs also show floodplain boundaries for the 500-year flood, which is the flood having a 0.2 percent chance of occurrence in any given year. FEMA has prepared a FIRM for Storey County, dated 2009. The 100-year floodplain was used the flood map, see Appendix B and which uses the 100-year flood as a basis and provides the areas susceptible to flood.

As shown in Appendix B, the principal source of flooding in Storey County is the Truckee River. The Truckee River is located along the northern border between Storey and Washoe Counties. Although the Truckee River generates a damaging flood roughly every ten years, the damage is usually in Washoe County. However, on those occasions when the damage flows into Storey County, residential and business structures near Lockwood are affected. The River runs through Storey County approximately 25 miles. The Largomarasino Canyon Creek is also a source of flooding during heavy rain fall. The FIS recommends that development in this area should be regulated. In 1997 and 2005 Storey County has had a Federal declaration for flooding occurring in this area. In the southern portion of the County flooding is mapped in the Six Mile Canyon area.

Flash Flood

Flash floods have generally occurred along the Truckee River, affecting the communities of Lockwood and Patrick, causing minor mudslides and leaving 4 to 5 inches of debris on roads in the area as well as washing out several bridges over the years. In the southern portion of the County, flash floods have occurred down Long Valley Creek affecting the Rainbow Bend subdivision/Six-Mile Canyon area, washing out bridges and the water main for the subdivision, which required that the subdivision be evacuated. Flash floods have occurred in the Geiger Grade (the main road into Virginia City) where boulders were washed onto the road, and in the Virginia City Highlands area where in 20 minutes, 1.23 inches of rain fell, washing out roads and delaying the transport of fire equipment. Based on previous occurrences, Storey County can expect to experience a damaging flash flood every two years.

Dam Failure

The Nevada Division of Water Resources lists 5 dams in Storey County. Of these dams, 1 is considered "high hazard," 1 is considered "significant hazard," and 3 are considered "low hazard." A high-hazard designation is assigned to a dam if there is reasonable potential for loss of life and/or excessive economic loss. A significant designation is given when there is no reasonable potential for loss of life, but there is potential for appreciable economic loss. Lastly, a low-hazard designation is assigned when there is no reasonable potential for loss of life and the economic loss is minor. The ratings provided by the Nevada Division of Water Resources do not reflect the safety or condition of the dam; the ratings are determined at the time the dam design plans are reviewed. The hazard rating may be altered when downstream conditions change.

The high-hazard dam is privately owned and not considered to pose a significant threat to life or property and is owned by the Tahoe Reno Industrial Center located approximately 7 miles east of the Reno-Sparks area on 1-80.

5.2.7 Hazardous Materials Events

Planning Significance - Low

5.2.7.1 Nature

Hazardous materials may include hundreds of substances that pose a significant risk to humans. These substances may be highly toxic, reactive, corrosive, flammable, radioactive, or infectious. Hazard materials are regulated by numerous Federal, State, and local agencies including the U.S. Environmental Protection Agency (EPA), U.S. Department of Transportation (DOT), National Fire Protection Association, FEMA, U.S. Army, and International Maritime Organization.

Hazardous material releases may occur from any of the following:

- Fixed site facilities (such as refineries, chemical plants, storage facilities, manufacturing, warehouses, wastewater treatment plants, swimming pools, dry cleaners, automotive sales/repair, and gas stations)
- Highway and rail transportation (such as tanker trucks, chemical trucks, and railroad tankers)
- Air transportation (such as cargo packages)
- Pipeline transportation (liquid petroleum, natural gas, and other chemicals)

Unless exempted, facilities that use, manufacture, or store hazardous materials in the United States fall under the regulatory requirements of the Emergency Planning and Community Right to Know Act (EPCRA) of 1986, enacted as Title III of the Federal Superfund Amendments and Reauthorization Act (42 USC 11001–11050; 1988). Under EPCRA regulations, hazardous materials that pose the greatest risk for causing catastrophic emergencies are identified as Extremely Hazardous Substances (EHSs). These chemicals are identified by the EPA in the *List of Lists – Consolidated List of Chemicals Subject to the Emergency Planning and Community Right-to-Know Act (EPCRA) and Section 112 of the Clean Air Act*. Releases of EHSs can occur during transport to and from fixed site facilities. Transportation-related releases are generally more troublesome because they may occur anywhere, including close to human populations, critical facilities, or sensitive environmental areas. Transportation-related EHS releases are also more difficult to mitigate due to the variability of locations and distance from response resources.

In addition to accidental human-caused hazardous material events, natural hazards may cause the release of hazardous materials and complicate response activities. The impact of earthquakes on fixed facilities may be particularly serious due to the impairment or failure of the physical integrity of containment facilities. The threat of any hazardous material event may be magnified due to restricted access, reduced fire suppression and spill containment, and even complete cut-off of response personnel and equipment. In addition, the risk of terrorism involving hazardous materials is considered a major threat due to the location of hazardous material facilities and transport routes throughout communities and the frequently limited antiterrorism security at these facilities.

On behalf of several Federal agencies including the EPA and the DOT, the National Response Center (NRC) serves as the point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment within the United States.

5.2.7.2 History

During the past 10 years (July 1999 to July 2009), the following events in Storey County have been reported to the National Response Center.

- Two storage tank spills
- Two fixed facilities
- Two mobile releases
- Two pipeline releases
- Three railroad non-releases

The Nevada Division of Environmental Protection report-shows the following large oil and chemical spills have occurred within Storey County from July 2009 to December 2013.

Location	Date	Substance	Description
TRI	6/22/2011	Hydrochloric Acid	100 Gallons from chemical hose with leak.
TRI	1/23/2013	Pre- Treatment Water	30,000 gallons was released from a building products manufacturer to storm drains and soil from break in pipe fitting.
Virginia City	8/1/2013	Cyanide Solution	29 cubic yards released to soil of combination of ore and process solution from the heap leach pad due to oversaturation. Mining
Virginia city	10/21/2013	Cyanide Solution	8 cubic yards leached into soil from overtopping. Mining
TRI	8/31/14	Muriatic Acid	200 gallon spill at plant.
Source: NV Division of Fr	vironmental Protection		

Table 5-9: Hazardous Material Release in County

5.2.7.3 Location, Extent, and Probability of Future Events

In Storey County, a hazardous materials event is most likely to occur along the major transportation corridors, including State Route 341, the Geiger Grade, I-80, and railroad tracks. Trucks and rail cars that use these transportation corridors and railroad tracks commonly carry a variety of hazardous materials, including gasoline and other petroleum products, along with other chemicals known to cause human health problems. A growing concern for the possibility of hazardous material releases is from any number of businesses located at the Tahoe-Reno Industrial Development (TRI) in McCarran just south of I-80. In the early stages of construction a fire station was built and is currently operational at the TRI complex. The Virginia City area has seen a rebirth in mining activity which makes the area at risk to mining hazardous materials releases.

Comprehensive information on the probability and magnitude of a hazardous material event along the transportation corridors is not available. Wide variations among the characteristics of hazardous material sources and among the materials themselves make such an evaluation difficult. Only one of the two mobile releases and three railroad releases over the past 10 years involved a hazardous material. As such, based on previous experience, Storey County is susceptible to a mobile hazardous material event every 10 years.

5.2.8 Severe Weather

Planning Significance - Moderate

5.2.8.1 Nature

While a considerable percentage of days in the region are characterized by tranquil weather -a number of high-impact severe weather types can occur. Low-frequency weather hazards can be particularly problematic from a preparedness standpoint due to complacency and people's lack of experience with the phenomenon.

The following starts with impacts from summer thunderstorms, transitioning into snow and wind from winter storms. Storey County faces additional weather hazards (e.g. dust storms, rare weak tornadoes) but the following are the most prominent with the highest economic and societal tolls.

Thunderstorms - Hail

<u>Nature:</u> Hail forms on condensation nuclei such as dust or ice crystals, when supercooled water freezes on contact. In clouds containing large numbers of supercooled water droplets, these ice nuclei grow quickly at the expense of the liquid droplets. The hail grows increasingly larger. Once a hailstone becomes too heavy to be supported by the storm's updraft it falls out of the cloud. Hail is most common in mid-latitudes during spring and early summer where surface temperatures are warm enough to promote the instability associated with strong thunderstorms, but the upper atmosphere is still cool enough to support ice. Hailstones are usually from the size of a pea to the size of a golf ball. The <u>National Weather Service in Reno</u> issues Severe Thunderstorm Warnings for thunderstorms capable of producing high winds (above 58 mph) and/or large hail (above 1 inch diameter).

<u>History:</u> Large hail is relatively rare in Nevada. The NOAA National Climatic Data Center (NCDC) has records of 1 large hail event in Storey County since 2000. This one event recorded "slushy" hail up to baseball size, 2.75 inch diameter, in June of 2005. There have not been any deaths or injuries associated with this recorded hail event or any reportable damages. It should be noted that often thunderstorms are the most common over high terrain and other remote areas of Nevada - leading to minimal actual reports of severe weather.

Location, Extent, and Probability of Future Events: Storey County is susceptible to hail events although it is infrequent. The single report noted above is an extreme event, and Storey County is more likely to see hail size on the order of ½ to 1 inch in diameter which typically results in minimal damage. Based on previous occurrences in nearby counties, Storey County can expect a large hail event to occur on the order of every 2 to 4 years.

Thunderstorms - High Winds & Lightning

<u>Nature:</u> Thunderstorms are formed from a combination of moisture, rapidly rising warm air, and a force capable of lifting air, such as warm and cold fronts or a mountain. Thunderstorms may occur alone, in clusters, or in lines. As a result, it is possible for several thunderstorms to affect one location in the course of a few hours. A thunderstorm can produce lightning, thunder, and torrential rainfall and may also lead to the formation of tornados, hail, downbursts, and

microbursts of wind. Focusing on the wind threat from thunderstorms - downbursts are strong, straight-line winds created by falling rain and sinking rain that may reach speeds of 125 mph. Microbursts are more concentrated than downbursts, with speeds reaching up to 150 mph. Both downbursts and microbursts typically last 5 to 7 minutes. The <u>National Weather Service in Reno</u> issues Severe Thunderstorm Warnings for thunderstorms capable of producing high winds (above 58 mph) and/or large hail (above 1 inch diameter).

<u>History:</u> Strong winds from thunderstorms are fairly common in Nevada, producing wind gusts above 40 mph, with gusts above 60 mph possible. With that being said there are no thunderstorm high wind or lightning damage reports in Storey County since 2000 in the NCDC database. Lightning is a common factor in new wildfire starts in Nevada, though no specific information is available for Storey County. As noted before, often thunderstorms are the most common over high terrain and other remote areas of Nevada - leading to minimal actual reports of severe weather and lightning.

Location, Extent, and Probability of Future Events: Thunderstorms in Storey County tend to favor the high terrain, including the Virginia Range. Thunderstorm activity which would produce high winds and/or significant lightning generally occurs from June through August. During this timeframe it is not unusual to experience thunderstorm activity on a daily basis for up to a week at a time. In an average year 2-4 severe thunderstorm warnings for high winds are issued for portions of Storey County. Severe thunderstorm warnings are not issued solely for significant amounts of lightning, though the National Weather Service will issue Red Flag Warnings for fire partners when widespread dry thunderstorms are expected. A map is attached showing areas of lightening activity within the County in Appendix B.

Thunderstorms – Flash Floods

<u>Nature:</u> Floods are rare but extremely high impact in the Sierra Nevada and Great Basin regions. Localized flash floods can occur in the summer, the result of intense thunderstorms producing copious rainfall in short periods of time. Moisture from the Southwest U.S. Monsoon can enhance the risk of flash flooding. These floods normally last on the order of an hour or two but can still result in major impacts and damage. The <u>National Weather Service in Reno</u> issues Flash Flood Warnings when flash flooding is likely based on radar estimates of rainfall or has been reported from law enforcement or a spotter.

<u>History:</u> Fortunately flash flooding events in Storey County are rare, but when they do happen they create a high impact. Since 2000 there have been 5 instances of flash flooding in the summer. Most have taken place in August. The most recent event occurred in August 2010 where thunderstorms producing heavy rainfall resulted in a mudslide that derailed the V&T train near Gold Hill.

Location, Extent, and Probability of Future Events: Based on past frequencies, flash flooding from thunderstorms in the summer can occur about every 1-2 years. Narrow canyons and low lying areas along roads are the most prone to flash flooding. Recently burned areas are especially prone to flash flooding and debris flows – which can result in significant damage to property.

Winter Storms – Heavy Snow

It is important to note that county-level storm data are not available for this phenomenon, therefore this analysis uses NWS forecast zone data. Forecast zones are geographic areas of

similar weather features NWS groups together to produce forecasts. Storey County is within the zone that covers the immediate lee of the Sierra or "Sierra Front". For reference, a map of that zone is provided at the end of the severe weather section.

<u>Nature:</u> Winter snow storms are often large areas of low pressure originating from the Gulf of Alaska and then moving into the western United States. As the moist air masses push across the Sierra Nevada and other Great Basin mountains, the air masses cool and the water condenses as snow. Wind in combination with the snow can cause reduced visibilities and deep snowdrifts. In addition, heavy snow can cause avalanches in areas along steep terrain. In some instances, freezing rain occurs, when very cold inland arctic air becomes trapped under warm moist air. The <u>National Weather Service in Reno</u> issues winter storm watches/warnings/advisories for heavy snow, and provides briefings to Emergency Managers when winter storms are forecast.

<u>History:</u> Since 2000 there have been 33 days where heavy snow has impacted the Sierra Front zone, which includes Storey County. On these days, snow amounts of greater than 6-12 inches occurred, along with other winter storm hazards such as high winds, low visibility, and cold temperatures. Localized lake effect snows downwind of Pyramid Lake can produce heavy snow in eastern parts of Storey County including Interstate 80 roughly every 1 to 2 years. FEMA Federal Disaster Declarations have been issued in the wake of several widespread winter storm events impacting Storey County, including February 2005 and January 2008.

Location, Extent, and Probability of Future Events: It is not uncommon for Storey County to experience snow with accumulations of 1-3 inches per winter storm, which can cause travel inconveniences but little in the way of long lasting impacts. Storms like this normally happen 3-6 times each winter season, especially above 6000 feet elevation. Larger storms, producing 6 inches or more, happen on average 2-3 times each winter season above 6000 feet; less frequently below that elevation. Snowfall of this magnitude can impact critical transportation corridors including Interstate 80 near the Tahoe-Reno Industrial Park and State Highway 341 leading to Virginia City. Every few years, particularly strong storms can produce high winds along with heavy snow creating life threatening blizzard conditions. Virginia City has an elevation of 6,200 feet; Gold Hill has an elevation of 5,843 feet; and Virginia City Highlands has an elevation of 5,990 feet. Probability is 1% per day or 3 days each year.

Winter Storms - High Winds

It is important to note that county-level storm data are not available for this phenomenon, therefore this analysis uses NWS forecast zone data. Forecast zones are geographic areas of similar weather features NWS groups together to produce forecasts. Storey County is within the zone that covers the immediate lee of the Sierra or "Sierra Front". For reference, a map of that zone is provided at the end of the severe weather section.

<u>Nature:</u> The same winter storms described previously also produce periods of widespread high winds in the Sierra Nevada and Great Basin. These winds of 40-60 mph typically precede the snow portion of a winter storm by a day or so – and are the most common from late fall through spring. Strong winds are the direct result of large differences in atmospheric pressure from the storm itself and the surrounding environment. Winds can be further enhanced in localized areas in the immediate lee of mountain ranges in what is called a downslope wind storm. Virginia City is located in such a place. Wind gusts in these situations can exceed 80 mph, reaching nearly 100 mph in the most extreme "once-in-a-decade" events. The <u>National Weather Service in Reno</u>

issues high wind watches/warnings/advisories, and provides briefings to Emergency Managers when high winds threaten.

<u>History:</u> Since 2000 there have been 59 days where high winds have impacted the Sierra Front zone, which includes Storey County. 15 of these days had winds above 70 mph. These wind events have been associated with damage to buildings, knocking over trees and power lines, and overturning large vehicles.

Location, Extent, and Probability of Future Events: High wind events with gusts above 60 mph are not uncommon in Storey County, especially along ridge tops above 6000 feet and in the vicinity of Virginia City. In the strongest storms winds are likely to gust above 80 mph, which can produce wind damage to structures and power infrastructure. Strong winds can also channel through the Truckee River drainage and impact eastern regions of the county around the Tahoe-Reno Industrial Park. Probability of a high wind day is 2% per day in each given year or 4 wind days per year on average.

5.2.9 Terrorism

Planning Significance – Low

5.2.9.1 Nature

The Department of Justice (DOJ) Federal Bureau of Investigation (FBI) defines terrorism as the unlawful use of force or violence against persons or property to intimidate or coerce a government and/or the civilian population in furtherance of political or social objectives. Weapons of Mass Destruction (WMD) associated with terrorism are defined as nuclear, biological and chemical in origin. Technological terrorism is defined as the intentional disruption in the nation's data control systems. Attacks on financial, business, and governmental computer networks are being considered as technological terrorist-related acts.

The FBI is the primary investigatory agency for domestic terrorism. The Central Intelligence Agency (CIA) monitors potential security threats from foreign sources. The DOJ through the FBI will coordinate the domestic preparedness programs and activities of this nation to address the threat posed by terrorists and the use of weapons of mass destruction.

Acts of terrorism may originate from a single person, special interest groups, or acts sponsored by a foreign government. Terrorist acts include the use of arson, hostile takeovers, shootings, biological agents (such as anthrax, plague, botulism and others), chemical agents (such as hydrogen cyanide, sulfur mustard, sarin and chlorine), and hostage taking. The most popular method used in recent events in the United States has been terrorism by bombing.

Conventional Explosive Devices

The easiest to obtain and use of all weapons is still a conventional explosive device, or improvised bomb, which may be used to cause massive local destruction or to disperse chemical, biological, or radiological agents. The components are readily available, as are detailed instructions to construct such a device. Improvised explosive devices are categorized as being explosive or incendiary, employing high or low filler explosive materials to explode and/or cause fires.

Bombs and firebombs are cheap and easily constructed, involve low technology, and are the terrorist weapon most likely to be encountered. Large, powerful devices can be outfitted with timed or remotely triggered detonators and can be designed to be activated by light, pressure, movement, or radio transmission. The potential exists for single or multiple bombing incidents in single or multiple municipalities. Historically, less than five percent of actual or attempted bombings were preceded by a threat. Explosive materials can be employed covertly with little signature, and are not readily detectable. Secondary devices may be targeted against responders.

Nuclear Weapon/Radiological Agent Use

The difficulty of responding to a nuclear or radiological incident is compounded by the nature of radiation itself. In an explosion, the fact that radioactive material was involved may or may not be obvious, depending upon the nature of the explosive device used. Unless confirmed by radiological detection equipment, the presence of a radiation hazard is difficult to ascertain. Although many detection devices exist, most are designed to detect specific types and levels of radiation and may not

be appropriate for measuring or ruling out the presence of radiological hazards. The table below lists some indicators of a radiological release.

General indicators of possible nuclear weapon/radiological agent use are as follows.

•	A stated threat to deploy a nuclear or radiological device			
•	• The presence of nuclear or radiological equipment (e.g., spent fuel canisters or nuclear transport vehicles)			
•	Nuclear placards or warning materials along with otherwise unexplained casualties			

The scenarios constituting an intentional nuclear/radiological emergency include the following:

- 1. Use of an **Improvised Nuclear Device (IND)** includes any explosive device designed to cause a nuclear yield. Depending on the type of trigger device used, either uranium or plutonium isotopes can fuel these devices. While "weapons-grade" material increases the efficiency of a given device, materials of less than weapons grade can still be used.
- 2. Use of a **Radiological Dispersal Device (RDD)** includes any explosive device utilized to spread radioactive material upon detonation. Any improvised explosive device could be used by placing it in close proximity to radioactive material.
- 3. Use of a **Simple RDD** that spreads radiological material without the use of an explosive. Any nuclear material (including medical isotopes or waste) can be used in this manner.

Biological Agents

An identified terrorist tactic or weapon is the use of toxic biological agents in an attempt to harm or intimidate the public. Anthrax, Yersinia pestis, and small pox are examples of this type of threat. Anthrax is found naturally in the soil in some of the old ranch areas in Nevada. UNR and the Nevada State Agriculture Labs maintain a vigilant watch of these threats.

According to information from the Nevada State Health Division, most biological agents are naturally occurring in various parts of the world. They can be weaponized to enhance their virulence in humans and make them resistant to vaccines and antibiotics. Weaponization of biological agents usually involves using selective reproduction pressure or recombinant engineering to mutate or modify the genetic composition of the agent. Terrorist may choose to use biological weapons to achieve their goals because a very small amount can harm many people. It is reported that many of these agents would be relatively easy to prepare and easy to hide. The actual or threatened use of bio-weapons can have tremendous psychological impact on the population. The CIA currently lists 15 animal pathogens as having potential Biological Weapons application that could potentially be used in a terrorist act:

- African swine fever
- Avian influenza
- Bluetongue
- Foot and Mouth Disease
- Goat Pox
- Monkey Pox
- Pseudo-rabies
- Hog cholera
- Lyssa virus
- Newcastle disease
- Pest des petits
- Swine vesicular disease
- Rinderpest
- Sheep pox
- Porcine enteroviral encephalomyelitis
- Vesicular stomatitis

Yersinia pestis is used an aerosol attack can cause cases a pneumonic form of plague. One to six days after becoming infected with the bacteria, people would develop pneumonic plague. Once people have the disease, the bacteria can spread to others who have close contact with them. Because of the delay between being exposed to the bacteria and becoming sick, people could travel over a large area before becoming contagious and possibly infecting others. Controlling the disease would then be more difficult. A biological weapon carrying Y. pestis is possible because the bacterium occurs in nature and could be isolated and grown in quantity in a laboratory. Even so, manufacturing an effective weapon using Y. pestis would require advanced knowledge and technology.

Smallpox is caused by the variola virus that emerged in human populations thousands of years ago. Except for laboratory stockpiles, the variola virus has been eliminated. However, in the aftermath of the events of September and October, 2001, there is heightened concern that the variola virus might be used as an agent of bioterrorism. For this reason, the US government is taking precautions for dealing with a small pox outbreak.

Unless the agent is disseminated in an airborne or other mass contaminate methodology, the exposures will be limited in nature. Mass distributed biologic agents could require mass contamination and isolation. Medical responders and facilities would be stressed. Infrastructure such as drinking water could be affected. Some critical buildings could be closed and sealed pending decontamination if possible. Economic losses could be incurred due to lack of tourism or if major gaming establishments were affected.

According to USDA-ARS Arthropod-Borne Animal Diseases Research Laboratory (ABADRL) att the present time, the most economically important arthropod-borne disease of US livestock is Bluetongue Disease (BLU). As articulated in the Journal of American Veterinary Medical Association article, *Biological Terrorism and Veterinary Medicine in the United States*,

"Although recent reports have emphasized the need for improving the ability to detect a biological terrorist attack on human populations, the use of veterinary services in this effort and the potential for the targeting of livestock (e.g., horses, cattle, sheep, goats, swine, and poultry) have been addressed only briefly. Improving surveillance for biological terrorist attacks that target livestock and improving detection and reporting of livestock, pet, and wild animal morbidity and mortality are important components of preparedness for a covert biological terrorist attack."

Chemical Agents

The table below lists those chemical agents that might be used in a terrorist attack and categorizes them by effect.

Effects	Chemical Agent
Blood (Blister/Vesicants)	Arsine (SA)
	Cyanogen Chloride (CK)
	Hydrogen Chloride
	Hydrogen Cyanide (AC)
Choking/Lung/Pulmonary Damaging	
	Chlorine (CL)
	Diphosgene (DP)
	Cyanide
	Nitrogen Oxide (NO)
	Perfluroisobutylene (PHIB)
	Phosgene (CG)
	Red Phosphorous (RP)
	Sulfur Trioxide-Chlorosulfonic Acid (FS)
	Teflon and Perfluroisobutylene (PHIB)
	Titanium Tetrachloride (FM)
	Zinc Oxide (HC)
Incapacitating (Nerve, Riot Control/Tear Gas)	Bromobenzylcyanide (CA)
	Chloroacetophenone (CN)
	Chloropicrin (PS)
	CNB – (CN in Benzene and Carbon
	Tetrachloride)
	CNS – (CN and Chloropicrin in Chloroform)
	CR
	CS
Vomiting	
	Adamsite (DM)
	Diphenylchloroarsine(DA)
	Diphenylcyanoarsine (DC)

Table. 5-10. Hazardous Chemical Agents Potentially Used in Terrorist Act

The State of Nevada is comprised of diverse populations that include members of nation-wide militia organizations. The Federal government has continually released terrorism warnings since 1998 that state most communities in the United States are vulnerable to terrorist attack. The State of Nevada Enhanced Multi-Hazard Mitigation Plan 2010, currently lists nine domestic terrorism groups with representatives and offices in Nevada. Those groups are included in this

plan to give local governments information of their existence and their geographical location. See the table below.

Туре	Group	Location
Domestic Terrorism Groups		
	World Church of the Creator	Carson City
	Hammerskin Nation	Las Vegas
	Nation of Islam	Las Vegas
	National Alliance	Las Vegas
	National Socialist Movement	Las Vegas
	Aryan Nations/Aryan National Alliance	Reno
	National Alliance	Reno
	Aryan Nations/Aryan National Alliance	Wellington
Patriot Groups		
	Center for Action	Sandy Valley

Table 5-11: Identifi	ed Hate Groups	and Patriot	Groups, Neva	da
Table 3-11. Identifi	eu maie Groups		Groups, neva	ua

5.2.9.2 History

There have been no incidents of terrorism in Storey County. According to the FBI, sporting events, political conventions, and other special events are attractive targets for domestic and foreign terrorists because they are highly visible and attract celebrities and political leaders. Other targets of opportunity for terrorism include large public works facilities, utilities, transportation facilities such as airports, train stations, subways, bridges and ferries, military bases, schools, medical facilities and other state and federal facilities. Examples of terrorism include the World Trade Center bombing in New York City, the Murray Federal Building bombing in Oklahoma City, the Olympic Centennial Park bombing in Atlanta, and the Pan American Flight bombing over Lockerbie, Scotland.

Acts of terrorism may originate from a single person, special interest groups, or acts sponsored by a foreign government. The most popular method used in recent events in the United States has been terrorism by bombing. Terrorist acts include the use of arson, hostile takeovers, shootings, biological agents (such as anthrax, plague, botulism and others); chemical agents (such as hydrogen cyanide, sulfur mustard, sarin and chlorine), and hostage taking.

5.2.9.3 Location, Extent, Probability of Future Events

In determining the risk areas within a jurisdiction, the vulnerabilities of potential targets should be identified, and the targets themselves should be prepared to respond to a WMD incident. In-depth vulnerability assessments are needed for determining a response to such an incident.

Standard models are available for estimating the effects of a nuclear, chemical, or biological release, including the area affected and consequences to population, resources, and infrastructure. Some of these models include databases on infrastructure that can be useful in preparing the TIA. A good source of information on available Federal government models is the *Directory of Atmospheric Transport and Diffusion Consequence Assessment Models*, published by the Office of the Federal Coordinator for Meteorology (OFCM).

The overall magnitude, potential severity and frequency of impacts of terrorism and weapons of mass destruction is considered low in the County. Assessment of probability of future terrorism events in the County is gauged primarily on speculation, as no terrorism or events involving weapons of mass destruction have previously occurred in the planning area. The consensus of the Planning Committee

Hazard Analysis

is that probability of future events is low within Storey County. Based on the Homeland Security Threatened Level System, it is anticipated that terrorism will remain a high threat into the foreseeable future. Because terrorism events typically are focused on a single high payoff area or facility, estimated damage is less than one percent damage to facilities in the County.

5.2.10 Wildland Fire

Planning Significance - High

5.2.10.1 Nature

A wildland fire is a type of fire that spreads through consumption of vegetation. It often begins unnoticed, spreads quickly, and is usually signaled by dense smoke that may be visible from miles around. Wildland fires can be caused by human activities (such as arson or campfires) or by natural events such as lightning. Wildland fires often occur in forests or other areas with ample vegetation. In addition to wildland fires, wildfires can be classified as urban fires, interface or intermix fires, and prescribed fires.

The following three factors contribute significantly to wildland fire behavior and can be used to identify wildland fire hazard areas.

- **Topography:** As slope increases, the rate of wildland fire spread increases. South-facing slopes are also subject to more solar radiation, making them drier and thereby intensifying wildland fire behavior. However, ridge tops can cause fire to spread more slowly or may even be unable to spread downhill. Narrow canyons, chutes and saddles can funnel and accelerate winds, causing fire to spread faster.
- **Fuel:** The type and condition of vegetation plays a significant role in the occurrence and spread of wildland fires. Certain types of plants are more susceptible to burning or will burn with greater intensity. Dense or overgrown vegetation increases the amount of combustible material available to fuel the fire (referred to as the "fuel load"). The ratio of living to dead plant matter is also important. The risk of fire is increased significantly during periods of prolonged drought, as the moisture content of both living and dead plant matter decreases. The fuel's continuity, both horizontally and vertically, is also an important factor.
- Weather: The most variable factor affecting wildland fire behavior is weather. Temperature, humidity, wind, and lightning can affect chances for ignition and spread of fire. Extreme weather, such as high temperatures, low humidity and high winds, can lead to extreme wildland fire activity. By contrast, cooling and higher humidity often signals reduced wildland fire occurrence and easier containment.

The frequency and severity of wildland fires also depends upon other hazards, such as lightning, drought, and infestations. If not promptly controlled, wildland fires may grow into an emergency or disaster. Even small fires can threaten lives and resources and destroy improved properties. In addition to affecting people, wildland fires may severely affect livestock and pets. Such events may require emergency watering/feeding, evacuation, and shelter.

The indirect effects of wildland fires can be catastrophic. In addition to stripping the land of vegetation and destroying forest resources, large, intense fires can harm the soil, waterways, and the land itself. Soil exposed to intense heat may lose its capability to absorb moisture and support life. Exposed soils erode quickly and enhance siltation of rivers and streams, thereby increasing flood potential, harming aquatic life, and degrading water quality. Lands stripped of vegetation are also subject to increased debris flow hazards, as described above.

5.2.10.2 History

Storey County had 82 wildland fires which burned 8295 acres, of which 38 were less than one acre, from 2003 to the beginning of 2013 according to NDF. Approximately 95 percent of these fires were due to lightning, while humans and unknown causes make up the remaining 5 percent of ignition sources. The figure below, provides a map of the historic fire locations in Storey County.



In 2013, Storey County Fire Department became responsible to wildfire response. According to the Storey County Fire Department (SCFD), SCFD responded to 50 reported wildland fires in 2013 all of which never exceeded an acre in size and most were single tree fires which are extinguished before they spread or false alarms. While large fires are low frequency, they have a high potential for impacting natural resources, communities and critical infrastructure.

5.2.10.3 Location, Extent, Probability of Future Events

Communities in Storey County have a varying degree of risk from Wildfire. This risk is varied, largely due to past fire activity and the type of moisture received during the winter months. Lengthy rainy seasons tend to increase the production of grasses which can create fast moving fires in the brush and grass areas of the County. Drought seasons tend to decrease the fuel

moisture in the large fuels (trees and large brush) and create high output BTU fires that are difficult to control and can extend for days.

Depending upon the type and amount of moisture received the risk to a given community in Storey County can change from season to season. Storey County has developed a Community Wildfire Protection Plan to help guide the community and its residents on where and how to focus fuel reduction efforts. The Community Wildfire Protection Plan (CWPP) generally speaks to protecting the built environment from the threats of wildland fire. The Virginia Highlands area has extreme rating due to interface fuel hazard and ignition risk. Appendix B, Figures B-11 through B-16, provide maps of each community and the wildland urban interface (WUI) area as provided in the RCI County Wide Assessment. RCI is currently updating the CWPP.

Community	Hazard Rating			
Gold Hill	High			
Lockwood	Moderate			
Six Mile	Moderate			
Virginia City	High			
Virginia Highlands	Extreme			
Source: RCI County Wide Assessment Results, http://www.rci-nv.com/reports/storey/section04.html				

Table 5- 12:	Wildfire	Assessment	Summary	by	Community
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Based on historical records, Storey County can anticipate nearly 1.5 wildland fire starts per year, which will burn more than one acre however a very small percentage of these (less than 1%) will exceed 100 acres.

A vulnerability analysis predicts the extent of exposure that may result from a hazard event of a given intensity in a given area. The analysis provides quantitative data that may be used to identify and prioritize potential mitigation measures by allowing communities to focus attention on areas with the greatest risk of damage. A vulnerability analysis consists of the following six steps: assets inventory, methodology, data limitations, exposure analysis, and summary of impacts. The asset inventory and exposure analysis were updated including Tables 6.1 through 6.5. Land Use and Development Trends is located in Section 3.

6.1 ASSET INVENTORY

Asset inventory is the first step of a vulnerability analysis. Assets within each community that may be affected by hazard events include population, residential and non residential buildings, and critical facilities and infrastructure. Assets and insured values throughout the County are identified and discussed in detail below.

6.1.1 Population and Building Stock

Population data for the County was obtained from the NV State Demographer and verified from the 2010 U.S. Census and shown in Table 6-1. The Nevada State Demographer's Office maintains annual population estimates by county. Estimated numbers and replacement values for residential and nonresidential buildings, as shown in Table 6-1, were obtained from FEMA Hazus-MH 2009 run by the Nevada Bureau of Mines and Geology and verified by the County Assessor's office .

The residential buildings considered in this analysis include single-family dwellings, mobile homes, multi-family dwellings, temporary lodgings, institutional dormitory facilities, and nursing homes. Nonresidential buildings were also analyzed including commercial, industrial, agricultural, government, educational, and religious centers.

The HAZUS-MH 2009 run for earthquake by the Bureau of Mines & Geology, UNR, was reviewed. The HAZUS-MH software presents a data limitation by which this software identifies nonresidential buildings by square footage resulting in some nonresidential buildings not being counted. The building count was verified by parcel data from the Assessor's Office. The buildings' values were calculated by multiplying the number by the US Census median value for buildings. Un-reinforced masonry (URM) building information was obtained from Wayne Carlson and Advanced Data Systems, Inc.

Although the building count or value may not be precise, whether residential or nonresidential, this analysis will meet the intention of DMA 2000 by providing County residents with an accurate visual representation of their community's risk by hazard. This data is the most complete dataset available at the time and will be updated in future version of the HMP.

Population		Residential Buildings		Nonresidential Buildings	
2000 Census Population Count	US Census 2010 2013 Estimate Population	Total Building Count	Total Value of Buildings (in millions)	Total Building Count	Total Value of Buildings (in millions)
3,399	3,942	1932	\$384,150	109	\$24,857

Table 6-1.	. Estimated	Population and	Building In	nventory
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Source: U.S. Census population data, <u>http://quickfacts.census.gov/qfd/states/32000.html</u>, State of Nevada Demographer, FEMA HAZUS-MH <u>http://www.nbmg.unr.edu/dox/of098/Scenarios/OpenFileReport09-8.pdf</u>, Storey County

6.1.2 Critical Facilities and Infrastructure

A critical facility is defined as a public or private facility that provides essential products and services to the general public, such as preserving the quality of life in the County and fulfilling important public safety, emergency response, and disaster recovery functions. Similar to critical facilities, critical infrastructure is defined as infrastructure that is essential to preserve the quality of life and safety in the County.

The County's critical facilities are listed in Table 6-2 and shown and were not shown in map form for security.

Category	Туре	Number	Estimated Value Per Structure/Mile (millions of \$)
	Sheriff Stations, Public Safety, & Juvenile Detention Center	3	3.5
	Fire Stations	5	9
	EOC	1	.5
	Public Primary and Secondary Schools	4	28
Critical Facilities	Shelters - Senior Centers	2	1.5
	Hospital w/Emergency Room (in Washoe)	1	11.2
	Urgent Care Facilities (in Washoe)	2	1
	Ambulance Facilities	1	Included in Fire Station
	Communication Facilities	1	5
	State and Federal Highways (miles)	396 km	1,730.7
Critical Infrastructure	Airport Facilities (Washoe)	1	79.6
	Bridges (County only)	6	Included in Highway
	Utilities (Water, Waste Water, Gas, Electrical)	n/a	245.8

Table 6-2. Critical Facilities and Infrastructure

Source: FEMA HAZUS-MH<u>http://www.nbmg.unr.edu/dox/of098/Scenarios/OpenFileReport09-8.pdf</u>, *Storey County Emergency Management, NV Dept. of Transportation*

The Sheriff station includes the Lockwood sub- station. The Shelters include the Senior Center in Virginia City and Lockwood.

In addition, the hospital, urgent care facilities and airport in Washoe County, since Storey County relies on these facilities are listed above but not included in the exposure analysis.

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6.2 METHODOLOGY

A conservative exposure-level analysis was conducted to assess the risks of the identified hazards. Hazard areas were determined using information provided by the U.S. Seasonal Drought Monitor, EPA, HAZUS, Nevada Bureau of Mines and Geology, and NWS. This analysis is a simplified assessment of the potential effects of the hazard on values at risk without consideration of probability or level of damage.

Using GIS, the building footprints of critical facilities were compared to locations where hazards are likely to occur. If any portion of the critical facility fell within a hazard area, it was counted as impacted. Using census block level information, a spatial proportion was used to determine the percentage of the population and residential and nonresidential structures located where hazards are likely to occur. Census blocks that are completely within the boundary of the hazard area were determined to be vulnerable and were totaled by count. A spatial proportion was also used to determine the amount of linear assets, such as highways and pipelines, within a hazard area. The exposure analysis for linear assets was measured in miles. For drought, population was the only asset analyzed, as drought mainly affects people and agricultural lands (which were not considered in this version of the HMP).

Replacement values or insurance coverage were developed for physical assets. These values were obtained from the County's Assessor's Office, Building Department, Nevada Department of Transportation and HAZUS-MH 2009 run. For facilities that did not have specific values per building in a multi-building scenario (e.g., schools), the buildings were grouped together and assigned one value. For each physical asset located within a hazard area, exposure was calculated by assuming the worst-case scenario (that is, the asset would be completely destroyed and would have to be replaced). Finally, the aggregate exposure, in terms of replacement value or insurance coverage, for each category of structure or facility was calculated. A similar analysis was used to evaluate the proportion of the population at risk. However, the analysis simply represents the number of people at risk; no estimate of the number of potential injuries or deaths was prepared.

6.3 DATA LIMITATIONS & FUTURE DEVELOPMENT

The vulnerability estimates provided herein use the best data currently available, and the methodologies applied result in an approximation of risk. These estimates may be used to understand relative risk from hazards and potential losses. However, uncertainties are inherent in any loss estimation methodology, arising in part from incomplete scientific knowledge concerning hazards and their effects on the built environment, as well as approximations and simplifications that are necessary for a comprehensive analysis.

The resulting analysis was complied to the highest degree possible with the hardware, software and data availability limitations discovered during plan preparation. HAZUS was able to determine the population and critical facilities within a given hazard area and from there a limited assessment was derived. In the situation of Drought & Epidemic, where structures would not usually be affected the term N/A (not applicable) is used.

It is also important to note that the quantitative vulnerability assessment results are limited to the exposure of people, buildings, and critical facilities and infrastructure to a hazard. It was beyond the scope of this HMP to develop a more detailed or comprehensive assessment of risk (including annualized losses, people injured or killed, shelter requirements, loss of facility/system function, and economic losses) except for earthquake hazard (HAZUS-MH). Such impacts may be addressed with future updates of the HMP.

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6.3.1 Future Development

Storey County has historically low growth with an average of less than 1% per year for population. During 2012-2017 the State Demographer estimated an increase in population growth of 15% from 4,103 in 2012 to 4,772 in 2017. As discussed at the end of Section 3 - Community Description there is additional land slated for 320 homes for residential use in the proposed Sunset Acres near the Highlands area (south east of Reno). The County is working on an update to the County Master Plan to include these homes. This area is at risk to wildland fire.

Additionally, the Reno-Tahoe Industrial park continues to grow which may have significant daily commuters to Storey County from Reno and Fernley. SR 439 from Highway 80 to Highway 50 at Silver Springs is slated for completion by 2017. Any additional building growth will incorporate the 2006 International Building Code which was adopted in 2010 and is not seen to pose additional risk.

For the purposes of this plan moderate growth over the next five years is expected, growth from 2016 to 2030 is expected at less than 45%. The numbers and values of the Figures in the Table 6-3 and 6-4 below are viewed as accurate. During the plan maintenance activities this should be reviewed and during the next plan update process growth can be revisited with the revised Master Plan detailing where the growth will occur.

http://nvdemography.org/wp-content/uploads/2012/10/2012-Oct-1-Population-Projections.pdf

6.4 EXPOSURE ANALYSIS

The requirements for a risk assessment, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Assessing Vulnerability, Overview

Assessing Vulnerability: Overview

Requirement 201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

- Element
- Does the new or updated plan include an overall summary description of the jurisdiction's vulnerability to each hazard?
- Does the new or updated plan address the impact of each hazard on the jurisdiction?

Source: FEMA 2008.

DMA 2000 Recommendations: Assessing Vulnerability, Identifying Structures

Assessing Vulnerability: Identifying Structures

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area. Element

- Does the new or updated plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?
- Does the new or updated plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

Source: FEMA 2008.

DMA 2000 Recommendations: Assessing Vulnerability, Estimating Potential Losses

Assessing Vulnerability: Estimating Potential Losses

Requirement 201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

Element

- Does the new or updated plan estimate potential dollar losses to vulnerable structures?
- Does the new or updated plan reflect changes in development in loss estimates?
- Does the new or updated plan describe the methodology used to prepare the estimate?

Source: FEMA 2008.

The results of the exposure analysis are summarized in Tables 6-3 and 6-4 and in the discussion below. The results in this exposure analysis were greatly affected by the hardware, software and data availability limitations described above. The significant hazards designated as high are included in the exposure analysis below.

	Ĭ					
Hazard	Degree	Population	Number Residential Buildings	Value * Residential Buildings	Number Nonresidential Buildings	Value * Nonresidential Buildings
Earthquake	Very Strong	1,598	684	\$39,840	2	\$5,470
	Severe	1,801	747	\$52,484	8	\$20,580
Riverine Flood	100-year	548	271	\$14,219	5	\$2,000
	500-year	0	0	0	0	0
Severe Winter Storm (Snow)	5000 to 7000 feet	1,973	804	\$56,304	10	\$24,522
	> 7000 feet	17	7	\$500	0	0
Wildfire	Low	1,233	573	\$34,381	7	\$16,354
	Moderate	1,882	739	\$509,789	2	\$8,717
	High	256	94	\$6,875	>1	\$964
	Extreme	2	>1	\$65	0	\$9

 Table 6-3: Storey County Estimated Population and Building Inventory at Risk

Value * = x1,000

Source: FEMA HAZUS-MH http://www.nbmg.unr.edu/dox/of098/Scenarios/OpenFileReport09-8.pdf, Storey County Emergency Management
-	Earthquake		Flood		Severe Winter Storm (Snow)		Wildfire			
	Very Strong	Severe	100-yr	500-yr	Warning/ Advisory 5,000–7,000 ft	Warning/ Advisory > 7,000 ft	Low	Moderate	High	Severe
Fire/EOC/Sheriff-#	5	12					4	2		2
Fire/EOC/Sheriff Value *	\$2,803	\$2,885					\$4,500	\$2,000		\$4,000
EOC	\$500	\$500					\$500			
Fire station #71							\$2,000			
Fire station #72										\$1,000
Fire station #73								\$500		
Fire station #74			\$1,500				\$1,500			
Fire station #75										\$3,000
Sheriff Station								\$1,500		
Sheriff Sub LW			\$500		\$500		\$500			
Government-#		6				1	3	1		
Government Value *		\$7,866				\$1,000	\$7,000	\$2,300		
SC Courthouse						\$1,000	\$5,000			
SC Barn (PW)							\$1,500			
SC Jail & Comms								\$1,500		
SC Maintenance Shop							\$500			
SC Bldg. Dept.								\$800		
School-#	1	4	1				3	1		

Table 6-4: Storey County Estimated Critical Facilities As Risk

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Vulnerability Assessment

School Value *	\$1,988	\$26,849	\$4,000		\$18,000	\$10,000	
High School		\$10,000				\$10,000	
Middle School		\$8,000			\$8,000		
Elementary VC		\$6,000			\$6,000		
Elementary LW		\$4,000	\$4,000		\$4,000		
Senior Center#	1	2	1		2		
Senior Center Value *	\$700	\$1,500	\$700		\$1,500		
Community Center #	1	1					
Community Center Value *	\$1,000	\$1,000					

Value * = x1,000

Source: FEMA HAZUS-MH http://www.nbmg.unr.edu/dox/of098/Scenarios/OpenFileReport09-8.pdf, Storey County Emergency Management

Table 6-5: Storey County Infrastructure

	Earthquake		Riverine Flood		Severe Winter Storm (Snow)		Wildfire			
	Very Strong	Severe	100-yr	500- yr	Warning/ Advisory 5000–7000 ft	Warning/ Advisory > 7000 ft	Low	Moderate	High	Severe
Bridge/Rail Road Crossing_#	6		6				3	3		
Bridge/Rail Road Crossing Value *	\$5,648		\$2,600				\$455	\$5,194		
Communication-#	1	1				1	1	1		
Communication Value *	\$19	\$19				\$19	\$19	\$19		
Petroleum Storage-#	0	6	2	0	4	0	0	2		4
Petroleum Storage Value *	0	\$78	\$26	0	\$51	0	0	\$26		51
Power Generating Stations/Substations-#	2		1					2		
Power Generating Station Substations Value *	\$18,000		\$9,000					\$18,000		
Water Storage-#	6	4						1		5
Water Storage Value*	\$11,148	\$1,320						\$1,975		\$9,000
Water/Waste Water Treatment Facility_#	5	2				2	2			1
Water/Waste Water Treatment Facility Value	\$3,500	\$2,325				\$2,500	\$15,000			\$2,000
Wells-#	1	1					1			
Wells Value *	46	46					46			

Value * = x1,000

Source: FEMA HAZUS-MH http://www.nbmg.unr.edu/dox/of098/Scenarios/OpenFileReport09-8.pdf, Storey County Emergency Management

6.4.1 Earthquake

Displayed within the Appendices on Figure C-3 Earthquake Hazard Area, there are two identified hazard areas, they are: severe shaking and very strong shaking. Within the perceived severe shaking area the population at risk is 1,801 people with 747 residential buildings valued at \$52.5 million; and 8 nonresidential buildings valued at \$20.6 million. Numerous critical facilities are at risk to perceived severe shaking; they include: 12 first-responder buildings (Fire/EOC/Sheriff) valued at \$2.8 million; 4 gas storage structures valued at \$51,000; 9 government buildings valued at \$7.8 million; 4 critical facilities within historic district buildings valued at \$700,000; 4 schools valued at \$27 million; 2 special-population buildings valued at \$4.1 million; and 1 transportation structure valued at \$602,000. Additionally, there are multiple County infrastructure components located within the perceived severe shaking area; they include: 1 communication structure valued at \$19,000; 4 water storage sites valued at \$1.3 million; 2 water/waste water treatment facilities valued at \$2.3 million; and 1 County-owned wells valued at \$46,000.

More than one-quarter of the County is located within the perceived very strong shaking area. These regions are distant from known, active faults and will experience lower levels of shaking less frequently. In most earthquakes, only weaker masonry buildings would be damaged. However, very infrequent earthquakes could still cause strong shaking here. This area is populated along the north and south County boundaries and is moving towards the interior which is not developed. Within this perceived very strong shaking area, the population at risk is 1,598 people with 684 residential buildings valued at \$40 million and 2 non-residential buildings valued at \$5.5 million. Numerous critical facilities are at risk to perceived severe shaking; they include: 5 first-responder buildings (Fire/EOC/Sheriff) valued at \$2.8 million; 1 school valued at \$2 million; and 1 Senior Center building valued at \$700,000. Additionally, there are multiple County infrastructure components located within the perceived very strong shaking area; they include: 6 bridge/rail road crossings valued at \$5.7 million; 1 communication structure valued at \$19,000; 2 power generating stations/substations valued at \$18 million; 6 water storage sites valued at \$11.1 million; 5 water/waste water treatment facilities valued at \$3.5 million; and 1 County-owned wells valued at \$46,000.

Storey County has 310 unreinforced masonry buildings. Many of these are of an historic nature and make up the bulk of the tourist business district. The VC fire station and courthouse are critical facilities and are URM.

6.4.2 Flash Flood

As the flash-flood hazard does not occur within an identified floodplain, there currently is no way to map this hazard to determine the population and buildings at risk. Therefore, mitigation projects rely upon historical occurrences to determine the appropriate location for mitigation actions.

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6.4.3 Riverine Flood

Displayed within the Appendices on Figure C-4 FEMA Special Flood Hazard Areas, there are two identified hazard areas, they are: the 100-year floodplain and the 500-year flood plain. Within the 100-year floodplain area, the population at risk is 549 people, with 271 residential buildings valued at \$14.2 million. There are numerous critical facilities at risk within the 100-year floodplain; they include: 1 Lockwood Elementary school valued at \$4 million; 1 Sherriff Sub-station valued at \$500 thousand; 1 Lockwood Senior Center valued at \$700 thousand and 1 Fire Station #74 valued at \$1.5 million. Additionally, there are multiple County infrastructure components located within the 100-year floodplain; they include: 6 bridge/rail road crossings valued at \$2.6 million; 2 Gas Storage tanks valued at \$26 thousand; and 1 power station valued at \$9 million. There are no repetitive loss properties within the 100-year floodplain.

Within the 500-year floodplain there are no residential structures. There are no critical facilities or infrastructure components located within the 500-year floodplain. There are no repetitive loss properties within the 500-year floodplain.

6.4.4 Severe Winter Storm

As described in the hazard profile in Section 5.2.12 Severe Winter Storm, there are two identified elevation ranges of concern, they are: elevations between 5,000-7,000 feet and those elevations greater than 7,000 feet. Within the 5,000–7,000-foot-elevation area, the population at risk is 1,973 people, of which 1,771 people reside within the historic district, with 804 residential buildings valued at \$56.3 million, and 10 nonresidential buildings valued at \$24.5 million. There are numerous critical facilities at risk within the 5,000–7,000-foot-elevation range; they include: 12 first-responder buildings (Fire/EOC/Sheriff) valued at \$2.8 million; 4 gas storage structures valued at \$51,000; 9 government buildings valued at \$7.8 million; 4 additional critical facilities within historic district buildings valued at \$700,000; 4 schools valued at \$27 million; 2 special-population buildings valued at \$4.1 million; and 1 transportation structure valued at \$602,000. Additionally, there are two County infrastructure components located within the 5,000–7,000-foot-elevation area; they include: 4 water storage sites valued at \$1.3 million and 2 water/waste water treatment facilities valued at \$2.3 million. Although these facilities may be affected by a severe storm only the Sheriff's Sub-station in Lockwood valued at \$500 thousand is at risk to building collapse.

There are significantly fewer people living and working in elevations greater than 7,000 feet. Within elevations greater than 7,000 feet, the population at risk is 17 people with 7 residential buildings valued at \$500,000 with an additional 12 people residing within the historic district. The critical facilities at risk are the Storey County Courthouse valued at \$5 million; and the Emergency Operation Center valued at \$500 thousand due to the age and construction of the buildings.

6.4.5 Wildfire

Displayed within the Appendices on Figure C-5 Wildfire Hazard Area, there are four identified hazard areas, they are: low, moderate, high, and severe. The population at risk to the wildfire hazard in the low category is approximately 36 percent of the population or 1,233 people with 573 residential buildings valued at \$34.4 million, 7 nonresidential buildings valued at \$16.4

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million, and 375 people residing within the historic district. There are numerous critical facilities at risk within the low wildfire category; they include: 4 first-responder buildings (Fire/EOC/Sheriff) valued at \$4.5 million; 3 government buildings valued at \$7 million; 3 schools valued at \$18 million; 2 Senior Centers valued at \$1.5 million. Additionally, there are multiple County infrastructure components located within the low wildfire category; they include: 3 bridge/rail road crossings valued at \$455,000; 1 communication tower valued at \$19 thousand; 2 water/waste water treatment facilities valued at \$15 million; and 1 County-owned well valued at \$46,000.

More than 55 percent of the County is located within the moderate-risk category of the wildfire hazard, which is 1,882 people with 739 residential buildings valued at \$510 million, 2 nonresidential buildings valued at \$8.7 million, and 1,248 people residing within the historic district. There are numerous critical facilities within the moderate wildfire risk area; they include: 2 first-responder buildings (Fire/EOC/Sheriff) valued at \$2 million; 1 jail & communication facility valued at \$1.5 million; 1 schools valued at \$10 million. Additionally, there are multiple County infrastructure components located within the moderate-risk category of the wildfire hazard; they include: 3 bridge/rail road crossings valued at \$5.2 million; 1 communication structures valued at \$19,000; 2 gas storage tanks valued at \$26,000; 2 power stations valued at \$18 million; 1 water storage sites valued at \$2 million.

There are 256 people, or 7.5 percent of the County population, who are located within the high-risk category for wildfire hazard; this area includes 94 residential buildings valued at \$6.9 million, 1 nonresidential building valued at \$964,000 and 153 people residing within the historic district. There are no critical facilities or infastructure located in the high-risk category.

The severe-risk category contains a distinct data limitation wherein the GIS model created does not correspond to the 2005 Nevada Community Wildfire Risk/Hazard Assessment Project study. This study identifies the community of Virginia City Highlands as at an extreme risk which the Storey County Fire Department and the Nevada Division of Forestry concur. The population of this community is approximately 1,500 however the GIS model states the County population located within the extreme-risk category of the wildfire hazard is .06 percent or 2 people with 1 residential building valued at \$65,000 with a minimal amount of nonresidential property containing no buildings valued at \$9,000 and 1 person residing in the historic district. The critical facilities located in the severe wildfire risk area are 2 first responder facilities valued at \$4 million. County infrastructure includes 4 gas storage tanks valued at \$51,000; 5 water storage tanks valued at \$9 million; and 1 water/waste water treatment facility valued at \$2 million. The mitigation goal and actions developed for this hazard reflect the known wildfire extreme-risk ranking and include mitigation actions to reduce the risk to all residential structures.

6.5 REPETITIVE LOSS PROPERTIES

The requirements for a risk assessment, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Assessing Vulnerability, Addressing Repetitive-Loss Properties

Assessing Vulnerability: Addressing Repetitive Loss Properties Requirement §201.6(c)(2)(ii): [The risk assessment **must** also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods. DMA 2000 Requirements: Assessing Vulnerability, Addressing Repetitive-Loss Properties

Element

- Does the updated plan document how the planning team reviewed and analyzed this section of the plan and whether this section was revised as part of the update process?
- Does the new or updated plan describe vulnerability in terms of the types and numbers of repetitive loss properties located in the identified hazard areas?

Source: FEMA 2008.

Storey County has no repetitive loss properties. The current status of repetitive loss properties should be discussed during the annual review of this plan with the County's Flood Plain Manager.

Repetitive Loss & Severe Repetitive Loss

The state is working with a variety of stakeholders to reduce the number of properties considered to be repetitive loss properties and to prevent severe repetitive loss properties from developing.

FEMA's Severe Repetitive Loss (SRL) Program was designed in 2004 to provide funding to reduce or eliminate the long-term risk of flood damage to SRL structures insured under the National Flood insurance Program (NFIP).

An SRL property is defined as a **residential property** that is covered under an NFIP flood insurance policy and:

(a) That has at least four NFIP claim payments (including building and contents) over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or

(b) For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.

For both (a) and (b) above, at least two of the referenced claims must have occurred within any ten-year period, and must be greater than 10 days apart. FEMA's Repetitive Flood Claims (RFC) grant program was authorized to assist States and communities in reducing flood damages to insured properties that have had one or more claims to the National Flood Insurance Program (NFIP). Nevada has no severe repetitive loss properties and Storey County has no repetitive loss properties.

While not required by the DMA 2000, an important component of a hazard mitigation plan is a review of the County's resources to identify, evaluate, and enhance the capacity of those resources to mitigate the effects of hazards. This section evaluates the County's resources in three areas—legal and regulatory, administrative and technical, and financial—and assesses capabilities to implement current and future hazard mitigation actions.

7.1 LEGAL AND REGULATORY CAPABILITIES

Legal and regulatory capabilities, as shown in Table 7-1, include applicable Building Codes, Zoning Ordinance, Subdivision Regulations, Capital Improvement Plan, and other regulatory development guides that provide specified support to hazard mitigation activities. Other less prescriptive documents describe the County's hazard mitigation capabilities to include various Master Plan elements, an Economic Development Strategy, an Emergency Response Plan, and Post-Disaster Recovery Plans, among others. This section lists these various tools, recognizes the local authority of the specific activity, and identifies the interaction of the specific tools with State and higher level authorities.

In addition to policies and regulations, the County participates in several hazard mitigation programs including the NFIP and Fire Safe and Living With Fire programs.

R	egulatory Tools (Ordinances, Codes, Plans)	Local Authority (Y/N)	Does State Prohibit? (Y/N)	Higher Level Jurisdiction Authority (Y/N)	Comments
A.	Building code	Y	Ν	Y	Building & Planning Dept., (2) State Fire Marshal for Schools.
В.	Zoning ordinance	Y	Ν	Ν	Building & Planning Dept .
C.	Subdivision ordinance or regulations	Y	Ν	Ν	Building & Planning Dept.
D.	Special purpose ordinances (floodplain management, storm-water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	Ν	Y	Building & Planning Dept.
E.	Growth management ordinances (also called "smart growth" or anti- sprawl programs)	Y	Ν	Ν	Building & Planning Dept.
F.	Site plan review requirements	Y	Ν	Ν	Building & Planning Dept.,

 Table 7-1: Storey County Legal and Regulatory Capability

		-		-	-
R	egulatory Tools (Ordinances, Codes, Plans)	Local Authority (Y/N)	Does State Prohibit? (Y/N)	Higher Level Jurisdiction Authority (Y/N)	Comments
					Fire Dept.
G.	General or comprehensive plan	Y	Ν	Ν	Master Plan adopted April 21, 1994
Н.	A capital improvements plan	Y	N	N	None
١.	An economic development plan	Y	Ν	Ν	Under development
J.	An emergency response plan	Y	Ν	N	Yes, updated annually in January
K.	A post-disaster recovery plan	Y	Ν	N	Under development
L.	A post-disaster recovery ordinance	Y	Ν	Ν	None currently
M.	Real estate disclosure requirements	Y	Ν	Ν	Under development by County Assessor

Table 7-1:	Storev C	ounty Leg	al and Re	gulatory C	apability
I abic / I.	Storey C	ounty Deg	, ai ana ite	Summer Summer	upublity

7.2 ADMINISTRATIVE AND TECHNICAL CAPABILITIES

The administrative and technical capability, as shown in Table 7-2, of the County provides an identification of the staff, personnel, and department resources available to expedite the actions identified in the Mitigation Strategy. Specific resources reviewed include those involving technical personnel that can apply GIS and other services needed to facilitate hazard mitigation actions throughout Storey County.

	Staff/Personnel Resources	Y/N	Department/Agency and Position
A.	Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	Building & Planning Dept., 1 position, Director
В.	Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Building & Planning Dept.; contract engineer as needed. No full time employee.
C.	Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	Y	Building & Planning Dept. 1 position, Director
D.	Floodplain manager	Y	Building and Planning Department1 position, Director
E.	Surveyors	Ν	Contract as needed, no full time position
F.	Staff with education or expertise to assess the community's vulnerability to hazards	Y	Building & Planning Dept., 1 position, Director
G.	Personnel skilled in GIS and/or HAZUS	Y	Building & Planning Dept., GIS Specialist, one position
H.	Scientists familiar with the hazards of the community	Ν	Contract as needed, no full time employee
I.	Emergency manager	Y	Emergency Management Department: 2 x part-time
J.	Grant writers	Y	Varied department locations, Fire Dept., Emergency Mgmt, Building & Planning Dept.

GIS = Geographic Information System HAZUS = Hazards U.S.

7.3 FINANCIAL CAPABILITIES

Specific financial and budgetary tools, as shown in Table 7-3, available to the County for hazard mitigation include Federal entitlements, general fund monies, secondary sales and property taxes, user fees for infrastructure, impact fees applied to new development, and various unique debt service techniques including bonding indebtedness.

	Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
А.	Community Development Block Grants (CDBG)	Yes
В.	Capital improvements project funding	Yes
C.	Authority to levy taxes for specific purposes	Only by vote of public
D.	Fees for water, sewer, gas, or electric service	Yes
E.	Impact fees for homebuyers or developers for new developments/homes	No. Could be established by Commissioners
F.	Incur debt through general obligation bonds	Yes. Established by Commissioners
G.	Incur debt through special tax and revenue bonds	Yes. Established by Commissioners
Н.	Incur debt through private activity bonds	Yes. Established by Commissioners
١.	Withhold spending in hazard-prone areas	Yes. Established by Commissioners
J.	Other: Fire Department, Plan Review fees	Yes
K.	Other: Ambulance fees	Yes
L.	Other: Business license and events fees	Yes

Table 7-3: Storey County Fiscal Capability

7.4 CURRENT MITIGATION CAPABILITIES

Storey County's current mitigation programs, projects, and plans, as shown in Table 7-4, are listed as follows.

	Programs, Plans,		Effect	on Loss Redu	iction	
Agency Name (Mission/ Function)	Policies, Regulations, Funding, or Practices	Point of Contact Name and Phone, E-mail	Support	Facilitate	Hinder	Comments
Building & Planning Dept.	Flood plain mgmt, economic development, code enforcement, public health nurse	Dean Haymore 775-847-0966	~	~		Engineering and planning support
Public Works	Roads, water, sewer, capital projects, building maintenance, County shop	Mike Nevin 775-847-0958	✓	✓		Detailed knowledge of infrastructure - source for skilled

 Table 7-4: Storey County Local Mitigation Capability Assessment

	Programs, Plans,		Effect	iction		
Agency Name (Mission/ Function)	Policies, Regulations, Funding, or Practices	Point of Contact Name and Phone, E-mail	Support	Facilitate	Hinder	Comments
	(vehicle repairs), parks, pools					manpower
Fire Department	Public education, plan review, code enforcement	Gary Hames 775-847-0954	~	~		Coordinates regularly with other fire agencies; familiar with grants
Emergency Management	Mitigation grants, develop and maintain mitigation plan	Joe Curtis 775-847-0986	~	~		Works well with all area agencies; conduit to local and Federal grants
School District	Identify and implement mitigation actions for school property	Rob Slaby 775-847-0983	~	~		Intricately familiar with school district infrastructure and hazard risks

Table 7-4: Storey County Local Mitigation Capability Assessment

Storey County is a close-knit community where many of those responsible for managing the various departments have multi-generational ties to the community or are long-time residents. This mutual bond creates a cohesiveness that is visualized on Table 7-4. Each agency's mission, mitigation programs, plans, policies, funding, and practices complement one another while working together to develop and effectively protect Storey County residents, visitors, and property.

The programs, plan, policies and regulations listed above provide a basic framework for mitigation projects. These programs cover the County's infrastructure and program needs and are effective. However, the funding for mitigation projects may not always be available.

The County being small in population has individuals wearing multiple hats and therefore doesn't have strong legal, administrative and financial capabilities in relation to larger counties within Nevada. However, the County is able to enforce the International Building Code & International Fire Code, Building Code Title 12.09 and 15.05 which restrict building within a floodway, and is a member of the NFIP, in addition to programs for public safety, health and human services, public works and the school district. These programs are run by trained County staff, who are provided the resources to implement and promote the programs. Future implementation may be constrained by budget reduction in the next few years due to the recession.

7.4.1 National Flood Insurance Program

DMA 2000 Requirements: Mitigation Strategy – National Flood Insurance Program
National Flood Insurance Program (NFIP) Compliance)
Requirement: §201.6(c)(3)(iii): [The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate. Element
Does the updated plan document how the planning team reviewed and analyzed this section of the plan and whether this section was revised as part of the update process?

- Does the new or updated plan describe the jurisdiction(s) participation in the NFIP?)
- Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?

Source: FEMA, March 2008.

The County has identified special flood-hazard areas. They entered the NFIP in 1994. The County participates in the Community Rating System (CRS) and is currently rated as an 8. The CRS is a voluntary program for the NFIP-participating communities. The goals of the CRS are to reduce flood losses, to facilitate accurate insurance rating, and to promote the awareness of flood insurance. The County outlined mitigation actions listed under goals 5 and 6 detailed below in Table 8-2, Mitigation Goals and Potential Actions. There are no repetitive loss or severe repetitive loss properties (as defined by the NFIP) within the County. County Building Code restricts future building within a floodway.

The following provides an overview of the four-step process for preparing a mitigation strategy: developing mitigation goals and objectives, identifying and analyzing potential actions, prioritizing mitigation actions, and implementing an action plan.

8.1 MITIGATION GOALS AND OBJECTIVES

The requirements for the local hazard mitigation goals, as stipulated in the DMA 2000 and its implementing regulations, are described below.

 DMA 2000 Requirements: Mitigation Strategy – Local Hazard Mitigation Goals

 Local Hazard Mitigation Goals

 Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

 Element

 • Does the new or updated plan include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards?

 Source:
 FEMA, March 2008.

The Planning Committee reviewed the hazard profiles in Section 5 as a basis for developing mitigation goals. Mitigation goals are defined as general guidelines that explain what a community wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing community-wide visions. The Planning Team developed 7 goals to reduce or avoid long-term vulnerabilities to the identified hazards (Table 8-1). Avalanche, Drought, Epidemic, Mine Caving, and Terrorism hazards all rated as low or moderate hazards are addressed in Goals One and Two.

Goal Number	Goal Description
1	Promote increased and ongoing County involvement in hazard-mitigation planning and projects.
2	Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters
3	Reduce the possibility of damage and losses due to earthquakes
4	Reduce the possibility of damage and losses due to floods
5	Reduce the possibility of damage and losses due to severe weather
6	Reduce the possibility of damage and losses due to wildland fires
7	Reduce the possibility of damage and losses due to hazardous material releases

8.2 IDENTIFYING MITIGATION ACTIONS

The requirements for the identification and analysis of mitigation actions, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Mitigation Strategy

Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. Element

- Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?
- Do the identified actions and projects address reducing the effects of hazards on new buildings and infrastructure?
- Do the identified actions and projects address reducing the effects of hazards on existing buildings and infrastructure?
- Does the mitigation strategy identify actions related to the participation in and continued compliance with the NFIP?

Source: FEMA, March 2008.

Mitigation actions are usually grouped into six broad categories: prevention, property protection, public education and awareness, natural resource protection, emergency services, and structural projects. As such, Table 8-3 lists the goals and potential actions selected for this HMP by the Planning Committee. The Planning Committee determined that Actions listed under Goals One and Two address the low rated Avalanche, Infestation, Landslide and Volcano hazards.

Table	8-2 -	Mitigation	Goals	and	Actions
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Goals	Action	New or Existing Bldgs.	Description
Goal 1:	1.A	N	Update the Master Plan to be consistent with the hazard area maps and implementation strategies developed in the HMP every 10 years. Review & update ordinances & code every 3 years.
Promote increased and ongoing involvement in hazard-mitigation planning and projects	1.B	N/E	Continue GIS data sharing agreements with Douglas County.
	2.A	N/E	Continue and expand Risk Watch outreach program that coordinates with the school district to teach children about the hazards in their community and what they can do to mitigate, prevent, and prepare for these hazard events. Additionally, the safety tips will be posted on the County Web site.
	2.B	E	Develop and sustain a public outreach programs that encourages consistent hazard mitigation content including all hazards addressed in this mitigation plan.
	2.C	N/E	Develop outreach program that will teach adults how to anchor parapets, signs, glass, machinery, shelving, fixtures, and other nonstructural elements or architectural detailing that might cause injury if items were to fall or break during an earthquake.
<i>Goal 2:</i> <i>Build and support</i> <i>local capacity to</i> <i>enable the public to</i> <i>prepare for, respond</i>	2.D	N/E	Use seasonal firefighters to conduct an outreach program to inform homeowners about the threat of wildfires; to explain how homeowners can reduce the wildfire hazards around their homes; to encourage homeowners to take the necessary action to improve the chance of their home surviving a wildfire; encourage homeowners to become involved with the Living With Fire program; and encourage attendance of existing Fire Safe Chapter members to the annual Wildfire Urban Interface Fire Summit.
to, and recover from disasters	2.E	N/E	Expand Highlands Fire Safe Council to include additional communities to inform Fire Safe councils, homeowner associations, and property owners about best management practices for Piñon-Juniper woodlands.
	2.F	N/E	Initiate an outreach program to inform and instruct building contractors, County and State road maintenance agencies, and Storey County schools in best management practices for vegetation management in developments, around existing and new construction, and along road right-of-ways.
	2.G	N/E	Within and immediately surrounding the area of the Virginia Highlands, the local chapter of the Nevada Fire Safe Council continue outreach efforts to emphasize the importance of internal fuel breaks to property owners in the community as a necessary prerequisite to enhancing fire protection.
Goal 3:	3.A	N	Develop a voluntary building inspection program in which homes, businesses, schools, and critical facilities and infrastructure are inspected by a building official for

Table 8-2 – Mitigation Goals and Actions

Goals	Action	New or Existing Bldgs.	Description
<i>Reduce the possibility of damage and losses due to</i>			nonstructural elements that might break during an earthquake. In conjunction with this action, develop a nonstructural retrofitting program to correct identified problems.
earthquakes	3.B	E	Recommend retrofit for private business, homes, and government, with higher priority to critical facilities, infrastructure, and government agencies located within identified historical buildings.
	3.C	E	Initiate program to provide funding for structural engineers to inspect County-owned critical facilities and infrastructure within identified high- shaking areas and historical buildings.
	3.D	E	Retrofit all critical assets within strong shaking areas that do not meet the most current IBC requirements for safety; with higher priority given to critical facilities, infrastructure, and government agencies located within identified historical buildings.
	3.E	N/E	Work with utility companies to evaluate the seismic risk to their transmission pipelines and implement mitigation measures, such as automatic shut-off valves.
	3.F	N/E	Install on all private and public buildings propane earthquake disconnect values.
	3.G	E	Continue seismic retrofit on facades on B & C Streets.
Goal 4:	4.A	N/E	Review and update flood plans that would include coordination with adjacent counties, cities, and special districts supporting a regional approach to flood control
Reduce the possibility of damage	4.B	E	Install new flood facilities including upgrade of the existing storm drain system to current standards including culverts and channel improvements throughout Storey Co.
flood and flash flood	4.C	E	Protect and enhance existing water conveyance structures, storage, and treatment facilities to reduce impact from flood (i.e. Lockwood, VC)
<i>Goal 5:</i> <i>Reduce the</i> <i>possibility of damage</i> <i>and losses due to</i> <i>Severe Weather</i>	5.A	E	In areas at risk to severe weather, retrofit public buildings to withstand snow loads and sever winds to prevent roof collapse/damage (Sheriff Sub-station, EOC, Courthouse)
<i>Goal 6:</i> <i>Reduce the</i> <i>possibility of damage</i> <i>and losses due to</i> <i>wildland fires</i>	6.A	E	Develop partnerships for a community based vegetation management program including chipping programs

Goals	Action	New or Existing Bldgs.	Description
	6.B	E	Within the VH create manageable, shaded fuel breaks thru entire subdivision including VC Highlands and Highland Ranches
	6.C	N/E	Continue program using seasonal firefighters and community service groups to provide veg. mgmt. services to elderly, disable, or low-income persons to remove flammable veg. around homes
	6.D	N/E	Create a veg. mgmt. program to replace cheat grass w/perennial grasses around communities to slow wildfire spread
	6.E	E	Perform study to determine appropriate method to retrofit buildings located VC urban fire hazard zone. (i.e. critical facilities, commercial business district, historic district and infrastructure)
	6.F	N/E	Implement fuels-reduction treatment along all boundaries of Six Mile Canyon to protect residences and community infastructure
<i>Goal 7:</i> <i>Reduce the possibility</i> <i>of damage and losses</i> <i>due to hazardous</i> <i>materials release</i>	7.A	N/E	Enforce zoning ordinances to reduce public health risks from hazardous materials releases

Table 8-2 – Mitigation Goals and Actions

8.3 EVALUATING AND PRIORITIZING MITIGATION ACTION

The requirements for the evaluation and implementation of mitigation actions, as stipulated in DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements:	Mitigation Strategy - Implementation of Mitigation Actions
CRAIN N N N	

Implementation of Mitigation Actions Requirement: \$201.6(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs. Element

- Does the mitigation strategy include how the actions are prioritized? (For example, is there a discussion of the process and criteria used?)
- Does the mitigation strategy address how the actions will be implemented and administered? (For example, does it identify the responsible department, existing and potential resources, and timeframe?)
- Does the prioritization process include an emphasis on the use of a cost-benefit review (see page 3-36 of *Multi-Hazard Mitigation Planning Guidance*) to maximize benefits?

Source: FEMA, March 2008.

The mitigation actions were finalized during the Planning Committee meeting on October 13, 2011. At this time the Planning Committee evaluated and prioritized each of the actions. To complete this task, the Planning Committee completed the STAPLE+E evaluation criteria using rankings of one for lowest and three for highest priority, acceptance, feasibility etc. The rankings for each action were totaled and the actions with the highest number of points were evaluated by the committee. See Table 8-4 for the evaluation criteria.

Evaluation Category	Discussion "It is important to consider"	Considerations
Social	The public Support for the overall mitigation strategy and specific mitigation actions	Community acceptance; adversely affects population
Technical	If the mitigation action is technically feasible and if it is the whole or partial solution	Technical feasibility; Long-term solutions; Secondary impacts
Administrative	If the community has the personnel and administrative capabilities necessary to implement the action or whether outside help will be necessary	Staffing: Funding allocation; Maintenance/operations
Political	What the community and its members feel about issues related to the environment, economic development, safety, and emergency management	Political support; Local champion; Public support
Legal	Whether the community has the legal authority to implement the action, or whether the community must pass new regulations	Local, State, and Federal authority; Potential legal challenge

Fable 8-3: STAPLE+E Evaluation	ation Criteria fo	r Mitigation Actions
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Economic	If the action can be funded with current or future internal and external sources, if the costs seem reasonable for the size of the project, and if enough information is available to complete a FEMA Benefit Cost Analysis	Benefit/cost of action; Contributes to other economic goals; Outside funding required; FEMA Benefit Cost Analysis
Environmental	The impact on the environment because of public desire for a sustainable and environmentally healthy community	Effect on local flora and fauna; Consistent with community environmental goals; Consistent with local, State and Federal laws

Upon review by the Planning Committee, mitigation actions were selected for the County that best fulfill the goals of the HMP and were appropriate and feasible to implement during the 5-year lifespan of this version of the HMP. In reviewing the actions the Planning Committee considered the following:

- Actions that strengthen, elevate, relocate, or otherwise improve buildings, infrastructure, or other facilities to enhance their ability to withstand the damaging impacts of future disasters
- Actions in which the benefits (which are the reduction in expected future damages and losses) are greater than the costs considered as necessary to implement the specific action
- Actions that either address multi-hazard scenarios or address a hazard that present the greatest risk to the jurisdiction

The high priority actions are shown in Table 8-5.

8.4 IMPLEMENTING A MITIGATION ACTION PLAN

A Mitigation Action Plan Matrix was prepared for the County detailing the mitigation actions and their priority level, how the overall benefit-cost were taken into consideration, and how each mitigation action will be implemented and administered. This matrix is Table 8-4.

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
1A.	Update the Master Plan to be consistent with the hazard area maps and implementation strategies developed in the HMP every 10 years. Update Ordinances every 3 years.	County Planning	Local Gen. Fund, HUD	24-36 months	Protection of lives due to pre-planning.	Low
1.B	Continue GIS and mapping capability to assess the risks in the County GIS data sharing agreements w/ Douglas Co.	County Planning	Local Gen. Fund	Ongoing	Protection of lives and property due to pre-planning	Medium
2.A	Continue and expand Risk Watch outreach program that coordinates with the school district to teach children about the hazards in their community and what they can do to mitigate, prevent, and prepare for these hazard events. Additionally, the safety tips will be posted on the County Web site.	Emergency Mgmt., Fire Dept., Sherriff, School District, Health Dept.	Local Gen Fund	Ongoing	Protection of homes, businesses, infrastructure, and critical facilities.	High
2.B	Develop and sustain public outreach programs which encourage consistent hazard mitigation content including all hazards addressed in this mitigation plan.	Emergency Mgr. Fire Dept.	EMPG, SERC, USEPA, NDEP, NDCNR, Local Gen Fund	Ongoing	Protection of lives and property due to pre-planning.	Low
2.C	Develop outreach program that will teach adults how to anchor parapets, signs, glass, machinery, shelving, fixtures, and other nonstructural elements or architectural detailing that might cause injury if items were to fall or break during an earthquake.	Public Works – Flood Plan Mgr. Fire Dept.	EMPG, SERC, USEPA, NDEP, NDCNR, Utility Service Charge	18-24 months	Protection of lives due to pre-planning.	Low
2.D	Use seasonal firefighters to conduct an outreach program to inform homeowners about the threat of	Emergency Mgr. Fire Dept.	HMGP, PDM, FMAG, NDF, Fire Dept., Local Gen. Fund	Ongoing	Protection of homes, businesses, infrastructure, and critical facilities.	High

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	wildfires; to explain how homeowners can reduce the wildfire hazards around their homes; to encourage homeowners to take the necessary action to improve the chance of their home surviving a wildfire; encourage homeowners to become involved with the Living With Fire program; and encourage attendance of existing Fire Safe Chapter members to the annual Wildfire Urban Interface Fire Summit.					
2.E	Expand Highlands Fire Safe Council to include additional communities to inform Fire Safe councils, homeowner associations, and property owners about best management practices for Piñon- Juniper woodlands.	Emergency Mgmt., Fire Dept.	NDF, Local Gen. Fund	Ongoing	Protection of homes, businesses, infrastructure, and critical facilities.	Low
2.F	Initiate an outreach program to inform and instruct building contractors, County and State road maintenance agencies, and Storey County schools in best management practices for vegetation management in developments, around existing and new construction, and along road right-of-ways.	Emergency Mgmt., Bldg. Dept.	Local Gen. Fund, FEMA, HUD	Ongoing	Protection of homes, businesses, infrastructure, and critical facilities.	Low
2.G	Within and immediately surrounding the area of the Virginia Highlands, the local chapter of the Nevada Fire Safe Council continue outreach efforts to emphasize the importance of internal fuel breaks to property owners in the community as a	Fire Dept., Emergency Management	NDF, Local Gen. Fund	Ongoing	Protection of homes, businesses, infrastructure, and critical facilities.	High

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	necessary prerequisite to enhancing fire protection.					
3.A	Develop a voluntary building inspection program in which homes, businesses, schools, and critical facilities and infrastructure are inspected by a building official for nonstructural elements that might break during an earthquake. In conjunction with this action, develop a nonstructural retrofitting program to correct identified problems.	Bldg. Dept., Emergency Management	Local Gen. Fund, FEMA HMGP, PDM	Ongoing	Protection of homes, businesses, infrastructure, and critical facilities.	Low

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
3.B	Outreach & recommend retrofit for private business, homes, and government, with higher priority to critical facilities, infrastructure, and government agencies located within identified historical buildings.	Bldg. Dept., Emergency Management	HMGP, PDM, US HUD, Local Gen. Fund	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Low
3.C	Initiate program to provide funding for structural engineers to inspect County-owned critical facilities and infrastructure within identified high- shaking areas and historical buildings.	Bldg. Dept., Public Works, Emergency Management	HMGP, PDM, US HUD, Local Gen. Fund	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Medium
3.D	Retrofit all critical assets within strong shaking areas that do not meet the most current IBC requirements for safety; with higher priority given to critical facilities, infrastructure, and government agencies located within identified historical buildings.	Bldg. Dept., Public Works, Emergency Management	HMGP, PDM, US HUD, Local Gen. Fund	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	High
3.E	Work with utility companies to evaluate the seismic risk to their transmission pipelines and implement mitigation measures, such as automatic shut-off valves.	Bldg. Dept., Public Works, Emergency Management	HMGP, PDM, US HUD, Local Gen. Fund	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Medium
3.F	Install on all private and public buildings propane earthquake disconnect values.	Bldg. Dept., Emergency Management	HMGP, PDM, US HUD, Local Gen. Fund	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Medium
3.G	Continue seismic retrofit on facades on B & C Streets.	County Building, Planning & Public Works	HMGP, PDM, US HUD, Local Gen. Fund	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	High
4.A	Review and update flood plans that would include coordination with	Public Works	PDM, HMGP, FMA, RFC, USDA, NDEP,	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Medium

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	adjacent counties, cities, and special districts supporting a regional approach to flood control		USEPA, NDRCS, Local, PW			
4.B	Install new flood facilities including upgrade of the existing storm drain system to current standards including culverts and channel improvements throughout Storey Co.	Public Works	PDM, HMGP, FMA, RFC, USDA, NDEP, USEPA, NDRCS, Local, PW	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Medium
4.C	Protect and enhance existing water conveyance structures, storage, and treatment facilities to reduce impact from flood (i.e. Lockwood, VC)	Public Works	PDM, HMGP, FMA, RFC, USDA, NDEP, USEPA, NDRCS, Local, PW	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	Medium
5.A	In areas at risk to severe weather, retrofit public buildings to withstand snow loads and sever winds to prevent roof collapse/damage (Sheriff Sub-station, EOC, Courthouse)	Public Works	PDM, HMGP, FMA, RFC, USDA, NDEP, USEPA, NDRCS, Local, PW	24-48 months	Protection of lives, homes, businesses, infrastructure, and critical facilities	High

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
6.A	Develop partnerships for a community based vegetation management program including chipping programs	Fire Dept.	PDM, HMGP, RFC, USDA, NDEP, USEPA, NDRCS, BLM, Local, PW	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities	High
6.B	Within the VH create manageable, shaded fuel breaks thru entire subdivision including VC Highlands and Highland Ranches	Fire Dept.	PDM, HMGP, RFC, USDA, NDEP, USEPA, NDRCS, BLM, Local, PW	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities	High
6.C	Continue program using seasonal firefighters and community service groups to provide veg. mgmt. services to elderly, disable, or low- income persons to remove flammable veg. around homes	Fire Dept.	PDM, HMGP, RFC, USDA, NDEP, USEPA, NDRCS, BLM, Local, PW	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities	High
6.D	Create a veg. mgmt. program to replace cheat grass w/perennial grasses around communities to slow wildfire spread	Fire Dept.	PDM, HMGP, RFC, USDA, NDEP, USEPA, NDRCS, BLM, Local, PW	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities while strengthening regional coordination.	Low
6.E	Perform study to determine appropriate method to retrofit buildings located VC urban fire hazard zone. (i.e. critical facilities, commercial business district, historic district and infrastructure)	Fire Dept.	PDM, HMGP, RFC, USDA, NDEP, USEPA, NDRCS, Local, PW	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities.	Medium
6.F	Implement fuels-reduction treatment along all boundaries of Six Mile Canyon to protect residences and community infrastructure	Fire Dept.	PDM, HMGP, RFC, USDA, NDEP, USEPA, NRCS, FEMA, 319(h) grants (Clean Water Act), Local, PW	24-36 months	Protection of homes, businesses, infrastructure, and critical facilities.	High
7.A	Enforce zoning ordinances to reduce public health risks from hazardous materials releases prevent roof	Building Dept.	PDM, HMGP, Local Gen. Fund	12-14 months	Protection of infrastructure, and critical facilities.	Low

Action Number	Action Item	Department / Division	Potential Funding Source	Implementation Timeline	Economic Justification	Priority Level
	collapse/damage					

BLM= Bureau of Land Management PW = Public Works DHS= Dept. of Homeland Security EMPG = Emergency Management Performance Grant FMA=Flood Management Assistance	HMGP = Hazard Mitigation Grant Program HUD=Housing & Urban Development NDEP = Nevada Division of Environmental Protection NDF = Nevada Department of Forestry NDRCS=Nevada Dept. Resource Conservation Services PDM = Pro Disaster Mitigation	RFC=Resource Finance Corporation SERC = State Emergency Response Commission USDA = U.S. Department of Agriculture USEPA = U.S. Environmental Protection Agency USFS = U.S. Fire Service USGS = US Geological Survey
	PDM = Pre-Disaster Mitigation	

This section describes a formal plan maintenance process to ensure that the HMP remains an active and applicable document. It includes an explanation of how the County and the Planning Committee intend to organize its efforts to ensure that improvements and revisions to the HMP occur in a well-managed, efficient, and coordinated manner.

The following three process steps are addressed in detail below:

- Monitoring, evaluating, and updating the HMP
- Implementation through existing planning mechanisms
- Continued public involvement

9.1 MONITORING, EVALUATING, AND UPDATING THE HMP

The requirements for monitoring, evaluating, and updating the HMP, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Plan Maintenance Process - Monitoring, Evaluating, and Updating the Plan

Monitoring, Evaluating and Updating the Plan Requirement §201.6(c)(4)(i): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle. Element

- Does the new or updated plan describe the method and schedule for monitoring the plan? (For example, does it identify the party responsible for monitoring and include a schedule for reports, site visits, phone calls, and meetings?)
- Does the new or updated plan describe the method and schedule for evaluating the plan? (For example, does it identify the party responsible for evaluating the plan and include the criteria used to evaluate the plan?)
- Does the new or updated plan describe the method and schedule for updating the plan within the five-year cycle?

Source: FEMA 2008.

The County Emergency Manager recognizes the need for plan maintenance and wanted to include tools into the plan for maintenance. The HMP was prepared as a collaborative effort between the County Emergency Management, and the Local Emergency Management Committee (LEPC) and the Nevada Division of Emergency Management. To maintain momentum and build upon this hazard mitigation planning effort, the LEPC will monitor, evaluate, and update the HMP. The LEPC will be responsible for implementing the Mitigation Action Plan. The County Emergency Manager will serve as the primary points of contact and will coordinate all local efforts to monitor, evaluate, and revise the HMP.

The LEPC will conduct an annual review of the progress in implementing the HMP, particularly the Mitigation Action Plan. As shown in Appendix E, the Annual Review Questionnaire and Mitigation Action Progress Report will provide the basis for possible changes in the overall Mitigation Action Plan by refocusing on new or more threatening hazards, adjusting to changes to or increases in resource allocations, and engaging additional support for the HMP implementation. The County Emergency Manager will initiate the annual review one month prior to the date of adoption. The findings from this review will be presented annually to the County Manager. The review will include an evaluation of the following:

SECTIONNINE

- Participation of County agencies and others in the HMP implementation.
- Notable changes in the County's risk of natural or human-caused hazards.
- Impacts of land development activities and related programs on hazard mitigation.
- Progress made implementing the Mitigation Action Plan (identify problems and suggest improvements as necessary).
- The adequacy of resources for implementation of the HMP.

The process of reviewing the progress on achieving the mitigation goals and implementing the Mitigation Action Plan activities and projects will also be accomplished during the annual review process. During each annual review, a Mitigation Action Progress Report will be submitted to the Planning Committee and provide a brief overview of mitigation projects completed or in progress since the last review. As shown in Appendix E, the report will include the current status of the mitigation project, including any changes made to the project, the identification of implementation problems and appropriate strategies to overcome them, and whether or not the project has helped achieve the appropriate goals identified in the plan.

In addition to the annual review, the LEPC will update the HMP every five years. To ensure that this occurs, in the third year following adoption of the HMP, the LEPC will undertake the following activities:

- Thoroughly analyze and update the County's risk of natural and man-made hazards.
- Provide a new annual review (as noted above), plus a review of the three previous annual reports.
- Provide a detailed review and revision of the mitigation strategy.
- Prepare a new action plan with prioritized actions, responsible parties, and resources.
- Prepare a new draft HMP and submit it to the County for adoption.
- Submit an updated HMP to the Nevada State Hazard Mitigation Officer and FEMA for approval.

9.2 IMPLEMENTATION THROUGH EXISTING PLANNING MECHANISMS

The requirements for implementation through existing planning mechanisms, as stipulated in the DMA 2000 and its implementing regulations, are described below.

DMA 2000 Requirements: Plan Maintenance Process - Incorporation into Existing Planning Mechanisms

Incorporation into Existing Planning Mechanisms

Requirement (c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

- Element
- Does the new or updated plan identify other local planning mechanisms available for incorporating the requirements of the mitigation plan?
- Does the new or updated plan include a process by which the local government will incorporate the requirements in other plans, when appropriate?

DMA 2000 Requirements: Plan Maintenance Process - Incorporation into Existing Planning Mechanisms

Source: FEMA 2008.

After the adoption of the HMP, the LEPC will continue to ensure that the HMP, in particular the Mitigation Action Plan, is incorporated into existing planning mechanisms. Each member of the LEPC will achieve this incorporation by undertaking the following activities.

- Conduct a review of the community-specific regulatory tools to assess the integration of the mitigation strategy. These regulatory tools are identified in Table 7-1.
- Work with pertinent divisions and departments to increase awareness of the HMP and provide assistance in integrating the mitigation strategy (including the action plan) into relevant planning mechanisms. Implementation of these requirements may require updating or amending specific planning mechanisms.

Since the first Storey County HMP 2010 was adopted Storey County has developed a Storey County Comprehensive Flood Control Plan 2011 which includes mitigation actions to reduce flood and Storey County Flood Zone Plan 2012 which provides restricted building in mapped flood zones.

9.3 CONTINUED PUBLIC INVOLVEMENT

The requirements for continued public involvement, as stipulated in the DMA 2000 and its implementing regulations, are described below.

```
DMA 2000 Requirements: Plan Maintenance Process - Continued Public Involvement
Continued Public Involvement
Requirement §201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.
Element
Does the new or updated plan explain how continued public participation will be obtained? (For example,
```

• Does the new or updated plan explain now **continued public participation** will be obtained? (For example, will there be public notices, an ongoing mitigation plan committee, or annual review meetings with stakeholders?)

Source: FEMA 2008.

The County is dedicated to involving the public directly in the continual reshaping and updating of the HMP. Hard copies of the HMP will be provided to each department. In addition, a downloadable copy of the plan and any proposed changes will be posted on the County's Web site. This site will also contain an e-mail address and phone number to which interested parties may direct their comments or concerns.

The LEPC will also identify opportunities to raise community awareness about the HMP and the County's hazards. This could include attendance and provision of materials at sponsored events. Any public comments received regarding the HMP will be collected by the County Emergency Manager, included in the annual report to the County Manager, and considered during future HMP updates. A press release and public notice by the County will be issued each year before the annual maintenance meeting inviting the public to participate.

The following websites or documents were accessed between October 2010 and March 2011.

- dePolo, C., G. Johnson, J. Price and J Mauldin 2009. *Quatenary Faults in Nevada*. <u>http://www.nbmg.unr.edu/dox/of099.pdf</u>.
- Hess R. and C. dePolo 2006. Loss-Esimtation Modeling of Earthquake Scenarios for Each Co. in Nevada Using HAZUS-MH. <u>http://www.nbmg.unr.edu/dox/of061/of061.pdf</u>.
- Price J, G. Johnson, C. Ballard, H. Armeno, I. Seeley, L. Goar, C. dePolo, J. Hastings. *Estimated Losses from Earthquakes near Nevada Communities*. <u>http://www.nbmg.unr.edu/dox/of098/Scenarios/OpenFileReport09-8.pdf</u>.
- FEMA. 2009. Flood Insurance Study: Storey County, Nevada.
- FEMA. 2008. How-To Guide: To Mitigate Potential Terrorist Attacks Against Buildings. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 452. <u>http://www.fema.gov/library/viewRecord.do?id=1938</u>.
- FEMA. 2002a. 44 CFR Parts 201 and 206, RIN 3067-AD22, Hazard Mitigation Planning and Hazard Mitigation Grant Program, Interim Final Rule. In *Federal Register* 67, No. 38. U.S. Department of Homeland Security, Federal Emergency Management Agency. http://www.fema.gov/pdf/fima/fr02_4321.pdf.
- FEMA. 2002b. State and Local Plan Interim Criteria Under the Disaster Mitigation Act of 2000 – Final Draft. U.S. Department of Homeland Security, Federal Emergency Management Agency. <u>http://www.fema.gov/fima/planning_toc4.shtm</u>.
- FEMA. 2002c. How-To Guide #1: Getting Started: Building Support For Mitigation Planning. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-1. <u>http://www.fema.gov/fima/planning_toc5.shtm</u> . September.
- FEMA. 2002d. How-To Guide #7: Integrating Human-Caused Hazards Into Mitigation Planning. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-7.
- FEMA. 2002e. 44 CFR Parts 201 and 206, RIN 3067-AD22, Hazard Mitigation Planning and Hazard Mitigation Grant Program, Interim Final Rule. In *Federal Register* 67, no. 190. U.S. Department of Homeland Security, Federal Emergency Management Agency. <u>http://www.fema.gov/pdf/fima/fr02_24998.pdf</u>.
- FEMA. 2003a. How-To Guide #3: Developing The Mitigation Plan; Identifying Mitigation Actions And Implementing Strategies. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-3.
- FEMA. 2003b. How-To Guide #4: Bringing the Plan to Life: Implementing the Hazard Mitigation Plan. U.S. Department of Homeland Security, Federal Emergency Management Agency. FEMA 386-4.
- Nevada Bureau of Mines and Geology. 2000. Living With Earthquakes: A Nevadan's Guide to Preparing for, Surviving, and Recovering from an Earthquake. Special Publication.
- Nevada Bureau of Mines and Geology. 2009. *Estimated Losses from Earthquakes near Nevada Communities*. <u>http://www.nbmg.unr.edu/dox/of098/Scenarios/County_Scenarios/</u>

SECTIONTEN

- Nevada Bureau of Mines and Geology. Map. Earthquakes in Nevada 1852-2008 www.nbmg.unr.edu/dox/m119.pdf
- Nevada Division of Emergency Management. State of Nevada Enhanced Multi-Hazard Mitigation Plan 2013.
- Nevada State Demographer. 2012. Population Projections for Nevada Counties. <u>http://nvdemography.org/wp-content/uploads/2012/10/2012-Oct-1-Population-Projections.pdf</u>
- Resource Concepts, Inc. 2005. Nevada Community Wildfire Risk/Hazard Assessment Project: Storey County. <u>http://www.rci-nv.com/reports/storey</u>.
- United States Census Bureau. 2010. American Fact Finder Fact Sheet. <u>http://factfinder.census.gov</u>, <u>http://quickfacts.census.gov/qfd/states/32/32021.html</u>.

United States Drought Monitor. 2014. http://www.drought.unl.edu/dm/monitor.html

Western Regional Climate Center. 2005. Historical Climate Information. <u>http://www.wrcc.dri.edu/CLIMATEDATA.html</u>. Appendix A Adoption Resolution

Resolution #15-419

WHEREAS STOREY COUNTY has historically experienced severe damage from natural and human-caused hazards such as flooding, wildfire, drought, thunderstorms/high winds, and hazardous materials incidents on many occasions in the past century, resulting in loss of property and life, economic hardship, and threats to public health and safety;

WHEREAS the STOREY COUNTY Hazard Mitigation Plan (the Plan) has been developed after more than one year of research and work by Storey County Office of Emergency Management in association and cooperation with the Storey County Planning Team for the reduction of hazard risk to the community;

WHEREAS the Plan specifically addresses hazard mitigation strategies and plan maintenance procedures for STOREY COUNTY;

WHEREAS the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific natural and human caused hazards that impact STOREY COUNTY with the effect of protecting people and property from loss associated with those hazards;

WHEREAS a public meeting was held to present the Plan for comment and review as required by law;

NOW THEREFORE BE IT RESOLVED

by the STOREY COUNTY BOARD OF COUNTY COMMISSIONERS, that:

- 1. The Plan is hereby Adopted as an official plan of STOREY COUNTY
- 2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them.
- 3. Future revisions and Plan maintenance required by the Disaster Mitigation Act of 2000 and FEMA, are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.
- 4. An annual report on the progress of the implementation elements of the Plan shall be presented to the, Local Emergency Planning Commission by October 31st of each calendar year.

PASSED by the Storey County Board of County Commissioners this 5th day of May 2015.

Janhall Mc But Commission Chair, Marshall McBride Date Absent -Commissioner, Lance Gilman Date Commissioner, Jack McGuffey Date

Appendix B Figures


source, plat maps, deeds, resurveys, etc. No liability is Storey County or Douglas County or as to the sufficiency of the data.

T:\3\A\5\HazardMitigationPlan\StoreyHistoric District.mxd



Appendix B Figures



Appendix B Figures



-----\\3\A\5\HazardMitigationPlan\StoreyWildlandFireRisk.mxo

Appendix B Figures



B-5



7:\3\A\5\HazardMitigationPlan\StoreyWildlandFireHistory.mxd

Appendix C Public Information

Press Release

STOREY COUNTY EMERGENCY MANAGEMENT PRESS RELEASE

January 2013

In recent years nature has been restless in Nevada; there has been a swarm of earthquakes rattling the western portion of the State immediately adjacent to Storey County as well as the levee breech in Fernley not to mention the ravishing wildland fires surrounding the Reno area as well as throughout the State. All of these emergency events have demonstrated to us all that Storey County can be vulnerable to disasters, including earthquakes, floods, and wildland fires. The risks posed by these hazards will continue to increase as the County's population continues to grow.

Storey County and Nevada have launched a planning effort, known as the *Hazard Mitigation Plan*, to assess risks posed by natural disasters and identify ways to reduce those risks. This plan is required under the Federal Disaster Mitigation Act of 2000 as a pre-requisite for receiving certain forms of Federal disaster assistance.

Storey County began this planning process in January 2013 and is making a questionnaire available for public input. The County anticipates submittal of the draft plan to the Board of County Commissioners for adoption during 2015.

Public comments and participation is welcomed. For additional information, request to participate, or to submit comments, please contact Cheri Nevin, Storey County at (775) 847-0986, cnevin@storeycounty.org.

11 or more

Questionnaire

STOREY COUNTY HAZARD MITIGATION QUESTIONNAIRE

This questionnaire is designed to help the County Hazard Mitigation Planning Committee identify the community's concerns about natural and human-caused hazards. The questionnaire should be completed by an adult, preferably the homeowner or the head of the household and returned to the address at the bottom of the page. All individual responses are strictly confidential and for research purposes only. Questions call (775)847-0986.

GENERAL HOUSEHOLD INFORMATION

1. RESIDENT (Y/N)? ______ # YEARS IN County? 0-1 ___

2-5

2. Have you experienced any of the natural hazards listed below?

	Na	Human Cause	
	Floods	Avalanche	Hazardous Materi
Wild Fire		Health Alert/Mass Disease	
	Earthquake	Severe Windstorm	
Severe Weather Drought		Expansive Soils	
		Landsubsidence/Ground Failure	

3. What is the most effective way for you to receive information about how to make your home safer from natural disasters? (Check all that apply)

Newspaper	Internet	Radio	
-----------	----------	-------	--

□ Television

Utility Bill 🗆 Mail **Public Meetings**

6-10

□ Billboard

4. In the following list, please check those activities that apply.

Have you or someone in your household:	Check all that apply
Attended meetings or received written information on natural disasters or emergency preparedness?	
Talked with family members about what to do in case of a disaster or emergency?	
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	
Prepared a "Disaster Supply Kit" (extra food, water, medications, batteries, first aid items and other emergency supplies)?	
In the last year, has anyone in your household been trained in First Aid or Cardio-	

Appendix C Public Information

Pulmonary Resuscitation (CPR)?

5. Is your property located in or near a FEMA designated floodplain? _____Do you carry flood insurance?

6. What modifications for earthquakes and/or floods have you made to your home? (*Check all that apply*)

Nonstructural	Structural		
Anchor bookcases, cabinets to wall	Secure home to foundation		
Secure water heater to wall	Brace inside of cripple wall with sheathing		
Install latches on drawers/cabinets	Brace unreinforced chimney		
Fit gas appliances with flexible connections	Brace unreinforced masonry & concrete walls and foundations		
Flood proof	Elevate home		
Other			

STOREY COUNTY HAZARD MITIGATION QUESTIONNAIRE (Cont'd)

7. Do you support policies to restrict or prohibit development in designated hazard zones?

Communitywide Strategies	Check one
Development should be prohibited in these zones	
Development should be restricted in these zones.	
Development should be restricted only where "severe risk" exists	
Development should NOT be restricted in hazard zones	
I don't know.	

8. Please rank how prepared you feel you and your household are for the probable impacts of natural hazard events. Rank on a scale of **1 to 5** with 5 being the most prepared. _____

9. Other Comments:

Appendix D Meeting Agendas & Handouts

Meeting 1 Agenda

AGENDA Storey County Mitigation Planning Subcommittee Wednesday, January 9, 2013- 1:00 p.m. Wal-Mart Distribution Center #7048 2155 USA Pkwy McCarran, Nevada 89434

- 1. **PUBLIC COMMENT** (NO ACTION) No action may be taken on a matter raised under this item on the agenda until the matter itself has been specifically included on an agenda as an item upon which action will be taken. Time limits on Public Comment will be at the direction of the Chairman of the Committee.
- 2. DISCUSSION (NO ACTION): WELCOME & INTRODUCTIONS Karen Johnson & Elizabeth Ashby, Division of Emergency Management
- 3. DISCUSSION/POSSIBLE ACTION: PLANNING PROCESS OVERVIEW Karon Johnson

Karen Johnson

- a. General Information Purpose of the plan
- b. Storey Co. Planning/LEPC's Role
- c. Douglas County GIS Group Role Erik Schmidt, Douglas County
- d. My Plan- Gary Johnson, UNR
- e. State Floodplain Management Luke Opperman, Division of Water Resources'
- f. Public Participation
- g. Contact by email and phone
- 4. DISCUSSION/POSSIBLE ACTION: INCORPORATION OF EXISTING PLANS Karen Johnson
- 5. DISCUSSION/POSSIBLE ACTION: TABLE 8-2 & 8-3 MITIGATION GOALS AND ACTIONS REVIEW – Karen Johnson
- 6. DISCUSSION/POSSIBLE ACTION: HAZARD IDENTIFICATION TABLE & HAZARD RANKING – Karen Johnson
- 7. DISCUSSION/POSSIBLE ACTION: ANNOUNCEMENT OF FUTURE MEETINGS
- 8. ADJOURNMENT

NOTICE:

- Anyone interested may request personal notice of the meetings.
- Agenda items must be received in writing by 12:00 noon on the Tuesday of the week preceding the regular meeting. For information call (775) 847-0986.
- Items may not necessarily be heard in the order that they appear.
- Public Comment will be allowed at the beginning of each meeting (this comment should be limited to matters not on the agenda). Public Comment will also be allowed after each item on the agenda (this comment should be limited to the item on the agenda). Time limits on Public Comment will be at the discretion of the Chairman. Please limit your comments to three minutes.
- Storey County recognizes the needs and civil rights of all persons regardless of race, color, religion, gender, disability, family status, or nation origin.

가지 않는 것 같은 것 같	Storey County	Hazard Mitigation Plan	ning Committee	가 가 전문 바라 온 다 가 온 날 바다
Name	Agency	Key Input	Phone	e-mail
GARY Johnson	NERROA BUREAU OF MUNIS + GEOMORY		775-483-9751	6-1.351.1MR.EDU
Joe Farsing	NDE	Wildlow Fre	775 721 2636	Tacing Clacestrey . NV.60
Bill Moline	NOF	Wildland Fre	775-720-0952	b mo line @ fore stry wasou
Jason Ester	NDE	wild land Fire	775 434-5014	SFOSSER & Foundary NV. Sov
Julie Stranberg	Toys R US		775-986-7812	Julia.Stranberg@ taysrus.con
John Hoskins	comstock Mining		795-233-1371	haskinstellanstellmining.com
MIKE NIVIN	Storry lo. P.N.			1 4411- 10 Secal Advance, 12-7
Bri Wurte	STONEY CO		775 847-0960	PWWATTOSE STORYCOUNTY. ORCY
ERIC Settimor	Daugues Co G15	GIS	775- 782-9834	eschmidt@
Rick VASQUE	2 WAL- MAY			(VASONO) WAS-MARTCOM

Meeting No. 1 - Sign In Sheet

	Storey County Ha	zard Mitigation Pla	nning Committee	이 있는 것 같은 것 이 것 같은 것 같아.
Name	Agency	Key Input	Phone	e-mail
Ward Canadianter	57 Weby			h 90/19.9h =r & S.785cy com/7.9 036_
Dawformer	E boler conty			r
P. Luke Opperman	NOWR		684-2826	LOppermane Water, MV. gov
LE CURTIS	StonoyCourry		691-5333	WHILE STOREY WANTY. O
Karen John	SON NDEM		6870 373	Kijohnson
E Ashby	MERCI		687-0374	
1	0			

Meeting # 1 - Handouts

Incorporation of Existing Plans/Study Table					
Plan / Study	Findings / Incorporation				
Storey County Master Plan (20)					
Building Code	IBC				
FEMA Flood Insurance Study, Storey Co. Nevada (FEMA 20):	This study addresses all flood plain issues				
State of Nevada Multi-Hazard Mitigation Plan	The state MHMP is updated every three years by the SHMO and includes all hazards to be addressed in this.HMP.				
Regional	To develop strategies for floodplain management that				
Floodplain Management Plan	can be applied regionally as well as locally.				
Hazardous Materials Emergency Response Plan 20					
<i>Community Wildfire Protection</i> <i>Plan, RCI</i> (January 2005)	This document includes findings and recommendations for mitigating the threat to property from wildland fires.				
<i>Emergency Operations Plan (</i>)	This document is the main reference source for managing disasters and large scale emergencies in Storey County.				
Storey County Fire Code ????					
Mass Illness Plan ?????					

Very High Risk	• High Risk	Medium Risk	Low Risk	Very Low Risk
Earthquake	Flood	Epidemic	Drought	Avalanche
Terrorism/WMD	• Wildfire	• Severe winter storm	 Hazardous materials event 	Expansive soils
•	•	•	 Severe windstorm 	Extreme heat
•	•	•	Tsunami/seiche	Land subsidence and ground failure
•	•	•	•	Hail and thunderstorm
•	•	•	•	Infestation
•	•	•	•	Tornado
•	•	•	•	Volcano

State of NV Categorization of Hazards

Appendix D Meeting Agendas & Handouts

Hazard Profiling Worksheet

							Legend: 1 = lo	west; 5 = highest
Hazard Type	Magnitude	Duration	Economic	Area Affected	Frequency	Degree of Vulnerability	State & Community Priorities	Total
Natural								
Avalanche								
Caving Ground (Mine Shapft Collapse								
Drought								
Earthquakes								
Epidemic								
Expansive Soils								
Extreme heat								
Flood (Includes dam failure, flash flood, canal/ditches and mudslides)								
Hail & thunderstorm								
Infestations								
Land subisdence & ground failure								
Severe Winter Storm								
Severe Windstorm								
Tornado								
Tsunami/seiche								
Volcano								
Wildfire								
Human-caused								
Hazmat								
Terrorism/WMD								

These criteria will be used to categorize the identified hazards into high, medium and low risk hazards.

Criterion One: Magnitude

Magnitude refers to the physical and economic impact of the event. Magnitude factors are represented by:

- 1. Size of event
- 2. Life threatening nature of the event
- 3. Economic impact of the event
- 4. Threat to property
 - a. Public Sector
 - b. Private Sector
 - c. Business and Manufacturing
 - d. Tourism
 - e. Agriculture

Value:

- 1. Very Low Handled by community
- 2. Low Handled at city/town level
- 3. Medium Handled at county level
- 4. High State must be involved
- 5. Very High Federal declaration needed

Criterion Two: Duration

Duration refers to the length of time the disaster affects the State and its citizens. Some disaster incidents have far-reaching impact beyond the actual event occurrence such as the September 11, 2001 event. Duration factors include the following:

- 1. Length of physical duration during emergency phase
- 2. Length of threat to life and property
- 3. Length of physical duration during recovery phase
- 4. Length of time affecting individual citizens and community recovery
- 5. Length of time affecting economic recovery, tax base, business and manufacturing recovery, tourism, threat to tax base and threat to employment

Value:

- 1 Very Low Critical facilities and/or services lost for 1 to 3 days
- 2 Low Critical facilities and/or services lost for 4 to 7 days
- 3 Medium Critical facilities and/or services lost for 8 to 14 days
- 4 High Critical facilities and/or services lost for 15 to 20 days
- 5 Very High Critical facilities and/or services lost for more than 20 days

Criterion Three: Economic Impact

Distribution of the event refers to the depth of the effects among all sectors of the community and State, including both the geographic area affected as well as distribution of damage and recovery of the economy, health and welfare, and the State/community infrastructure. Distribution factors include the following:

1. How widespread across the state are the effects of the disaster?

- 2. Are all sectors of the community affected equally or disproportionately?
- 3. How will the distribution of the effects prolong recovery from the disaster event?

Value:

- 1 Very Low Community –Only the immediate community or part of a town/city is affected
- 2 Low City/Town entire town/city is affected
- 3 Medium County effects are felt at the county level
- 4 High State the entire state will be affected by the event
- 5 Very High Federal effects are felt nationwide (e.g. Hurricane Katrina-sized)

Criterion Four: Area Affected

Area affected refers to how much area is physically threatened and potentially impaired by a disaster risk. Area affected factors include of the following:

- 1. Geographic area affected by primary event
- 2. Geographic, physical, and economic areas affected by primary risk and potential secondary effects.

Value:

- 1 Very Low Community
- 2 Low City/Town
- 3 Medium County
- 4 High State
- 5 Very High Federal

Criterion Five: Frequency

The frequency of the risk refers to the historic and predicted rate of recurrence of a hazardous event (generally expressed in years, such as the 100 year flood).

Value:

1	Very Low	Occurs less than once in 1,000 years
2	Low	Occurs less than once in 100 to once in 1,000 years
3	Medium	Occurs less than once in 10 to once in 100 years
4	High	Occurs less than once in 5 to once in 10 years
5	Very High	Occurs more frequently than once in 5 years

Criterion Six: Degree of Vulnerability

The degree of vulnerability refers to how susceptible the population, community infrastructure and state resources are to the effects of the risk. Vulnerability factors include the following:

- 1. History of the impact of similar events
- 2. Mitigation steps taken to lessen impact
- 3. Community and State preparedness to respond to and recover from the event

Value:

- 1 Very Low 1 to 5% of property in affected area severely damaged
- 2 Low 6 to 10% of property in affected area severely damaged
- 3 Medium 11 to 25% of property in affected area severely damaged
- 4 High 26 to 35% of property in affected area severely damaged

5 Very High 36 to 50% of property in affected area severely damaged

Criterion Seven: State and Community Priorities

State and community priorities refer to the importance placed on a particular risk by the citizens and their elected officials. Priorities factors consist of the following:

- 1. Long term economic impact on portions of the State or community
- 2. Willingness of the State or community to prepare for and respond to a particular risk
- 3. More widespread concerns over one particular risk than other risks
- 4. Cultural significance of the threat associated with a risk.
- 5. Potential for long term community or cultural disruption presented by the hazard
- 6. Matrix Prioritization of Hazards Results

Value:

- 1 Very Low Advisory
- 2 Low Considered for further planning in the future
- 3 Medium Prompt action necessary
- 4 High Immediate action necessary
- 5 Very High Utmost immediacy

Vulnerability Ratings

- **High Risk Hazard:** Event has most likely occurred in the past and/or is likely to occur in the future. Of substantial magnitude, with loss and financial impact to the State considered beyond the State's available resources and ability to respond.
- **Moderate Risk Hazard:** Event has most likely occurred in the past and/or is likely to occur in the future. Of moderate magnitude, may be considered beyond the State's available resources and ability to respond.
- Low Risk Hazard: Event has a very low occurrence rating and not likely to cause major damage to property or loss of lives in the future. Not likely to exceed the State's available resources or ability to respond.
- **No Substantial Risk Category:** Event would be considered a State/local emergency incident within the jurisdiction's response capability and needing no additional resources to respond.

Special Risk Category: A hazard with an identified mitigation plan or lead agency that provides the expertise to provide mitigation strategies.

	Appendix D
Meeting Agendas ar	nd Handouts

Mitigation Project	PDM	FMA	RFC	SRL
PROPERTY ACQUISITIC	N AND	DEMO	ITION	0R
RELOCATION ACTIVITIE	5		5 K.	
Property Acquisition and Demolition or Relocation	-	-	-	-
CONSTRUCTION ACTIV	ITIES	5. N		1.0
Property Elevation	~	~	~	v
Mitigation Reconstruction ^L				-
Localized Minor Flood Reduction Projects	~	-	~	~
Dry Roodproofing of Residential Properties ²		-		~
Dry Floodproofing of Non-Residential Structures		-	-	
Stormwater Management	~	~		
Infrastructure Protection Measures	~			
Vegetative Management/Soil Stabilization	~			
Retrofitting Existing Buildings and Facilities	-			
Safe Room Construction	-			
NON-CONSTRUCTION A	CTIVITI	ES		
All Hazard/Flood Mitigation Planning	~	-		

 The SRL program allows mitigation reconstruction projects located OUTSIDE that regulatory Boodway as identified on the effective Flood Insurance Rate Map (FIRM). Mitigation reconstruction is only permitted if traditional elevation cannot be implemented.

 The residential structure must meet the definition of "Historic Structure" in 44 CFR § 59.1.

* Critical facilities only.

Hazard Mitigation Assistance (HMA)

HMA under FEMA's Mitigation Directorate unifies the pre-disaster grant programs to better support the overall goal of reducing the loss of life and property due to natural hazards.



The HMA programs: Pre-Disaster Mitigation (PDM), Flood Mitigation Assistance (FMA), Repetitive Flood Claims (RFC), and Severe Repetitive Loss (SRL) provide mitigation grants annually on an allocation and competitive basis to State, Ternitory, Tribal, and local entities. The new unified process achieves economies of scale and portfolio management for Federal, State, and local officials by aligning program requirements in a unified HMA guidance document. The intent of this alignment is to enhance the quality and efficiency of grant awards.

In addition, under the unified process, eligible subapplications submitted but not funded under a specific grant program may also be considered for another mitigation grant program(s).

State Contacts

HMGP & PDM Elizabeth Ashby (775) 687-0314 eashby@state.dps.nv.us

FMA, RFC, & SRL Kim Groenewold (775) 684-2884 groenewd@water.nv.gov

Deadlines

June 24, 2009	Notice of Interest due to Division of Emergency Management/Division of Water Resources
August 12, 2009	Scope of Work due to Division of Emergency Management/Division of Water Resources
August 26, 2009	NHMPC's Quarterly Meeting
October 7, 2009	Benefit Cost Analysis and backup documentation due to Division of Emergency Management/Division of Water Resources
October 21, 2009	Full Application Package due to Division of Emergency

Emergency Management/Division of Water Resources

November 4/5, 2009 NHMPC Prioritization meeting (4 Southern Nevada; 5 Northern Nevada)

Post-Disaster Hazard Mitigation Grant Program (HMGP)

The Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. Authorized under Section 404 of the Stafford Act and administered by FEMA, HMGP was created to reduce the loss of life and property due to natural disasters. The program enables mitigation measures to be implemented during the immediate recovery from a disaster.

http://www.fema.gov/goverument/grant/hmgp/

Pre-Disaster Mitigation (PDM) Program

The PDM program provides funds to States, Territories, Federally recognized Indian Tribal governments, and communities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. The goal of the PDM Program is to reduce overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.

www.fema.gov/government/grant/pdm/index.shtm

Flood Mitigation Assistance (FMA) Program

The FMA grant program provides funding to States, federally recognized Indian Tribal governments, and communities so that cost-effective measures can be taken to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the National Flood Insurance Program (NFIP). The long-term goal of FMA is to reduce or eliminate claims under the NFIP through mitigation activities.

www.fema.gov/government/grant/fma/index.shtm



Unified Hazard Mitigation Assistance Program in Nevada

FEMA

Repetitive Flood Claims (RFC) Program

The RFC grant program was created with the goal of reducing flood damages to individual properties for which one or more claim payments for losses have been made under flood insurance coverage and that will result in the greatest savings to the NFIF (National Flood Insurance Fund) in the shortest period of time.

The RFC program is subject to the availability of appropriation funding. RFC grants will be awarded on a national basis without reference to State allocations, quotas, or other formula-based allocations of funds. The funding source for the RFC grant program is the NFIF.

www.fema.gov/government/grant/rfc/index.shtm

Severe Repetitive Loss (SRL) Program

The SRL program provides funding to reduce or eliminate the long-term risk of flood damage to severe repetitive residential structures insured under the NFIP. The definition of severe repetitive loss as applied to this program is a *residential property* that is covered under an NFIP flood insurance policy, and:

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

For both (a) and (b) above, at least two of the referenced claims must have occurred within any 1-year period, and must be greater than 10 days apart. The long-term goal of the SRL program is to reduce or eliminate claims under the NFIP through project activities that will result in the greatest savings to the NFIF in the shortest period of time.

www.fema.gov/government/grant/srl/index.shtm

the hazard mitigation planning process

Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural and human-caused hazards. Four basic phases are described for the hazard mitigation planning process as shown in this diagram.

For illustration purposes, this diagram portrays a process that appears to proceed sequentially. However, the mitigation planning process is rarely a linear process. It is not unusual that ideas developed while assessing risks should need revision and additional information while developing the mitigation plan, or that implementing the plan may result in new goals or additional risk assessment.

organize resources

From the start, communities should focus on the resources needed for a successful mitigation planning process. Essential steps include identifying and organizing interested members of the community as well as the technical expertise required during the planning process.



assess risks

Next, communities need to identify the characteristics and potential consequences of hazards. It is important to understand how much of the community can be affected by specific hazards and what the impacts would be on important community assets.



develop a mitigation plan

Armed with an understanding of the risks posed by hazards, communities need to determine what their priorities should be and then look at possible ways to avoid or minimize the undesired effects. The result is a hazard mitigation plan and strategy for implementation.



implement the plan and monitor progress

Communities can bring the plan to life in a variety of ways ranging from implementing specific mitigation projects to changes in the day-to-day operation of the local government. To ensure the success of an on-going program, it is critical that the plan remains relevant. Thus, it is important to conduct periodic evaluations and make revisions as needed.



Meeting No. 2 - Agenda

AGENDA

Storey County Local Emergency Planning Committee (LEPC)

Wednesday, April 10, 2013- 10:00 a.m. Storey County Emergency Operations Center 141 North C Street Virginia City, Nevada 89440

All items include discussion and possible action to approve, modify, deny, or continue unless marked otherwise.

- 1. CALL TO ORDER
- PUBLIC COMMENT (NO ACTION) No action may be taken on a matter raised under this item on the agenda until the matter itself has been specifically included on an agenda as an item upon which action will be taken. Time limits on Public Comment will be at the direction of the Chairman of the Committee.
- 3. DISCUSSION/POSSIBLE ACTION: Approval of Minutes from January 9, 2013
- 4. DISCUSSION/POSSIBLE ACTION: Approval of Minutes from March 7, 2013
- DISCUSSION/POSSIBLE ACTION: Approval of Fiscal Year 2014 State of Nevada Emergency Response Commission (SERC) United We Stand Grant Application for submittal to the State of Nevada Emergency Response Commission This item will seek approval of the Storey County LEPC FY2014 United We Stand Grant. (Cherie Nevin, Grants & Emergency Management Coordinator)
- DISCUSSION (NO ACTION): Review of Grants Received by Storey County Local Emergency Planning Committee This item will provide an overview of open grants received by the Storey County LEPC. (Cherie Nevin, Grants & Emergency Management Coordinator)
- DISCUSSION (NO ACTION): Emergency Management Directors Report This item is a general discussion of activities related to the Storey County Office of Emergency Management related to emergency preparedness, planning and response. (Joe Curtis- Director of Emergency Management)
- DISCUSSION (NO ACTION): Cooperating Local Emergency Planning Committee Members Report on Activities This item is general discussion of activities of our private industry and county LEPC Members.
- DISCUSSION (NO ACTION): Review any Hazardous Materials Incidents that have occurred since the Last Meeting of this Committee- This item is a review of any Hazmat related incidents that have occurred since our last LEPC Meeting in January 2013. (Joe Curtis- Director of Emergency Management)

10. ADJOURNMENT

NOTICE:

- Anyone interested may request personal notice of the meetings.
- Agenda items must be received in writing by 12:00 noon on the Tuesday of the week preceding the regular meeting. For information call (775) 847-0986.
- Items may not necessarily be heard in the order that they appear.
- Public Comment will be allowed at the beginning of each meeting (this comment should be limited to matters not on the agenda).
 Public Comment will also be allowed after each item on the agenda (this comment should be limited to the item on the agenda).
 Time limits on Public Comment will be at the discretion of the Chairman. Please limit your comments to three minutes.
- Storey County recognizes the needs and civil rights of all persons regardless of race, color, religion, gender, disability, family status, or nation origin.

Notice to persons with disabilities: Members of the public who are disabled and require special assistance or accommodations at the meeting are requested to notify the Storey County Office of Emergency Management in writing at PO Box 7, Virginia City, Nevada 89440.

In accordance with Federal law and U.S. Department of agriculture policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, religion, age, disability (Not all prohibited bases apply to all programs.) To file a complaint of discrimination 1

Meeting No. 2 - Sign In Sheet

STOREY COUNTY LOCAL EMERGENCY PLANNING COMMITTEE REGULAR MEETING

APRIL 10, 2013 10:00 A.M. Storey County Emergency Operations Center 141 North C Street- Virginia City, Nevada

NAME (PLEASE PRINT)	AGENCY	EMAIL	SIGNATURE
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STOREY COUNTY LOCAL EMERGENCY PLANNING COMMITTEE REGULAR MEETING

APRIL 10, 2013 10:00 A.M. Storey County Emergency Operations Center 141 North C Street- Virginia City, Nevada

	NAME (PLEASE PRINT)	AGENCY	EMAIL	SIGNATURE
l	Dean Haymore	Store, County Com	Development	

Meeting # 2 - Handouts

Results Storey County

Hazard Profiling Worksheet

Hazard Type	Total	Divided by Respondents
Natural		•
Wildfire	247	31
Flood (Includes dam failure, and	470	
mudslides)	179	26
Severe Winter Storm	133	22
Severe Windstorm	123	21
Earthquakes	97	19
Land subisdence & ground failure	69	17
Drought	83	14
Epidemic	81	14
Hail & thunderstorm	70	12
Avalanche	66	11
		0
Human-caused		
Hazmat	83	21
Terrorism/WMD	89	22

Meeting #3 - Agenda



Meeting # 3 - Sign In Sheet -

STOREY COUNTY LOCAL EMERGENCY PLANNING COMMITTEE SPECIAL MEETING

JULY 10, 2013 10:00 A.M. Food Bank of Northern Nevada 550 Italy Drive- McCarran, Nevada

NAME (PLEASE PRINT)	AGENCY	EMAIL	SIGNATURE
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MIKE NWIN	Story Co.		Mehr Gra.
Karen Allen	CCHUS	Kallen & Carson a	a Karen Ulta
Mindi Mitchell	FBNN	Constances @ fbnn. or	a findithitchee
CYDE TAKAHAREHI	FBNN	ctakahashi@fben.or	5 lpt mini
Elyabeth Ashby	NDEM	cashley edps.state.w.u.s	
Karen Johnson	NDEM	Kjohnsonedes. state nu	141
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JUC Carris	Storey Co.		

Meeting # 3 - Handouts

Hazard Profiles and Earthquake

Meeting #4 – Agenda

AGENDA

Storey County Local Emergency Planning Committee (LEPC)

Wednesday, April 9, 2014- 10:00 a.m. Comstock History Center 20 North E Street Virginia City, Nevada 89440

All items include discussion and possible action to approve, modify, deny, or continue unless marked otherwise.

- 1. CALL TO ORDER
- PUBLIC COMMENT (NO ACTION) No action may be taken on a matter raised under this item on the agenda until the matter itself has been specifically included on an agenda as an item upon which action will be taken. Time limits on Public Comment will be at the direction of the Chairman of the Committee.
- 3. DISCUSSION/POSSIBLE ACTION: Approval of Minutes from January 8, 2014
- 4. DISCUSSION/POSSIBLE ACTION: Approval of Minutes from March 4, 2014
- DISCUSSION (NO ACTION): Hazard Mitigation Plan Update This item will provide an overview of the updates to the Storey County Hazard Mitigation Plan. (Karen Johnson)
- DISCUSSION (NO ACTION): Future of Interoperable Communications in the State of Nevada This item will provide an overview of the future of interoperable communications in the state of Nevada and will be presented by the Statewide Interoperability Coordinator George Molnar.
- 7. DISCUSSION/POSSIBLE ACTION: Fiscal Year 2015 State of Nevada Emergency Response Commission United We Stand Grant Requests from LEPC Members This item will provide a time for LEPC Members to provide input on items that they would like to see submitted under the FY2015 SERC UWS Grant
- 8. DISCUSSION (NO ACTION): Review of Grants Received by Storey County Local Emergency Planning Committee

This item will provide an overview of open grants received by the Storey County LEPC. (Cherie Nevin)

- DISCUSSION (NO ACTION): Emergency Management Directors Report This item is a general discussion of activities related to the Storey County Office of Emergency Management related to emergency preparedness, planning and response. (Joe Curtis- Director of Emergency Management)
- 10. DISCUSSION (NO ACTION): Cooperating Local Emergency Planning Committee Members Report on Activities

This item is general discussion of activities of our private industry and county LEPC Members.

11. DISCUSSION (NO ACTION): Review any Hazardous Materials Incidents that have Occurred Since the Last Meeting of this Committee- This item is a review of any Hazmat related incidents that have occurred since our last LEPC Meeting in January 2014. (*Joe Curtis- Director of Emergency Management*)

12. ADJOURNMENT

Meeting #4 – Sign In Sheet

STOREY COUNTY LOCAL EMERGENCY PLANNING COMMITTEE REGULAR MEETING

APRIL 9, 2014 10:00 A.M. Comstock History Center 20 North E Street Virginia City, Nevada

NAME (PLEASE PRINT)	AGENCY	EMAIL	SIGNATURE
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Chevie pevin	Storeyount	Cnevinestoreycountyd	Chene M. neu
Bill Sjovangen	Storey Co	bsionangen & Storen Const	n the
George J. MolNar	NEM	gralvaradesstatem.	Ma
Janeth Woodward	NDEM	jwoodward@ aps stuk. n	was Aunele Wardward
Chris Smulloub	NWS NOAA	chris. smallisate Onega.gov	Clone
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RICK VASQUEZ	WAL-MART	VASQUE E WAL-MART Cay	R. Nasa
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Meeting # 4 – Handouts

Wildland Fire profile and Fire History map, Flood profile

Meeting #5 – Agenda

Meeting #5 – Sign In Sheet

STOREY COUNTY LOCAL EMERGENCY PLANNING COMMITTEE REGULAR MEETING

JULY 9, 2014 10:00 A.M. Northern Nevada Food Bank 550 Italy Drive McCarran, Nevada

NAME (PLEASE PRINT)	AGENCY	EMAIL
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Karen Johnson	KANDEM	Kijihnson Edps State nr. us Ka-Ja
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CLYDE TAKAMOGU	18MN O	ataliahushi@fbin.og /2 On-
Debbie Tanaka	NDEM	Hebbie tavaka Odossatenvus Depend 9
ERIC SETTMIOT	Douglas Go GIS	eschmidtere, daytarianas for AFCM
Karen Allen	CONNS	Kallme war Kase alle
Patrick Macan	American Rod Chose	Patrick. Macane tol costs Phil
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Joe Curtis	Storey County E.	M jourtisestorey county ins

Meeting #5 – Handouts

All maps, Staple E and Mitigation Actions List

Meeting #6 – Sign In Sheet

Meeting #6 – Handouts

Appendix E Plan Maintenance Documents Sample Press Release for Annual Maintenance Meeting

Storey County, Nevada is meeting to review and maintain its Hazard Mitigation Plan to assess risks posed by natural and manmade disasters and identify ways to reduce those risks. This plan is required under the Federal Disaster Mitigation Act of 2000 as a prerequisite for receiving certain forms of Federal disaster assistance. The plan can be found on the County's website at <u>www.storeycounty.org</u>.

Public comments and participation are welcomed. For additional information or to request to participate, or to submit comments, please contact Joe Curtis, Storey County Emergency Management, at (775) 691-5333 or <u>jcurtis@storeycounty.org</u>.

Annual Review Questionnaire

PLAN SECTION	QUESTIONS	YES	NO	COMMENTS
	Are there internal or external organizations and agencies that have been invaluable to the planning process or to mitigation action?			
PLANNING PROCESS	Are there procedures (e.g., meeting announcement, plan updates) that can be done more efficiently?			
	Has the Steering committee undertaken any public outreach activities regarding the HMP or implementation of mitigation actions?			
	Has a natural and/or human-caused disaster occurred in this reporting period?			
HAZARD PROFILES	Are there natural and/or human-caused hazards that have not bee addressed in this HMP and should be?			
	Are additional maps or new hazards studies available? If so, what have they revealed?			
	Do any new critical facilities or infrastructure need to be added to the asset lists?			
ANALYSIS	Have there been changes in development patterns that could influence the effects of hazards or create additional risks?			
	Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?			
	Are the goals still applicable?			
MITIGATION STRATEGY	Should new mitigation actions be added to a community's Mitigation Action Plan?			
	Do existing mitigation actions listed in a community's Mitigation Action Plan need to be reprioritized?			
	Are the mitigation actions listed in a community's Mitigation Action Plan appropriate for available resources?			

Mitigation Action Progress Report

	Page 1 of 3
Progress Report Period:	to
(date)	(date)
Project Title:	Project ID#
Responsible Agency:	
Address:	
City:	
Contact Person:	
Phone # (s):	email address:
List Supporting Agencies and Contacts:	
Total Project Cost:	
Anticipated Cost Overrun/Underrun:	
Date of Project Approval:	Start date of the project:
Anticipated completion date:	
Description of the Project (include a description completing each phase):	tion of each phase, if applicable, and the time frame for

Milestones	Complete	Projected Date of Completion

		Page 2 of 3
Plan Goal(s) Address		
Goal:		
ndicator of Success:		
Project Status	Project Cost Status	
□ Project on schedule	Cost unchanged	
□ Project completed	Cost overrun*	
□ Project delayed*	*explain	
explain	<u></u>	
	Cost underrun*	
□ Project Cancelled	*explain	
Summary of progress on project for this r	eport:	
A. what was accomplished during this rep	porting period?	
	id you are constant if any O	
3. What obstacles, problems, or delays d	id you encounter, if any?	
C. How was each problem resolved?		
Page 3 of 3

Next Steps: What are the next step(s) to be accomplished over the next reporting period?

Other Comments:

Table 8-2: Mitigation Goals an	d Potential Actions from 2008 HMP
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	Action	Description	Status of Action
Goal 1: Promote increased and ongoing County involvement in hazard mitigation planning and projects	1.A	Storey County Hazard Mitigation Plan Steering Committee will remain active and will conduct and complete an annual review of the LHMP along with re-establishing priority actions to be accomplished.	Performed on 4 th year. Update action 1.A
	1.B	Regional mitigation projects will be sought with State mutual aid NEMAC Region 1 jurisdictions (Carson City, Douglas, Lyon, Washoe, Churchill, Pershing, and Mineral Counties).	Completed with Truckee River Flood Plan. Action vague not included in update.
	1.C	Develop GIS data-sharing agreements with appropriate State agencies and State/regional governmental and private agencies that allow for the sharing/utilizing of existing and new GIS hazard and asset information to include applicable hardware, software, training, education, and data acquisition (i.e., maps, imagery).	Completed. Partnered with Douglas, Carson & Lyon for a GIS group.
Goal 2: Build and support local capacity to enable the public to mitigate and prepare for disasters		Continue and expand Risk Watch outreach program that coordinates with the school district to teach	Completed and Ongoing
		children about the hazards in their community and what they can do to mitigate, prevent, and prepare for these hazard events. Additionally, the safety tips will be posted on the County Web site	School District Does Risk Watch
	2.A		Sheriff's Office does a business and neighborhood watch program Fire dept. continues with coordination of UNR and Wildfire Awareness Outreach.
	2.B	Develop and sustain public outreach program that encourages consistent hazard mitigation content.	Ongoing, 2.B , 2.D & 2.E combined for Update Action 2.B.
	2.C	Develop outreach program that will teach adults how to anchor parapets, signs, glass, machinery, shelving, fixtures, and other nonstructural elements or architectural detailing that might cause injury if items were to fall or break during an earthquake.	Ongoing, Living with Fire information made available to public.
	2.D	Develop a public outreach campaign that informs the public on how to protect their homes from severe (wind, hail, thunder, and snow) storms.	Ongoing, combined with 2.B
	2.E	Establish community program to educate residents and visitors about measures they can take during winter weather alerts to minimize potentially life-threatening conditions.	Ongoing, combined with 2.B
	2.F	Use seasonal firefighters to conduct an outreach program to inform homeowners about the threat of wildfires; to explain how homeowners can reduce the wildfire hazards around their homes; to encourage homeowners to take the necessary action to improve the chance of their home surviving a wildfire; encourage homeowners to become involved with the Living With Fire program; and encourage attendance	Ongoing Fire Dept. with NDF and UNR.(Living with Fire)

		of existing Fire Safe Chapter members to the annual Wildfire Urban Interface Fire Summit.	
	2.G	Expand Highlands Fire Safe Council to include additional communities to inform Fire Safe councils, homeowner associations, and property owners about best management practices for Piñon-Juniper woodlands.	Completed Mark Twain area included and fuels reductions projects ongoing.
	2.H	Initiate an outreach program to inform and instruct building contractors, County and State road maintenance agencies, and Storey County schools in best management practices for vegetation management in developments, around existing and new construction, and along road right-of-ways.	Ongoing, included in update.
Goal 2 (cont'd.): Build and support local capacity to enable the public to mitigate and prepare for disasters	2.1	Within and immediately surrounding the area of the Virginia Highlands, the local chapter of the Nevada Fire Safe Council must continue outreach efforts to emphasize the importance of internal fuel breaks to property owners in the community as a necessary prerequisite to enhancing fire protection.	Ongoing Living with Fire continues media campaigns. Modified for Included in update.
	2.J	County emergency response agencies will continue regional preparedness efforts to include development and maintenance of response-and-recovery plans, entering into agreements with other public and private entities, and continued EOC training.	Ongoing - Response and Recovery. Not included in update. Not mitigation.
Goal 3: Reduce the possibility of damage and losses on new and existing buildings and infrastructure due to earthquake	3.A	Develop a voluntary building inspection program in which homes, businesses, schools, and critical facilities and infrastructure are inspected by a building official for nonstructural elements that might break during an earthquake. In conjunction with this action, develop a nonstructural retrofitting program to correct identified problems.	Completed on Grammar and Middle Schools and the Catholic Church. Ongoing. Included in update.
	3.B	Identify and obtain funding sources for private business, homes, and government to retrofit structures, with higher priority to critical facilities, infrastructure, and government agencies located within identified historical buildings.	Storey Historic Structure Study completed. Building Dept. works w/residents to redo foundations or tie down structure. County assists w/costs.
	3.C	Initiate program to provide funding for structural engineers to inspect County-owned critical facilities and infrastructure within identified high-shaking areas and historical buildings.	Completed. Safety Report performed in 2010. Court House inspected.
	3.D	Retrofit all critical assets within strong shaking areas that do not meet the most current IBC requirements for safety; with higher priority given to critical facilities, infrastructure, and government agencies located within identified historical buildings.	Included in update.

Table 8-2: Mitigation Goals and Potential Actions from 2008 HMP

	3.E	Work with utility companies to evaluate the seismic risk to their transmission pipelines and implement mitigation measures, such as automatic shut-off valves.	Completed in industrial park & power plants. Continue propane outreach program. Modified for schools. Included in update
	3.F	Conduct hydrogeological study to identify impact of a severe earthquake on the well systems to determine emergency-planning direction.	No wells in County. Not included in update.
	3.G	Conduct geological study to identify impact of a severe earthquake on the underground mine workings in the Virginia City area.	Completed 2010.
Goal 4: Reduce the possibility of damage and losses to new and existing buildings and infrastructure and natural resources due to flood and flash flood	4.A	Initiate hydrology analysis, to include a full risk assessment, to identify areas most prone to flash flooding and mass movement of water and debris throughout Storey County. Analysis will include mitigation recommendations for each impacted area.	Completed in 2010. Flood Study by FarrWest.
	4.B	Pursue flood-management projects—both regional and local—that would reduce damage due to flash flooding (e.g., stabilizing stream banks, replacing existing culverts and bridges, creating debris or flood/storm water retention basins in small watersheds, flow-diversion structures, erosion control, and utilize best management practices, protect vulnerable sewer and reclaimed water lines, and prevent flood and storm run-off waters from entering wastewater treatment plants.)	Included in update.
	4.C	Require the maximum use of natural drainage ways and prohibit the disruption of natural flowage patterns.	Not a specific action. Not in update.
	4.D	Limit uses in floodways to those tolerant of occasional flooding, including but not limited to, agriculture, outdoor recreation, and natural resource areas.	Completed with new Zoning Ordinance 2010.
Goal 5: Reduce the possibility of damage and losses on new and existing buildings and infrastructure due to severe winter storms (snow)	5.A	Determine the structural stability of critical-facility roofs, carports, and garages to withstand ice and snow loads and wind.	New snow shed for snow removal equipment and retrofit on Courthouse in 2012. No plans for more assessment.

Table 8-2: Mitigation Goals and Potential Actions from 2008 HMP

Goal 6: Reduce the threat to life, new and existing property and infrastructure, and natural resources due to catastrophic wildfires	6.A	Implement fuels-reduction treatment in the Gold Hill area to protect residences and community infrastructure along the western township boundary.	Complete. Noxious weed control completed in 2011. BLM conducted fuels-reduction in 2010.
	6.B	In the Virginia City area implement fuels-reduction treatment along the western township boundary.	In update Action 6.A.ongoing
	6.C	In the Virginia City area create fuel break by extending the vegetation removal treatment along the west and east boundaries to create manageable areas by splitting the north and south boundaries.	Completed. Need to maintain
	6.D	Within the Virginia Highlands create manageable, shaded fuel breaks through entire subdivision to include Virginia City Highlands and Highland Ranches.	In progress. Continued.
	6.E	Create a program, using seasonal firefighters and community service groups, to provide vegetation management services to elderly, disabled, or low-income persons who lack the resources to remove flammable vegetation around their homes.	In progress. Continued
	6.F	Create a vegetation management program to replace cheat grass with perennial grasses around communities to create fuel breaks that would help to slow a wildfire before it reaches structures.	No funds available. Continued.
	6.G	Conduct surveys to ascertain the dependable availability of wood/slash/chips and the desirability of obtaining grants that will provide a local biomass utilization program for power and/or heat generation in the Virginia City/Gold Hill area of Storey County.	Biomass plant project dead. Not in update.
	6.H	Perform study to determine appropriate method to retrofit buildings located within the Virginia City urban fire hazard zone. Initial focus will be critical facilities, commercial business district, and infrastructure located within 19 th -century buildings within the identified historic district.	No funds available. Continued.
	6.I	Implement fuels-reduction treatment in the Mark Twain area to protect residences and community infrastructure along all boundaries, which will include regional coordination with Lyon County, Nevada Division of Forestry, Storey County Fire District, Central Lyon County Fire District, and Dayton Water Utility.	Ongoing – Continued.
	6.J	Implement fuels-reduction treatment along all boundaries of the Six-Mile Canyon area to protect residences and community infrastructure.	Noxious weed abatement and road shoulder expansion reduced risk. Continued.

GIS = Geographic Information System

IBC = International Building Code

LHMP = Local Hazard Mitigation Plan

NEMAC = Nevada Emergency Management Assistance Compact